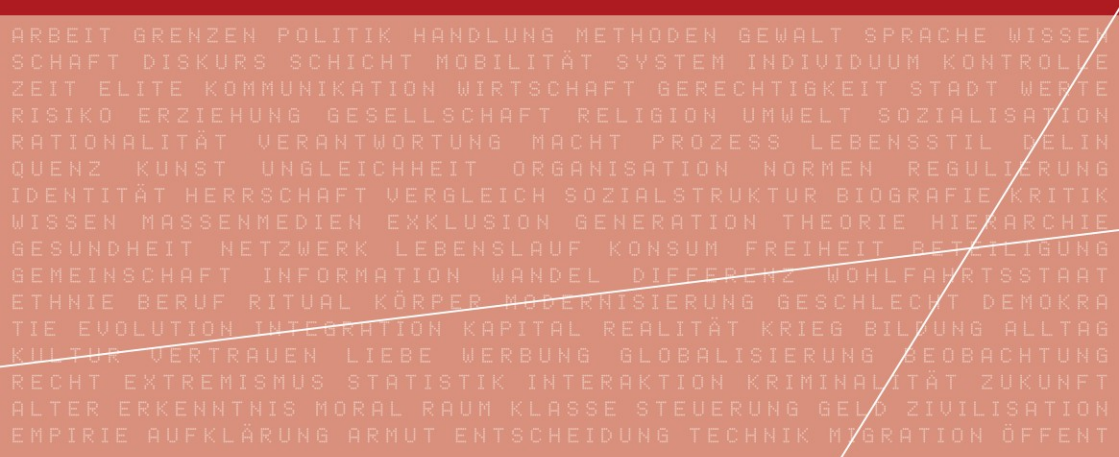
Stefan Baron

Workplace Learning

Subjective Motives and Supervisor Support Matter



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Bibliographic information published by the Deutsche Nationalbibliothek
The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at http://dnb.d-nb.de.

Dissertation within the PhD-program "Productive Adult Development" at Jacobs University Bremen, entitled 'Lifelong Learning. Subjective motives and supervisor support matter', 2010.

1st Edition 2011

Editorial Office: Dorothee Koch

VS Verlag für Sozialwissenschaften is a brand of Springer Fachmedien.
Springer Fachmedien is part of Springer Science+Business Media.
www.vs-verlag.de

Cover design: KünkelLopka Medienentwicklung, Heidelberg
Printed on acid-free paper
Printed in Germany

ISBN 978-3-531-17857-8

Acknowledgements

I would like to thank Klaus Schömann for his guidance and support over the last three years. Without his supervision, this work would not have become a reality. I would also like to thank Rolf Becker and Christian Stamov Roßnagel for agreeing to be on my committee and reviewing my thesis. All three were always there to listen and give advice.

Also, I would like to thank my colleagues in the Demopass team (Daniela Noethen, Katie Bowen, Nicolas Feuerhahn and Laura Khil) who co-collected the data for this dissertation. I am especially thankful to my wonderful office mates Katie and Daniela for their support and a lot of fun we had in room number 19. Additionally, I am very grateful for the friendship of all the members of the Sociology group at the JCLL: Anette, Daniel, Judith, Liuben, Paula and Sara. I also want to acknowledge the efforts of Torsten Biemann and Hannes Zacher, who were always willing and available to answer my methodological and statistical questions. Kersti helped by proofreading my English.

Large parts of my dissertation were written mainly during my stay at Nuffield College in Oxford from January to March 2010. I am grateful for the hospitality and stimulating research atmosphere I experienced there. A special thanks goes to Duncan Gallie who acted as my college supervisor during this time, as well as to John Goldthorpe and the participants of the GRIPS-seminar who provided me with helpful comments and suggestions.

I would like to thank my parents for their love and support. Without their help during the course of my education, this degree would not be possible. To Andrea, Gerd and Tobias, thanks for the support and hospitality during my time in Bremen. Finally and most importantly, a special thank-you goes to Johanna. I am greatly indebted to her love and patience during the last three years of our long-distance relationship. With very few complaints and regrets, she has enabled me to complete this PhD project.

My dissertation was part of the interdisciplinary Demopass project, which is supported by the German Ministry of Education and Research and the European Social Fund (grant number 01 FA0712).

Contents

1 Introduction

Klaus J. Jacobs was absolutely right when he proclaimed that everyone should have the right to a good education, independent of his age, social background, and gender. In contrast, reality is different and participation in learning is still dependent on class origin and, later in the life course, on age. Although class inequalities in primary and secondary education have been declining over the past decades, inequality in the transition to universities has remained relatively unchanged. Same holds true for participation in further training: the German further training system is highly segmented and not everyone has the same access to lifelong learning. For many employees further training is still a "Fremde Bildungswelt" (Bolder and Hedrich 2000). Older employees are less likely to participate in further training than their younger colleagues, and lower skilled employees normally show poor training participation, whereas their higher educated colleagues participate more regularly in training. However, in the near future further training will become even more important. It helps to maintain one's own employability and thus avoid unemployment, and from the firms' perspective, investments in further training can strengthen productivity and make the company more competitive.

Different datasets already have provided a lot of information about further training participation in Germany. The Berichtssystem Weiterbildung (BSW) started in 1979, and 10 repeated cross-sectional surveys have been conducted in the meantime. The German Socio-Economic Panel Study (GSOEP), now in its 26th year, has conducted surveys on further training participation, as well as the project Further Training as a Part of Lifelong Learning (WeLL). The new National Educational Panel Study (NEPS) also includes questions about lifelong learning, and both the Adult Education Survey (AES) and the Continuing Vocational Training Survey (CVTS) allow for a European comparison. Finally, the IAB-Establishment Panel has asked a representative sample of German employers about their further training support. Still, most of the empirical work done in this field concentrates on objective reasons for different training rates, but show less attention to underlying subjective factors. From my point of view, such research can provide only little information about the structure of further training participation, and the underlying mechanisms of individual attainment remain unclear. For example, further training data shows a persistent inequality in par-

S. Baron, *Workplace Learning,* DOI 10.1007/978-3-531-92870-8_1,

ticipation rates, even though direct costs are usually rather low for all employees and most people can receive at least some returns from participation. Still, some people are better able to estimate possible costs and benefits from further training decisions, whereas others often get stuck in certainty-difficulty gaps (Heiner 1983).

It is therefore necessary to include subjective factors like employees' motivation or perceived investment risk of training decisions into an explanation of different participation patterns in further training. Moreover, additional research is also needed on the influence of direct supervisors and the management. Firms need to make it worthwhile for their employees to take part in further training throughout their whole working life, but people in charge often follow widely shared stereotypes about the two focus groups of my research. Thus, older employees are often perceived as less able and willing to learn, and people with lower educational background are perceived as less productive and deserving of training. Hence, firms often reproduce the existing inequality in further training through the organisation of jobs, sometimes simply because better trained employees have a higher likelihood of getting promoted. As a consequence of being in a new job, they then need more training, whereas their less trained colleagues often have a higher likelihood of a status decline. To summarize, further training decisions reflect at least three types of influence: first, the characteristics of the job and the supervisor, second, the characteristics of the person who occupies the job, and third, the way in which both factors are get linked together (Baron and Bielby 1980; Granovetter 1981).

This dissertation aims to analyse the underlying mechanisms of individual attainment in further training, from which practical implications can be derived for the daily HR practice. For my analysis I used multilevel data from the interdisciplinary Demopass project at Jacobs University Bremen, which examined effects of mismatches and matches between aspects of human and social capital, corporate strategy and work organization on the physical and mental well-being of employees (Schütz et al. 2008; Heidemeier et al. 2009). One ambition of the project was the creation of a dataset, which includes at least two levels of observation – of the individuals and of the working group. With this dataset we now have the new and unique opportunity for analysing the effects of individual characteristics, supervisor and team information in one model.

Data on further training experiences is available for two firms of the German automobile sector and one firm of the finance sector. Within each firm, working groups were selected and all working group members were asked to complete questionnaires on a voluntary basis. Additionally, direct supervisors completed a similar questionnaire that included performance ratings for each employee in their working group. In total 742 employees nested within 82 work-

ing groups completed the questionnaire. With 92 percent, most of the participants in the survey were full-time workers with a permanent work contract. 22 percent of the employees were blue-collar workers, 46 percent participated in further training during the last 12 months and 27 percent were female. The mean age was 39 years and the average employees' job experience was 8 years. 50 percent had obtained 'Abitur' (the highest level of secondary education) or received a university degree, 35 percent had a degree from German 'Realschule' (medium secondary level) and 15 percent had a low educational level.

Learning is an activity that can take place in many different settings, therefore I decided to use a rather broad definition of further training. Similar to the concept of the Expertenkommission Finanzierung Lebenslangen Lernens (2002), further training was defined as any job-related continuation or renewal of organized learning after completion of an initial occupational training. This comprises internal training at the workplace as well as external training, and makes no differentiation between formal or informal learning. While internal training is normally taken within the employees' firm, external training describes training forms taken outside the firm. These could be courses offered by a third party, but also rather informal forms like conference visits. For a differentiation between formal and informal training one can mainly use three characteristics: 1) The organization of learning, 2) the specificity of learning arrangements, and 3) the learning contents (Brussig and Leber 2005b). While informal learning describes different unscheduled learning forms like reading of professional journals or attending conferences, formal learning is normally organized learning such as courses and seminars.

1.1 Outline

In chapter 2, I will describe the problem of the expected shortages of skilled labour and the need for employers and employees to invest more in lifelong learning. Technological modernization with often changing requirements at the workplace will require employees to upgrade their knowledge throughout the working life, and employers must provide more training support to their less educated and older employees. For a better understanding, I will provide the reader with background information about the further training system in Germany, and situate my own analysis into the broader context of national and European results. Another point addresses the question how effective policy instruments can be for strengthening lifelong learning. My argument is that such instruments are necessary and helpful, but the data shows only little impact. Instead, employers determine the training support, and direct supervisors decide

about releases for participation in training. Finally, the literature review and a theoretical overview provide the clear picture that job-related further training is often connected with high returns, but low costs. However, employees with low motivation have only few incentives to participate. For those employees with low confidence in their own training competence even low costs can be a high investment risk.

Following the theoretical assumptions by Breen and Goldthorpe (1997) and Esser (1999) for explaining educational differentials, chapter 3 takes a closer look at the effects of subjective factors on employees' perceived importance of further training participation. I argue that further training decisions are not completely rational, because most people cannot decipher the complexity of the training system and are unable to grasp all the relevant information for their training decision. This is especially true for both older and less educated employees, who often act under 'bounded rationality'. Indeed, results of multivariate regression models with two levels show that a higher confidence in one's own training competence is the most important factor for an increase of the perceived importance of further training participation of both older and less educated employees. With high confidence, investment risk decreases and a training participation becomes more likely. Furthermore, the results reveal that middle-aged employees and those with lower and higher educational backgrounds perceive a significantly higher importance for further training participation if they expect a higher likelihood of a status decline in their job. Higher educated employees and older employees are more reluctant if they perceive only low returns from training participation. Finally, perceived direct or indirect costs show no effect at all. To sum up, training decisions follow subjective expectations based on different experiences and work situations, so firms should pay more attention to both the different competencies and needs of their employees.

Chapter 4 deals with the question of possible interventions for strengthening employees' confidence in their own training competence. A better understanding of these interventions is essential to improve the low participation rates in further training. Based on the Frame-Selection Theory by Hartmut Esser (2001), I will study the question of whether supervisors, the working team's training climate, or their own educational background influence employees' confidence in training competence. The results of my multilevel regression models indicate that the team's learning goal orientation plays an important role for all employees, and that higher educated employees generally show a higher confidence level than their lower skilled colleagues. However, the latter can reach the same level of confidence if they perceive more support from the management and their supervisors. This holds especially true for previous non-participants in further training, and older employees can even exceed their younger colleagues if they per-

ceive a higher management support. In conclusion, the results of this chapter clearly show that confidence in training competence can be strengthened, and that this may have positive consequences for the further training participation rates.

Chapter 5 addresses the role of supervisors as gatekeepers of access to further training. Supervisors usually act as training managers and they decide whom to send to further training. They can motivate their team members, can give orientation and they can send clear signals concerning the importance of further training. Supervisors can also strengthen the individual's confidence in the own training competence, but they will only do so if they can be sure about their team members' willingness to train. However, especially in larger teams or teams with frequent fluctuations it can be quite difficult to assess correctly the willingness to train of all team members. Therefore, educational credentials may serve as a screening device in further training access, in the form that credentials sort individuals according to perceived trainability. Additionally, I expect that supervisors tend to follow well-known age-stereotypes, namely that older employees are perceived as less willing to train. Indeed, the results of multinomial logistic regression models with two levels reveal that supervisors have significantly lower opinions on willingness to train for groups that need in fact more support, namely older employees and those with a lower educational background.

Finally, chapter 6 provides a summary of my dissertation, and follows the previous chapter in its emphasis on the role of supervisors. It gives recommendations for HR practices in order to overcome existing stereotypes about both older and less educated employees. While some stereotypes are not completely false, supervisors often tend to overlook positive attributes of such employees. This attitude often leads to poor training, which means that a new training culture is needed. However, it seems that most supervisors are probably not aware of their behaviour, in many cases they are simply not trained as supervisor and need more support and instruction for their tasks as skill and training manager. From my point of view, additional supervisor training is therefore probably the most important tool in breaking up existing misconceptions about both older and less educated employees, and for fostering lifelong learning for all employment groups.

2 Strengthening further training

Chapter 2 gives a short overview on the further training system in Germany and the problem of low participation rates in lifelong learning. I have integrated my work into a broader context by presenting representative results of large-scale datasets on employees' further training participation and firms' training support, and provide the reader with a literature review and a theoretical introduction on possible reasons for the persisting inequality in further training participation.

2.1 Do policy instruments matter?

In the last decades, jobs in the labour market have become more and more complex, and skills needed in the job have risen significantly. Ongoing technological innovations with growing requirements in the workplace, along with the globalization of labour markets, call for continuous updates of knowledge and investments in lifelong learning during one's entire working life. Employees participating in further training can maintain their employability and even improve their labour market performance. Continuous further training participation is required to respond quickly and flexibly to changes on the labour market. Büchel and Pannenberg (2004) were able to show that employed participants in further training have a lower risk for unemployment than non-participants.

Moreover, with the upcoming demographic change and the pressure of a lack of skilled labour further training becomes also an important issue for employers (Vaupel and Loichinger 2006). Not only for firms with a relatively old workforce, but also for younger firms. In many cases, such firms recruited their first staff from the same age cohort without any variation in job tenure and now they are getting older together, with all the consequences of an aging workforce and for future replacement processes. Hence, employers should begin to focus more on developing and implementing strategies to strengthen the employability of their older employees. Certainly, during economic recessions further training is not their primary concern and the training budget is often a first candidate for cost cuts. However, it might be worthwhile not only to keep employees in the firms, but also to continue to invest in further training and to use the available time for promoting lifelong learning. In the following economic recovery, all

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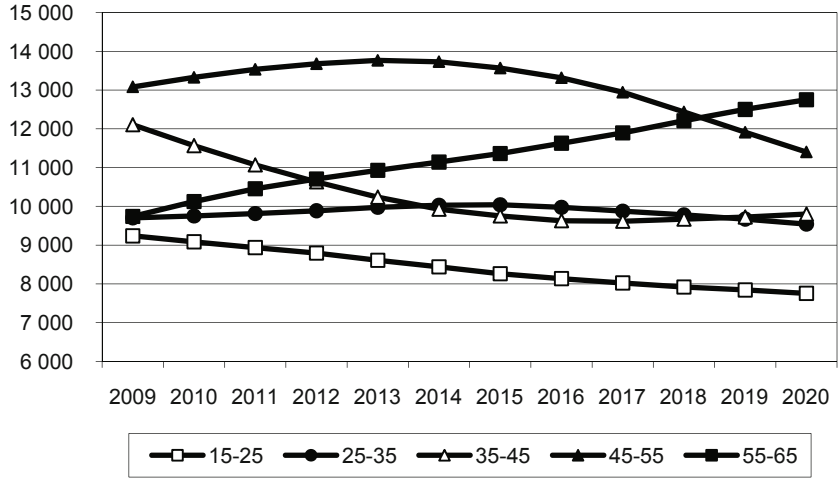
employers search for qualified employees and in some branches it will become more and more difficult to find adequate staff, and a lack of skilled labour can result in restrictions for growth.

While many employers today still use partial retirement for employment reduction, they have to adapt to new challenges in the near future. Germany has the highest median age of the total population in the European Union (Eurostat, Population projects 2008), and the workforce will still get older and older. Long-term forecasts are dependent on preliminary estimates about birth rates, life expectancy and net migration, but for the year 2020 all scenarios show a similar result. The share of people aged 55-65 years in the workforce will increase by around 7 percent from 18,1 percent in 2009 to nearly 25 percent in 2020 (see figure 1). In ten years, they will represent the largest group in the workforce – with consequences for the economy. The official retirement age was already extended from 65 to 67 years, regulations for partial retirement will expire and the effective retirement age will continue to rise.

Figure 1: Population projection 2009-2020. In thousands.



Assumptions: Nearly constant birth rate at 1.4 children per woman, no increase in life expectancy, annual net migration of 100.000 persons after 2014. Source: Federal Statistical Office

With regard to the upcoming demographic change and a predictable lack of skilled labour, employers must (re-)integrate older employees into their labour force instead of kicking them out of the working life. Today, Germany has al-

ready reached the Lisbon target of an employment rate of 50 percent among people above 55 years, and more older employees will have to work for longer in the near future. However, that is a development for which they need to be prepared adequately. A (re-) integration can only work if substantial efforts are made to increase further training during the whole life course. Older employees may be affected by a reduced speed of information reception, a reduced ability to react, and an increased risk for jobs under time pressure (fluid intelligence/mechanics), while they dispose of higher grades of crystallized intelligence/pragmatics like wisdom, discernment and a higher capability for integrative thinking (Catell 1971; Baltes et al. 2006). Thus, firms can benefit from an age-diverse staff, if they follow some crucial advice: First, they should create working conditions which support learning through enlarged job latitudes, variety of tasks, and possibilities for communication and cooperation. Second, firms should make their further training more suitable for their aging workforce. This could include adjustments of learning speed, explanation of learning strategies, or they could tie up on work experiences. Finally, firms should facilitate intergenerational knowledge transfer through age-diverse working groups.

In the meantime, lifelong learning has received attention by politicians and the social partners. In 2002, two years after the announcement of the so-called Lisbon-Strategy, the European ministers of vocational education and training released the Copenhagen Declaration as the starting point of the Copenhagen process, which aims to encourage people to participate in lifelong learning, based on common European frameworks and standards. In 2004, the European Council addressed several key areas to make lifelong learning a concrete reality. In Germany, all political parties agree on the general goal of more lifelong learning and the current conservative-liberal government has decided in its coalition agreement to encourage older employees to participate more in further training while cutting partial retirement policies. Also, they suggested another alliance for lifelong learning, mainly to help small and medium-sized enterprises (SME) to strengthen their further training efforts. Trade unions and employer associations subscribe to that aim, however, the targets and also the alliance are not new and look much like the 'Bündnis für Arbeit, Ausbildung, und Wettbewerbsfähigkeit' of the former red-green government. At that time, nearly ten years ago, the goal was to devise a qualification plan with specific offers for older employees as well as the further development of training arrangements within the firms.

The number of actors and programs involved in designing and implementing lifelong learning strategies is typically quite large, including the European Union, different ministries on the federal level, the public employment services, regional authorities, trade unions and employer associations, as well as private learning providers. It is therefore not very surprising that in 2007 nearly 50 per-

cent of employees with only lower secondary school degrees reported that they did not know very much about the various training possibilities. For employees with a university degree, the share was still 24 percent (Von Rosenbladt and Bilger 2008).

In a report for the European commission, van Elk and Gelderblom (2005) identified 94 policy instruments for fostering further training in the EU-15. More than three quarters of the instruments provided financial incentives, but the countries also offered special programs for different target groups, e.g. unemployed, female and older workers. In Germany tax reduction schemes and educational leaves are predominant, but the Federal Employment Agency also promotes further training for the unemployed and those threatened by unemployment (§ 77 SGB III), as well as a specific program for older workers aged 50 years plus and older employees in small and medium-sized firms (WeGebAu, § 417 SGB III). Currently, the Federal Employment Agency and the European Social Fund (ESF) support qualification measures for employees in short time work, and in 2009 and 2010 the WeGebAu program has also supported employees who have had no training experience in the past four years. The support of qualification measures during short time work has turned out a quite successful story, while other programs have been criticized for their bureaucracy. However, another point of criticism is more important. While educational leave is a good opportunity for employees with high intrinsic training motivation and tax reduction schemes are only helpful for higher income classes, the programs by the Employment Agency may be effective for the target groups but do not reach the education-minded groups in the employed middle class.

Lifelong learning has also become an issue of collective agreements between the social partners, for example in the qualification agreement of the metal and electrical industry of Baden-Württemberg in 2001, the collective agreement of Auto 5000 GmbH in the same year, or more recently, the agreements in the public sector in 2005 and in the metal and electrical industry of North Rhine-Westphalia in 2006. Finally, it is also an often stated argument that firm agreements between the work council and the employer or management can play an important role in intra-firm training policies, because of their direct knowledge about the workforce and its problems and requirements. In individual cases, this argument may hold true, but the reality in many firms is rather different from the ideal case. Tariff obligation has decreased for several years, and especially small and medium-sized enterprises often are not members. In 2007, 41 percent of employees in West Germany and 55 percent of employees in East Germany were not covered by a collective agreement, and only 10 percent of the firms had a work council. While that was the case for 90 percent of West German firms with

more than 500 employees, it was only 6 percent for firms with less than 50 employees (cf. Ellguth and Kohaut 2008).

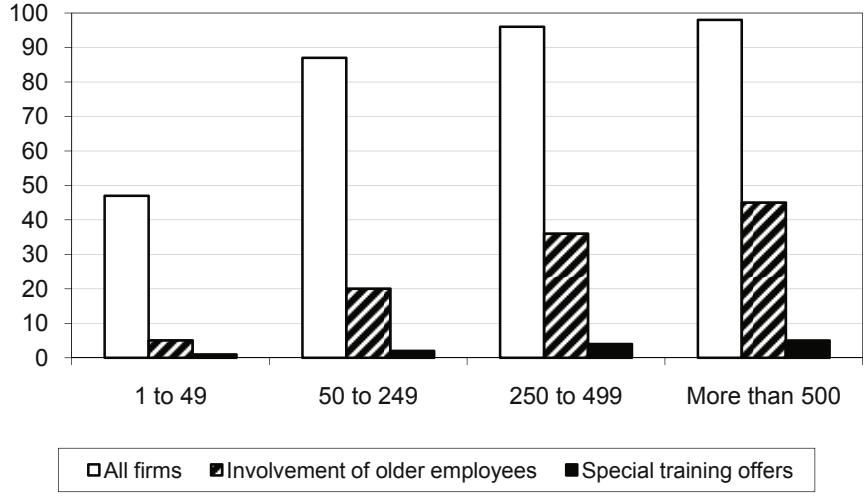
However, despite all the efforts taken, the job-related further training participation of employees aged 55-64 years has increased only slightly by two percent from 17 percent in 2003 to 19 percent in 2007 (BSW 2003, 2007). In the same time, the overall participation rate of employed persons remained stable at 34 percent, and the rather low increase in the participation rate of older employees cannot be accounted for the policy instruments mentioned. It is rather a consequence of the positive development of the labour market and an increase in the total employment rate of older employees. With an increase of nearly 14 percent between 2000 and 2007 their employment rate has increased faster in Germany than anywhere else in the EU-27 (Eurostat Labour Force Survey). Compared to that number, the additional two percent in training participation seem to be a very small step forward, just as the total number of now 19 percent remains rather low as compared to younger age groups.

Finally, it is the responsibility of employers and in their own interest to implement lifelong learning in their enterprises. They must react to the demographic change, and in fact, further training strategies offered by firms can be more effective than policy programs. As Felstead et al. (2007) noticed, many of the skills needed for a high level of productivity are acquired at the workplace, either through formal training courses or a positive learning environment. Employers should provide such a positive environment for all age groups, as well as accessibility to lifelong learning (Baron et al. 2009). Policy instruments and collective agreements do not ensure improvements in lifelong learning. They can give support, but employers determine the implementation. In the end, it is the supervisor who decides whom to send into further training and who will get a release. Larger firms are more likely to offer training opportunities for older employees, simply because they have a higher share of older employees within the organization. The higher the share of older employees within the working group or firm, the more supervisors and employers are aware of their individual training needs. Unfortunately, however, many employers have not recognized the need for investments in lifelong learning yet.

2.2 The specific situation of Lifelong Learning in Germany

The 2008 IAB-Establishment Panel provides a clear picture of the firms' further training offers in Germany. More than 50 percent of firms with less than 50 employees did not release staff for the purpose of participating in internal or external training courses or covered the expenses for training at least in part. On the other side, nearly all firms with more than 250 employees offered further training courses for their employees. The relatively strict definition by the IAB researchers excludes more informal training opportunities like reading of job-related magazines or experience exchange with colleagues, but the pattern is quite obvious: Smaller firms do not have the time, money, or capacity for formalized further training (they do it more often 'on-the-job'), whereas bigger firms often have their own HR-departments and even their own firm strategies for lifelong learning. Furthermore, firms' training policies are highly linked to the structure of their workforce. Jolivet (2002) could show for France that training opportunities for older workers are positive related to their share in the workforce.

Figure 2: Firms' support of training courses in the first half of 2008



For firms with employees over 50 years of age: Involvement in in-firm advanced training activities and support of special training offers (in percent). Source: IAB-Establishment Panel 2008, Bellmann 2002.

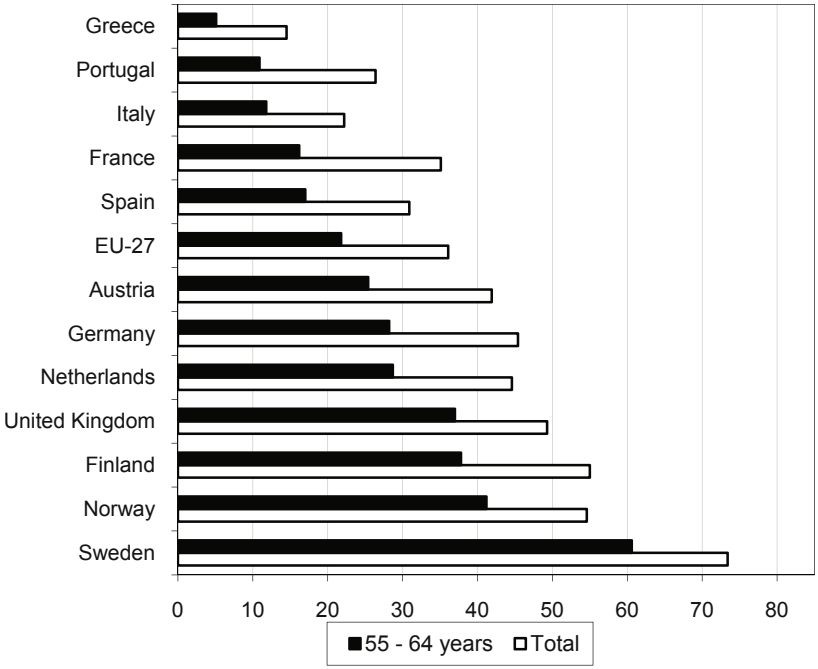
However, as figure 2 shows, it was also found that most of the bigger firms with more than 500 employees and an older workforce have not learned their lessons from the demographic change yet. Only 45 percent of them included employees aged 50 years plus in in-firm training activities, and around 5 percent offered special training for older employees. Unfortunately, these low shares were even smaller for companies with fewer employees. In the case of firms with less than 50 employees, no more than 6 percent included older employees in in-firm training measures, and just one in a hundred firms gave special training offers to their older workforce. A comparison with previous waves of the panel did not show any changes in numbers, and also the share of firms offering early-time retirement remained stable over the last years[1]. Thus, employers have not changed their behaviour yet, in fact, in many cases they are still not aware of the upcoming demographic change. From their point of view, further training of older employees is probably less profitable, as most older employees are seen as less productive and less willing to train.

Figure 3 provides a comparison of further training participation between selected European countries based on data from the Adult Education Survey 2007 (AES). With a participation rate of 27,1 percent amongst employees aged 55 years plus Germany ranks in the middle, but above the EU-27 average. Sweden heads the group with 60,1 percent followed by the other Nordic countries and the United Kingdom, whereas Southern European countries rank at the bottom. It is worth mentioning that the AES data differs from the German data of the Berichtssystem Weiterbildung (BSW), which I have already mentioned. In this particular case, the BSW-data explicitly deal with job-related further training, whereas the AES data covers all sorts of non-formal training during adulthood. Thus, the AES data shows larger numbers, but the overall pattern remains stable.

Perhaps employer attitudes and practices towards older employees may have an effect on the training participation rate of their aging workforce. Concepts of lifelong learning have been developed in the Nordic countries many years before it became a topic in Germany, and in the meantime employers realized the positive contributions of older employees in terms of loyalty, experience, and firm commitment (cf. Bredgaard and Larsen 2005). Harper et al. (2006) examined attitudes and practices of employers toward aging workers and found clear differences in their views about the age at which employees are categorized as 'old'. They found significant company size variation, but the mean threshold for defining employees as 'old' was only 51,7 years in Germany, with 53,9 years a bit higher in Sweden, and even 59 years in the United Kingdom.

[1] Data access was provided via remote data access at the Research Data Centre (FDZ) of the German Federal Employment Agency (BA) at the Institute for Employment Research (IAB).

Figure 3: Overall participation/Participation rate of employees aged 55-64. Non-formal education and training, selected countries (in percent)



Source: Eurostat, AES 2007, own calculation.

Of course, different attitudes and practices of employers alone do not account for the gap between the countries. Brunello and Medio (2001), for example, found more further training in countries with higher union density and a higher index of employment protection, but less training in countries with more stratified secondary school education, like in Germany. Diekhoff et al. (2007) reported positive effects of education in most countries, but their analysis with ECHP-data also showed that older employees are less likely to receive further training in Germany, France, Spain, and the United Kingdom, whereas they found no evidence of age disadvantages in Denmark and Finland. There has been a considerable amount of comparative research in this field (e.g. Schömann and O'Connell 2002; Green 2002; Hutsebaut and Jepsen 2002; Korpi and Mertens 2003; Grünewald et al. 2003; Arulampalam et al. 2004; Bassanini et al. 2005; OECD 2005; OECD 2007), and I do not strive for another country comparison. Never-

theless, the data seems to indicate a relationship between countries' participation rates in lifelong learning, the share of their older workforce and their educational level. The Scandinavian countries have withstood early retirement policies in the late 1970s, Finland and also the Netherlands have reversed the early retirement trend and opened new pathways to continued employment for 'silver agers' (Guillemard 2001). Traditionally, the Nordic countries stand for relatively high rates of employment among older employees, whereas Germany barely passed the Lisbon target.

Especially higher educated employees show a higher activity rate at an older age, usually because they have jobs which are physically less stressful. That is also the case in Germany, but in Sweden more than 40 percent of people finished a tertiary education, the other Nordic countries and the United Kingdom follow with around 30 percent. In comparison to these countries, the share of German people having a university degree is rather low with only 17 percent (Eurostat, 2007). Thus, our Nordic neighbours are maybe more used to participating in lifelong learning, whereas early retirement is still quite popular in Germany. In the end, older people who are still in employment show a higher likelihood of further training participation than people in early retirement.

During the past 15 years, Germany's employment rate of employees between 55 and 64 years has increased by 18 percent, and with higher educational attainment in their youth as a result of educational reforms in the late 1960s and 1970s, more people have participated in further training and also continue to do so later in their working life (Schömann and Becker 1995). Figure 4 with data from the German Socio-Economic Panel Study (GSOEP) (Wagner et al. 2007) shows that the participation rate in job-related further training in this age group has doubled during the past 20 years. While the overall participation rate has remained fairly stable, especially in the age group 50 to 60 years more employees participated in further training. However, the ratio between the oldest group and the age group 40-44 years is still quite high.

Using different waves of the GSOEP, age, period and cohort effects become apparent (cf. Mayer and Huinink 1990). In each wave participation decreased with age, but in the general trend employees in younger cohorts are more likely to participate in further training than the cohort born in 1945-1949 (in bold). Deviations from this trend can be explained by period effects, such as the employment boost and the additional need for further training in the years after German reunification, changes in the partial retirement schemes after 2004, or by the short-cuts in the duration of unemployment benefits and the introduction of new welfare schemes as part of the so-called Hartz-Reforms in 2005. These reforms, for example, may explain the decline in further training participation of the age group 59-65 years between 2004 and 2008. During this time, employ-

ment rate among older people above 55 years increased by 8,3 percent from 45,5 percent in 2005 to 53,8 percent in 2008. While they were used to retiring earlier than their higher educated colleagues in the past, more lower educated employees now stay longer in the workforce. Thus, average numbers of participation provide only little information, because the composition of the reference group varies over time. Finally, we have to keep in mind that older employees are not notorious non-participants, they still show high numbers of participation in their 50s. The cut comes first around age 60.

Figure 4: Further training over the life course

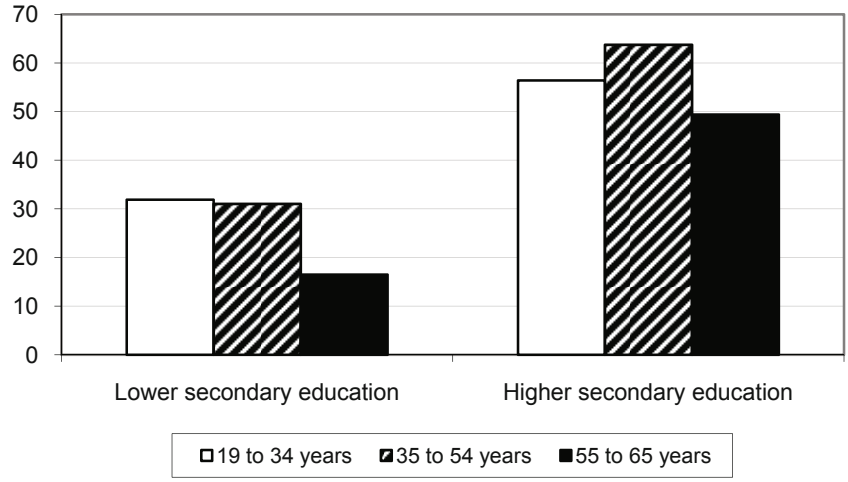
	1989	1993	2000	2004	2008
40-44 years	**51,9**	51,6	53,5	54,5	61,5
44-48 years	42,0	**60,6**	53,7	49,7	50,6
51-55 years	27,5	32,2	**41,4**	47,9	43,6
55-59 years	23,0	27,0	37,3	**42,0**	44,5
59-65 years	14,7	18,2	23,3	27,4	**24,1**
55-65 years	17,1	20,9	28,2	31,7	34,4
Total	33,8	36,7	39,0	36,9	38,1

Participation in the last three years (in percent). Only West-Germany. Source: GSOEP 1989-2008, own calculation.

So far, previous charts only referred to older employees at an average, but there is not **the** aging workforce or **the** older employee. Older people vary significantly in many points, and the most important difference with regard to lifelong learning is of course their educational background. Figure 5 gives an impression of training participation for two education groups in 2007. As we can see, further training participation is highly segregated and educational background is a good indicator for the further educational career. In all three age groups, people with a higher educational background have participated more often in training than people with a lower educational background. This is especially true for higher educated employees above 55 years, who showed a three times higher participation rate than lower educated employees of the same age group, and even a higher participation rate than younger less educated people.

Of course, higher educated employees in old age tend to participate less in further training, too. They only take part in further training if this seems to be meaningful to them, and so far they have had only few incentives. Everything in

Figure 5: Participation in non-formal further training/ last 12 months



By education and age groups (in percent). Source: BSW-AES 2007, own calculation.

the life course is a reflection of goals, resources and norms of a given society, but with higher expected returns from training, more support from supervisors and special offers for an aging workforce, more higher educated people might be willing to participate in further training after age 55 years. Results from the European Adult Education Survey (AES 2007) revealed that nearly 50 percent of older employees would participate in further training for improving job abilities and career prospects, and around 40 percent would use further training to increase knowledge and skills on an interesting subject. Most of them still have the necessary learning competence, and if not, they only need a few sessions of task-related training to increase their performance (cf. Baltes et al. 2006). In general, higher educated employees do not only have more access to further training, but they also show a higher responsibility for their own learning process and have both the knowledge of the actual training needs and the knowledge about available training resources. That, however, is not the case for lower educated employees.

Lifelong learning is selective and self-directed and people draw on the resources they have from previous learning experiences (Illeris 2006). Therefore, it is important for further research and practical implications not only to look at the aging workforce, but also to include lower educated employees at all stages of

their life course. Learning barriers can be reduced by further training early in the working life, simply because participating in one further training course increases the probability of an individual undertaking more training throughout his life course (Jenkins et al. 2003). Heckman (2000) pointed out that non-cognitive skills like motivation, persistence, patience, or self-regulation can be improved also in adulthood, but that learning is most effective when it begins at a younger age. In later stages of the working life, especially less educated employees obtain poorer results of skill investments. They are either less willing to participate in further training, or they get less training support from their supervisors and their firms (Schömann and Becker 1995).

2.3 Literature Review

Despite the educational expansion since the late 1960s, the educational system in all industrialized countries is still highly segregated, and social origin is a good indicator for the further educational career (cf. Blau and Duncan 1967; Mare 1980). The 'education scissors' widen with each step and inequality of educational opportunity is still persistent over the life course (Becker 2003; Schömann and Leschke 2004; Becker and Hecken 2005; Hansen and Mastekaasa 2006; Hansen 2008; Becker 2009). It starts pretty early in the school system or already in pre-school, when parents desire to avoid status demotion by choosing the right schools or school tracks for their children (Stocké 2007).

Breen et al. (2009; 2010) showed that in general class inequalities in educational attainment were declining rather than persistent over the course of the 20th century, but that inequalities in the transition to tertiary education remained fairly stable. Schimpl-Neimanns (2000) and Davies et al. (2002), for example, showed for Germany and Denmark that children are significantly less likely to leave school after the 10th grade if their parents have a higher education; the parental influence even increases with their level of education. Later in the life course, people having higher educated parents show higher educational ambitions, better working habits, and a stronger interest in reading (Hansen 2008). Hansen and Mastekaasa (2006) still found a relationship between class origin and academic performance at Norwegian universities, and Hillmert and Jacob (2002) concluded that the parents' education and income are good indicators for children's educational behaviour. People wish to achieve at least the same status level as their parents; the higher their educational and social background, the higher the level of education they want to complete. Recently, a study by Becker and Schömann (forthcoming) showed that intergenerational status maintenance is still an important driving force for further training participation.

People's expectations and beliefs on returns from education are in most cases influenced by family background and the interaction with direct peers (see also Meier Jaeger 2007).

Previous education almost completely determines the first professional position when entering the labour market (Müller 1975; Allmendinger 1989; Blossfeld and Shavit 1993; Breen and Jonsson 2000; Konietzka 2003; Müller and Gangl 2005). Those with the best education have a high likelihood of fast integration into the labour market and better job opportunities, whereas lower educated people often have poorer job prospects. Moreover, Blossfeld and Meyer (1988) showed with data of the German Life History study that also job mobility relies more on qualifications than on firm size or employers' recruitment practices.

The pattern of educational inequality may already be established at an earlier stage, but it still increases during working life. People with a higher educational background participate in training more often than people with a lower educational background, and abet the further polarization of educational qualifications over the life course (Wilkens and Leber 2003). Duncan and Hoffman (1979) showed with data from the United States that even one additional year in education increases the likelihood of receiving on-the-job training. Similar results can be found for Germany. Hubert and Wolf (2007), for example, found not only a significant influence of educational background on the likelihood of further training participation, but also a positive impact on the number of training hours taken by further training participants. To sum up, it is a common result in literature that higher educated employees are more likely to participate in further training than lower educated employees (see also Buchmann et al. 1999; Leuven and Oosterbeek 1999; Martin and Düll 2000; OECD 2003; OECD 2005; Leber and Möller 2007), which again has a positive impact on their future job career.

Further training reduces the likelihood of job loss and status decline, and has a positive impact on job mobility and further job career. In fact, higher educated employees accumulate more and more education during the life course (Becker 1991). Higher skilled jobs are often connected with stronger training needs, whereas employees in low-level positions normally have fever opportunities for training (cf. Oosterbeek 1996). It seems that further training leads to a 'self-reinforcing' segmentation of educational opportunities. It increases rather than reduces inequalities in the labour market (O'Connell 2007). Those employees who are already in a lower position in the labour market tend to receive less employer-sponsored training, leading to poorer career prospects, lower wages and less employability. Employees with fewer training experiences might be excluded from internal career tracks and entrant positions (Lassnigg 2007). They tend to be locked in the secondary labour market with often fixed-term and

atypical job contracts, while higher-skilled employees stay in the primary labour market with stable employment, state of the art technical equipment, better career prospects and more income (Doeringer and Piore 1971; Giesecke and Groß 2002; Zwick 2002; Timmermann 2005).

This inequality remains over the life course. Further training participation first increases at a younger age, but then tends to decline with more years of labour market experience (Behringer 1999; Büchel and Pannenberg 2004; Schömann and Leschke 2004; Evertsson 2004; Bannwitz 2008). A common argument for this result is that older workers past a certain age and below a certain skill level obtain poor returns to skill investment (Heckman 2000). Following Gary Becker's Human Capital Theory (1964), it should not be longer profitable for them to invest in further training, because the duration until their retirement would be too short for a pay-back. Indeed, older employees in both groups participate less likely in further training if they have only a short working horizon until their retirement. They are often less motivated and interested, and desire less training than middle aged employees (Leuven and Oosterbeek 1999; OECD 2005).

However, older employees are not a homogeneous group. Previous educational attainment becomes less important in old age, but job status is still a good predictor of further training participation (Wilkens and Leber 2003; Friebe and Jana-Tröller 2008). White-collar workers participate more often in further training than blue-collar workers, as older employees aged 55-65 years with more job autonomy using a computer in their daily work are more active than older workers at the production line (Leber and Möller 2007). While higher skilled employees often still show a high importance for further training in older age, lower educated colleagues do not only expect fewer benefits from a participation for their remaining years in employment, they also are less confident with regard to their training competence. They often have fewer previous training experiences than their higher educated colleagues (Bolder and Hendrich 2000; Maurer 2001). For example, in a broad study about motives, reasons and barriers for non-participation in further training (Schröder et al. 2004), 54 percent of non-participants agreed with the statement that they were not used to learning anymore.

The length of one's working horizon also has an effect on the probability of receiving training by the employer (Duncan and Hoffman 1979; Arulampalam and Booth 1998; Brussig and Leber 2005). Firms normally offer less training to employees with a shorter working horizon, but Schömann and Becker (1995) also showed that working a long period for the same employer in fact increases the probability of receiving training. Moreover, older employees who are still in work after age 60 years are often higher skilled and healthy persons who are

experts in their work. It is often quite difficult to find adequate successors for them on the labour market, whereas in the general picture many employers offer incentives for older employees to leave the workforce earlier and try to adjust their qualification structure through the hiring of younger and higher skilled employees.

Still, Schömann and Leschke (2004) have identified a positive training trend for older employees over time, and Riphan and Trübswetter (2006) pointed out that the increase in training among older employees is caused by behavioural changes in the provision of training rather than by workers' characteristics and employment rates. The IAB-Establishment Panel 2002 asked companies about widespread beliefs about older employees and got mixed results. While firms expected higher flexibility, learning ability and creativity from younger employees, they assumed higher working morale, quality consciousness and loyalty from older employees (Bellmann and Leber 2008). In the end, firms can profit from an aging workforce. Higher working morale, quality consciousness and loyalty can at least compensate for reduced speed or flexibility. In any case, Börsch-Supan and Weiss (2007) did not find any evidence of a productivity decline in old age, and employers can actually improve their chances in a competitive labour market by investing into their older workforce.

For employees, it makes of course also sense to invest steadily in further training. Some of the younger old still have a working horizon of more than ten years. In comparison, the average job tenure in Germany is about 11 years (OECD data for 2008), and no further training at all during such a long period may have consequences for job security. Firms can dismiss employees that are lacking in qualifications; it is the employees' responsibility to be updated in the skills needed in their job. Huyer et al. (1998) found a negative but short-term effect of further training participation on unemployment duration, and Büchel and Pannenberg (2004) confirmed this pattern even for older employees. They also found a positive effect on future career opportunities.

With regard to wage returns from further training the existing literature provides a mixed picture. Schömann and Becker (1998) and Pannenberg (1998) pointed out that the timing of training participation has an influence on monetary benefits and chances for future training participation. Younger employees obtain an earning increase after further training, but different analyses showed no significant effect for employees aged 45 and older (cf. Büchel and Pannenberg 2004; Kuckulenz and Zwick 2003). Wolter and Schiener (2009) showed the interesting result that the pure effect of further training has a positive significant income effect for lower skilled employees, but not for their higher educated colleagues. Still, by looking at the effect of training volume they detected a positive effect for higher skilled employees, whereas training volume had no signifi-

cant effect for less educated employees. Furthermore, Pischke (2000) and Muehler et al. (2007) found significant effects only for general training taken outside of the firm, and Diekhoff et al. (2007) came up with no significant effect on employees' wage level at all when selection effects were taken into account.

However, it is always quite difficult to measure training returns exactly, and beside these objective returns employees may also follow their own subjective expectations. Referring to results from a study of the Federal Institute for Education and Training (BIBB) on costs and benefits in further training, Beicht et al. (2005) reported that 79 percent of survey participants had expected a high or very high benefit for their personal development, 77 percent had expected a higher job ability, and still 70 percent had expected some support for the adjustment to job requirements. Of course, these high rates might be subject to social desirability effects and vary for different age and education groups, but they also give an idea of employees' willingness to train. Hence, employers must support more further training for all their employees, but the latter should also demand more training. Training benefits in terms of higher job security and better career opportunities are usually high, whereas costs are often low. This counts for both lower educated and older employees, too. As reported in the BIBB study, most employers pay the direct costs of firm-specific training. 74 percent of participants paid not more than 100 Euros and only 12 percent had to pay costs of more than 500 Euros. Finally, the BIBB study also showed that only 9 percent of respondents estimated their benefits as lower than their costs, while 52 percent categorized their benefits as higher than their costs. 38 percent reported a balanced ratio (Beicht and Walden 2006).

2.4 Theoretical overview

Educational credentials like previous participation in further training are important determinants for success in internal labour markets (Bills 1988a; Brown 2001). Thurow (1975) pointed out that the labour market is characterized by job competition, and more further training probably secures a better place in the queue of employees waiting for job promotion. That holds true even for older employees aged 55 years plus. There are always vacancy chains in internal labour markets when a job position is vacated by a colleague leaving the firm. Usually, the vacant position will be filled by employees in lower positions from inside the firm who can climb up the 'promotion ladder' and become promoted to the new job position with a higher salary, but also a higher status within the firm (Sørensen 1983). Mincer (1974) showed with his Human Capital Earnings Function that schooling, post-school investments and job tenure account for a large

share of the inequality in earnings of adults. Educational attainment strongly determines occupational attainment, but even with lower initial education further training participation can open bridges to more flexible 'pathways' ensuring better and more adequate job opportunities for better and stable employment (Raffe 2003). Further training can provide better positions in firm-internal social networks and may open connections to otherwise inaccessible jobs (Granovetter 1974; Burt 1992). Thus, status attainment is one of the most important motives for further training participation. We know that training decisions are often made in comparison to the relative standing of direct colleagues; they turn on their ability, talents, and productivity (Blau 1963; Frank 1985b). Frank (1985a) argued that employees with higher productivity compared to their co-workers achieve a higher status position in their work environment. Employees with a lower status position can either leave the firm for a new employer where they might have a higher status, or they decide to catch up with their colleagues and invest in their continuous vocational education.

Training certificates reduce the variety of recruitment uncertainties for employees, serve signals about employees' educational attainment and supposed productivity, and select people who have already demonstrated their willingness to learn new tasks (Phelps 1972; Arrow 1973; Spence 1973). Supervisors have only little information about employees' real characteristics, but they have an interest to reduce their transaction costs in the sense of search costs, negotiation costs and control costs (Williamson 1981). All sorts of educational certificates (as well as age) provide easily accessible information, and employers can use them as a screening device and filtering function for matching open job positions with seemingly capable employees. From the employers' perspective, employees certified as more valuable are more valuable (Arrow 1973). They refer to the statistical distribution of productivity drawn on general information or previous experiences they have for different subgroups in their working force. In doing so, they do not discriminate against single employees, but against whole groups with common characteristics independent of the actual performance, knowledge, and productivity of single employees (England and Lewin 1989; England 1992). For example, they follow well-known age stereotypes and discriminate against older employees. These are often perceived to learn more slowly, to be inflexible, show poor training interest, and are close to retirement anyway. Employers may exclude them from training, although they are the ones who need special supervisor support.

Differences in the expectations of employees' productivity and usefulness for the firm may lead to a segmentation of the workforce. The Segmentation Theory was first developed by Doeringer and Piore (1971) as a separation of the firm's labour market into a primary market offering relatively high payments,

high job protection, good career prospects and working conditions, and a secondary labour market which is different in all these aspects. Lutz and Sengenberger (1974) developed a slightly different approach for the West-German labour market. They distinguished between an internal labour market, for which firm-specific qualifications are required, a craft-specific labour market with qualifications that are special for certain occupations, and a secondary labour market for employees with a lower educational background. Other approaches distinguish only between a permanent and firm-specific skilled workforce and more flexible employees in permanent exchange with the external labour market (Sengenberger 1987), but all of these approaches have in common that mainly firms' cost-benefit considerations and the protection of the firm-specific workforce are the major reasons for the ongoing segmentation.

Employees with a lower probability of having the characteristics desired by the firms may be relocated into the secondary labour market to carry out simple tasks, often using expiring technologies and connected with few chances for further development. As already mentioned, firms follow signals like employees' educational qualification, nationality, gender or social background (Carroll and Mayer 1986; Köhler and Preissendörfer 1988; Köhler and Schultz-Wild 1989), but also age or job tenure matter. Employees in internal labour markets get the best further training support; their employers have a strong interest in retaining their manpower since it is hardly possible to recruit new employees with the qualifications required for the job. Employees in the secondary labour market receive less training support, simply because their job can be done by anybody else. Thus, internal labour market segmentation generates additional educational inequality and 'training spirals' (Sengenberger 1982). As the 'Matthew Effect' (cf. Merton 1968; 1995)[2] proposes, higher educated employees receive still more further training, whereas colleagues in the secondary labour market are often excluded from firms's training support. Older employees and their colleagues with a lower educational background seem to be caught in a vicious circle of having inadequate supply and demand for lifelong learning; this in fact represents a market failure in the further training system (Schömann and Siarov 2005).

Still, according to Boudon (1974) it should be reasonable for everybody to acquire as much education as possible. In a meritocratic society being better educated increases the chances of reaching a desirable social position. Perhaps, more education is the only way to break the vicious circle for getting a better and more valuable job position with better training and career opportunities. From an objective point of view, it makes of course sense to invest steadily in further

[2] For to all those who have, more will be given, and they will have an abundance; but from those who have nothing, even what they have will be taken away (Matthew 25:29).

training since the benefits in terms of higher job security and better career opportunities are usually high, whereas the costs for job-related further training are rather low. Thus, following the argumentation of the classical Human Capital Theory, employees should be more willing to participate in further training, because the theory suggests that people invest in training until their costs exceed their expected benefits. Also, the expected benefits differ between employees. For example, a possible explanation for the lower training participation of older employees could be that they simply have a shorter period over which they can receive benefits from their training investment (Ben-Porath 1967). Additionally, employees may expect higher benefits from their investments if they have a higher formal school degree (Hinz and Abraham 2005). Still, in the case of job-related further training with low or no direct cost for the employees, participation should be worthwhile also for older and less educated employees.

3 Further training – Subjective factors matter

It has become evident that potential costs and benefits cannot explain the persistent low training participation rates of both older and less educated employees. In this chapter, I will take a closer look on subjective factors for non-participation in further training. Multivariate regression models with two levels give the clear result that training decisions are not only a function of objective rationales, but also of employees' training motivation and their subjective investment risk. Reasons for non-participation differ between different subgroups, but especially older and less educated employees are often lacking confidence in their own training competence. With low confidence, only small training costs can be perceived as a high investment risk and prevent them from further training participation.

3.1 Introduction

Although employees may have objectively good reasons for participating in further training, the results of the literature review clearly show a persisting inequality in the participation rates. Objective factors like potential costs and training returns cannot explain the low participation rates of both older and less educated employees alone, which raises the question of whether subjective reasons, such as people's likelihood of a status decline, or confidence in their own training competence, have an influence on training decisions. In general, a precondition for Becker's assumption is that people act totally rationally. They must be able to calculate their investments and benefits, and need full information, perfect market conditions, and a real choice between at least two alternatives. Regarding their training decision, this may lead to uncertainties on three levels: 1) Most employees are unable to compare and rank all possible courses of action; 2) they have problems in predicting future gains of training participation, and 3) they do not have the optimal amount of information they should collect before making a training decision (Elster 1989; Blossfeld and Prein 1998). Also, as the real world is different from the logical and idealized world (cf. Gigerenzer 2007), the clear picture becomes blurred if we include subjective considerations. Not only objective conditions are relevant for training decisions, but also subjective perceptions

S. Baron, *Workplace Learning,* DOI 10.1007/978-3-531-92870-8_3 ,

and interpretations, as they are influenced by social structures, subjective attitudes, preferences, and experiences.

People have different resources in the sense of social and cultural capital, economic constraints, or educational background, and therefore different returns from further training. Individuals who were disadvantaged already in school are less likely to participate in further training later in life; educational choices are mainly conditional on differences in demonstrated ability or performance (Boudon 1974; Jenkins et al. 2003). Additionally, people are neither fully informed about prospective returns, nor are the markets perfect. People act under 'bounded rationality' (Simon 1955), that is to say, they cannot decipher all of the complexity of their decisions, and are unable to grasp all the relevant factors of a training decision. Without some certainty about potential outcomes of their training decisions, it is difficult for many people to calculate in what way and to what extent they may profit from further training. Especially lower educated employees often get stuck in certainty-difficulty gaps (Heiner 1983) which are hard to solve. Previous experiences or general perspectives on the labour market can give them some orientation, but in comparison to their higher skilled colleagues they often have less knowledge of the further training system, possible benefits of further training, and future skill needs. To some degree, this also holds true for their older colleagues who often have difficulties in assessing technological innovations and potential consequences for their jobs. Hence, both groups are equally dependent on sufficient knowledge about their work and training situation, but the sheer complexity of information hinders them from maximizing their expected utility. They tend to underestimate the possible benefits from training, while overestimating its potential costs.

Hence, the usefulness of Human Capital Theory is absolutely depending on the extent to which the theory is able to incorporate forms and consequences of uncertainty (cf. Blossfeld and Prein 1998). The low participation rates may be explained by different subjective expectations, namely by different subjective expected probabilities of a status decline and by different subjective probabilities of training success. People weigh potential costs and benefits of training decisions with their subjective expectations about their training ability and their individual necessity of training. For example, potentially high benefits may shrink if people feel less confident in their own training competence and expect only a low likelihood of successfully completing a training course. Low costs may be perceived as high if people do not expect a status decline in the case of non-participation in training. This assumption builds on the Sociological Rational Choice Theory (SRC Theory), which combines the basic axiom that people are rational decision-makers with the sociological idea that educational decisions are

always embedded in social contexts, are confronted with uncertainty, and serve both economic and social goals.

The SRC Theory has been empirically confirmed in a few applications, for example, for parents' decisions concerning their children's educational career (Becker 2003; Stocke 2007), students' choices for secondary (Meier Jaeger 2007) and tertiary education (Becker 2007), but an analysis of further training decisions is still outstanding. It is the objective of this chapter to fill this gap and to test whether the SRC Theory is an efficient theory for explaining further training decisions. If we assume that costs and benefits are comparable for different people, subjective expectations may be the 'set screws' for increasing the participation in further training.

3.2 Explaining educational inequalities

The use of rational choice theories for explaining educational inequalities is not new (Boudon 1974; Mare 1981; Gambetta 1987), but during the last decade research in this field has profited from more formal approaches (Breen and Goldthorpe 1997; Goldthorpe 1998; Esser 1999; Breen and Yaish 2006). Following these approaches, all social action can be viewed from the standpoint of individuals maximizing their utility from a stable set of preferences and accumulating optimal amounts of information on the market in which they are involved.

Principally, individuals are engaged in some kind of optimization. Breen and Goldthorpe (1997) pointed out that the decision whether to continue in education or not depends on three main mechanisms: First, the costs of remaining in education, second, different educational abilities and likelihoods of success, and third, the value or utility people attach to education. Thus, in a formalistic manner people would continue in education if $E(B) > C/pEP$, whereas $E(B)$ stands for the expected value or benefit of education, C for costs, and pEP for the expected likelihood of successfully completing education. Together the last two terms represent the individual investment risk, which has to be smaller than the expected benefit of continuing in education.

Similar to the results of Beicht et al. (2005) that I mentioned in the previous chapter, figure 6 shows that two thirds of the participants in the Demopass survey had costs of less than 500 Euros, and a large majority reported rather high benefits for their daily work. Hence, supposing comparable costs and benefits for different groups of employees, it becomes obvious that the subjective value people attach to education and their subjective expected likelihood of success in education are the most important predictors for explaining educational attainment.

Figure 6: Costs and benefits of further training

Own costs for further training		Benefits from further training	
No costs	52,3 %	A great deal	21,8 %
Less than 50 Euros	5,2 %	Much	41,7 %
50-100 Euros	3,4 %	Somewhat	25,3 %
100-500 Euros	5,8 %	Very little	8,0 %
More than 500 Euros	33,3 %	Not at all	3,2 %

Source: Demopass. Only participants in the last 12 months.

In the past most authors in sociology and economics have been very skeptical about using subjective information from their respondents. Therefore they were often restricted on information of what people do, not knowing what they think or expect (for further discussion see Manski 2004). Of course, it is not a problem to collect subjective information using objective methods, but using subjective information holds the problem that an empirical test needs strong 'bridge assumptions' about the distribution of subjective expectations. Charles Manski pointed out that even if an assumption of rational expectations is plausible, this assumption per se does not specify the expectations that persons hold. It only asserts that persons hold objectively correct expectations conditional on the information they possess. Which goals or benefits an individual pursues is not defined by the theoretical framework. Thus, without 'bridge assumptions' the SRC theories remain meaningless at this point. Hartmut Esser (1998) defined bridge assumptions as descriptive statements about the relationship between values of structural variables in the objective situation and certain values of variables in the premises of the action employed. They describe the logic of the individuals' situation and must imply goals, preferences, restrictions, alternatives, and effects; they must be explicit, reasonable, and empirically testable (Esser 1991; 1998). For further training decisions, the Theory of Social Production Function can serve as such a 'bridge assumption', including social esteem and well-being as common goals which can be attained by status, behavioural confirmation and affection (Ormel et al. 1999). In general, people strive to improve their skills and to perform well relative to others, they want to do what they are socially expected to do, as they need the feeling of having done the right thing (Lindenberg 1990; Behringer 1999).

Based on the work by Kahneman and Tversky (1979), Breen and Goldthorpe argued in their paper on explanations for educational differentials that families' desire to avoid downward mobility is stronger than that to achieve upward mobility, or in other words, they try to ensure that their children reach a

class position at least as advantageous as their own position. People multiply each value of a potential outcome with a decision weight, and normally they are risk-averse in gain situations, and risk-seeking in loss situations. Their responses to potential losses are usually more extreme than responses to potential gains. The assumptions can easily be transferred to the field of further training. However, while in the original paper educational decisions are made to minimize the risk of ending up in a lower class than one's parents, further training decisions are made not to end up in a lower position than direct peers. Training returns are connected with status maintenance, but also with social recognition and confirmation from supervisors and other relevant groups. In order to maintain their career status, higher educated employees need to maintain pertinent knowledge which in many jobs rapidly loses its relevance. They also have a greater risk of status decline in the case of non-participation, whereas for lower educated employees further training seems to be less important. In comparison to the upper or middle class, they have either no or only a small risk of status decline. Their jobs can be done with any kind of educational degree, often even without any degree.

The same applies to older employees. They often have a lower risk of a status decline and are often less motivated to participate in further training. However, the results of the data from the European Adult Education Survey (AES 2007) I discussed in the previous chapter show that many older employees would in fact participate in further training if they could improve their performance. Older employees can look back on many training experiences, therefore they are perhaps more selective in their training choice. Not every training must be useful and the umpteenth course in the same subject is useless. But being old does not entail becoming a notorious non-participant. There are a lot of useful training courses and in the end they often only need one very good reason to participate again in training. Hence, I expect in my **first hypothesis** that a positive assessment of training returns may have more importance for older employees than for younger members of the workforce, as well as for higher skilled employees than for their lower skilled colleagues.

For an explanation of different expectations of educational success, Breen and Goldthorpe followed Boudon's (1974) differentiation between primary and secondary effects. Primary effects describe the relationship between social class background and academic ability in childhood. Individuals from advantaged social backgrounds normally show a higher academic ability, due to a higher appreciation of education in the family and higher financial resources for potential tutoring. During the life course direct effects of social background lose relevance, but secondary effects of social class belonging influence upcoming educational decisions further on. In a complex system with a lot of providers and offers, many training variants and diverse cost structures, employees with higher

educational background are often better able to estimate costs and long term benefits of training as well as future skill needs. They have a higher confidence in their own training competence, whereas people from lower classes often have problems in mastering the educational system with its cultural codes, manners, and expectations. They are unable to assess their subjective likelihood of successfully completing education and tend to underestimate their chances. They lack the relevant knowledge about the educational system, which could help to increase the subjective likelihood of success in education (Erikson and Jonsson 1996). Similar to lower educated employees, the same applies to older employees. They often feel less cognitively able to learn, feel more anxiety in training situations and have lower perceptions of themselves (Maurer 2001; Maurer et al. 2003). In general, younger employees show a higher confidence in their own training competence and a more recent knowledge about training needs in their job. The discussion can be summarized in my **second hypothesis**, namely that further training decisions are mainly determined by confidence in one's own training competence, or in other words, the subjective expected likelihood of training success (in the following I will use both terms interchangeably). Secondary effects and age pattern are existent and a higher confidence in one's own training competence is more important for less educated employees as well as for older employees. For both groups, investment risk rises exponentially with lower confidence and a continuation of education becomes less likely.

What is more, demonstrated ability and performance affect the educational life course simply because higher educated people can often better estimate possible gains and losses. Cultural and economic resources of family background can give a 'push' (Gambetta 1987), give orientation, and facilitate a better insight into general perspectives of the labour market. Thus, I expect in my **third hypothesis** that financial inequalities are still persistent. A negative effect of expected direct and indirect costs may be greater for less educated employees than for their higher skilled colleagues.

As aforementioned, the utility people attach to educational decisions is dependent on individuals' subjective expectations of a status decline, but the Breen-Goldthorpe model does not contain a specific term for status decline. At this point, Hartmut Esser's Subjective Expected Utility Theory (SEU-Theory) (Esser 1999) can be seen as an extension of the previous model. It includes the factors of Breen and Goldthorpe's model, but Esser has added the subjective expected probability of a status decline (pSD) as a fourth factor. In a formal manner I can now rewrite the probability of continuing in education as $E(B) + pSD > C/pEP$. The left part of the unequation describes the educational motivation; the right part still describes the investment risk. Once again, it becomes obvious in this extended formula why both lower educated people and older employees are less

likely to continue in education. The central assumption underlying this model is the expectation that in general both older and less educated people show not only lower confidence in their own training competence, but also a lower risk of status decline than their better educated and/or younger colleagues. Thus, I can argue that both groups combine low educational motivation with high investment risk, while it is the other way round for higher educated and younger colleagues. In my **fourth hypothesis** I therefore assume that the expected amount for status decline in the case of non-participation in further training is an additional factor in employees' further training decisions. The higher the fear of a status decline, the more likely employees participate in further training. The motive for intra-firm status maintenance may be stronger for employees with higher educational background, as well as for younger employees.

3.3 Operationalization of theoretical constructs

Unfortunately, the Demopass survey does not provide any information about employees' future further training plans. One reason for this decision during the preparation of the questionnaire was the assumption that people have different definitions about further training activities (and that a clear and simple instruction can not solve the problem), and second, that such a question would cover also mandatory training courses and could therefore provide only limited information about the real training orientation. Finally, by asking employees directly about their future further training plans, social desirability effects may become a problem. Instead, I decided to ask the participants in the Demopass survey about their perceived importance of further training participation. The underlying assumption was that people with a higher perceived importance also participate more likely in future training. The participants were asked to rate six different goals which might be important reasons for participating in further training. Examples of such goals were career aspects, retraining, or more job security (please see the Appendix for a full list). The original items were taken from the German Socio-Economic Panel Study (GSOEP) 2004 (Wagner et al. 2007) which I supplemented by a five-point rating scale and aggregated to the new variable (Cronbach's alpha=0.77).

The main predictors in my regression analysis were employees' subjective expectations of costs and returns of further training participation, as well as their expected likelihoods of training success (confidence in one’s own training competence) and status decline. These variables should provide unbiased information on employees' true beliefs about their further training situation.

For the assessment of expected costs I used an index of six items from the German Berichtssystem Weiterbildung IX (Kuwan et al. 2006), measuring both direct costs of further training as well as indirect costs like job and family constraints, or abstinence from leisure time (please see the Appendix for a full list). On a five-point scale, employees were asked for their agreement with several potential reasons for non-participation. Answers were recorded on a scale from 1 'Does not apply' to 5 'Applies' (Cronbach's alpha=0.81). To capture expected returns of further training I used a single item from the Berichtssystem Weiterbildung IX in which employees stated their agreement whether they have 'good job opportunities also without any further training'. Answers were given on a five-point scale from 1 'Does not apply' to 5 'Applies'. For the measurement of subjective expected likelihood of training success I used a single item which is largely based on a subset of self-directed items developed by Straka (2005). Employees responded to the item 'I am proficient in the learning methods which are necessary for successful further training' on a five-point scale from 'Does not apply' to 'Applies'.

The subjective expected likelihood of a status decline in the case of non-participation in further training is a rather more difficult concept to grapple with empirically. I gave it a try by introducing the product term of three variables included in the dataset. First, the employees' satisfaction with their job security (Answers ranged from 1 'Very dissatisfied' to 5 'Very satisfied'), second, a single statement from a scale by Abele et al. (2000), in which employees were asked to estimate their ability to cope with job difficulties ('I can remain calm when facing difficulties in my job because I can rely on my abilities'). Answers were given on a four-point scale with the response categories 'not correct', 'marginally correct', 'partially correct', and 'correct'. And finally, I used an item from the General Training Climate Scale (GTCS, Tracey and Tews 2005) in which employees were asked whether they agree with the statement that 'top management expects continuing technical excellence and competence'. Answers ranged from 1 'Does not apply' to 5 'Applies', but I recoded the scale into the other direction. I assumed that employees being satisfied with their job security, having a high self-perceived job efficacy, and low management's expectations may expect a lower likelihood of a status decline than colleagues with lower values on all three scales.

Furthermore, I controlled for educational background and individual characteristics. First, I included information about previous further training experience in the last 12 months as well as three dummy variables to indicate employees with lower, medium, and higher education. For the main models in my analysis I chose the first group as my reference group. Of course, I also controlled for employees' age and gender. Finally, I controlled for positive affectivity, supervisor

ratings of employees' willingness to train and team's further training participation. Following Burke et al. (1993), self-reports of positive aspects of work context may be influenced by positive affectivity. In order to control for this problem, I used the mean of 10 items for positive affectivity taken from Kessler and Staudinger (2009) (Cronbach's alpha=0.84, please see the Appendix for a full list). Employees were asked to rate how often during the last weeks they felt 'relaxed', 'euphoric' or 'delighted' at work. Answers were based on a five-point scale that ranged from 1 'Never' to 5 'Very often'. Additionally, supervisor ratings can be helpful in controlling for single source biases, such as self-appraisals or social acceptability (cf. Podsakoff et al. 2003; Spector 2006). I included supervisor ratings on employees' willingness to train, which were given on a five-point scale from 1 'Very good' to 5 'Inadequate'. For measuring working team's further training participation rate, I aggregated the information from individuals' training participation to the team level. Probably, perceived importance of further training participation is influenced by the overall team's training climate.

3.4 Imputation of missing values

In total 742 employees nested within 82 working groups completed the questionnaire. It is a common problem in social sciences that data is missing for some variables or some cases. I dropped working groups with less than 4 members and lost some cases due to item non-response or denied supervisor interviews. Although the percentage of missing values is not alarming, it leads to considerable data loss in my multivariate models. I cannot deal with the unit non-response in the supervisor interviews, but for the problem of item non-response the statistical literature provides helpful suggestions. A good method should 1) reduce the bias of missing values in the data, 2) maximize the use of data and 3) provide accurate estimates of standard errors, confidence intervals and p-values (Allison 2009).

The easiest and often also the default method to deal with the problem is simply a listwise deletion of the cases with missing values. A precondition for listwise deletion is that data is missing completely at random (MCAR), this means that the probability that a variable is missing depends neither on the other variables in the model nor on the possibly missing values of the variable itself (Allison 2001). In practice this assumption is unrealistic, as that is especially the case with missing values on subjective variables. Another problem of listwise deletion is that it leads to a severe loss of information and statistical power if the deleted cases represent a relatively large proportion of the dataset. In multivariate analyses with many covariates only small percentages of missings may cause a

large data loss. Especially constructs composed of several single items, like perceived importance of further training or expected indirect and direct costs, would be coded as missing if only one of the underlying items is lacking.

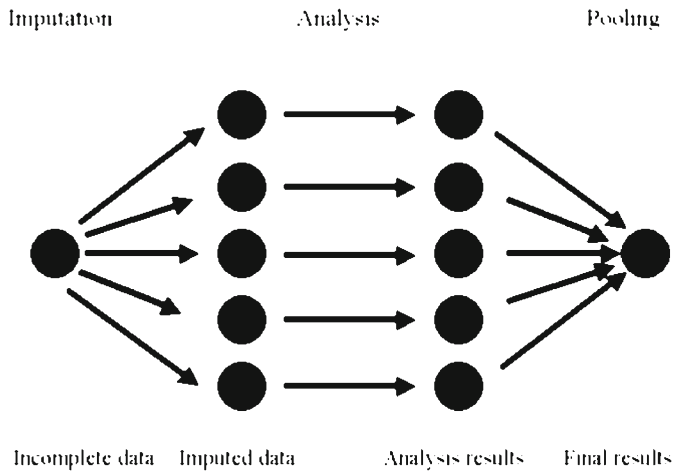
Another solution was offered by Cohen and Cohen (1985). They suggested an adjustment with dummy variables. A dummy variable indicates whether or not data is missing on the variable and should provide all available information in the regression analysis. However, Jones (1996) showed that this method typically produces biased results on the regression coefficients. Weighting the complete cases can be another possibility to reduce the bias from case deletion. The distribution of the sample with weighting can resemble the full sample, but it requires some information about the probabilities of responses and cannot correct for any biases against variables that are unused or unmeasured (Schafer and Graham 2002). Hence, it is useful to impute for missing values in the ratings. Such an imputation procedure makes use of more information in the dataset with only a minor effect on the quality of results. A first quite simple and plausible possibility is to impute the mean of the variable, but this method has clear deficiencies because it often produces biased estimates and standard errors are too optimistic. Furthermore, again a precondition is that data is missing completely at random.

Missing values in the Demopass dataset are not missing completely at random, but I can assume that the data is missing at random (MAR). Following this assumption, the probability that a variable is missing can depend on other covariates in the model, but it does not depend on the variable itself. For example, previous non-participants in further training might have a higher likelihood of non-response to questions related to further training. Under the MAR-assumption, missing values can be filled by single imputation or regression estimates of a list of independent variables that are highly correlated with the missing variable. For missing values on the information about previous further training, these covariates can be, for example, educational background, age, gender, or job position. The use of single imputation and regression estimates is much better than imputing the mean of the variable, but is still problematic. Neither method can account for imputation uncertainty. Regression estimates tend to produce overestimates of correlations and underestimates of standard errors and single imputation can distort data distribution and relationships (Little and Rubin 2002). As a first recap, no single conventional method can satisfy all three conditions. However, maximum likelihood methods (ML) and multiple imputation (MI) have proven to be feasible procedures to handle the problem of missing values and represent the practical state of the art (Schafer and Graham 2002). Both procedures need fewer statistical assumptions and are generally considered

as superior to the regression method. Both procedures still require the MAR assumption.

Using the ML method, missing values will be replaced by maximum likelihood estimations using EM or FIML algorithms and the new estimates are consistent and show asymptotic efficiency and normality. Still, maximum likelihood estimations are not simple in their use and rest on some crucial assumptions. Normally, large datasets are required for robust ML estimations, as well as a parametric model for the complete data. Additionally, one has to define a joint probability distribution for all relevant variables and a numerical method for maximizing the likelihood (Allison 2009, Schafer and Graham 2002). Finally, for obtaining correct standard errors, direct maximum likelihood measurement is necessary, which to my knowledge is only possible in stand-alone programs for structural equation modeling like LISREL or AMOS.

Figure 7: Multiple Imputation (MI) for missing values.



Based on www.multiple-imputation.com.

I decided to use Multiple Imputation (MI) as proposed by Rubin (1987) to handle the problem of missing values in my dataset. The basic idea is to create at least five copies of the original dataset which have the missing values suitably imputed. In the next step, estimates of the parameters are averaged across the copies for getting a single estimate. Standard errors are computed according to the

'Rubin rules'. As the results of ML estimations, results of multiple imputation are consistent and asymptotically normal, and with a sufficient number of imputations they are also asymptotically efficient (Allison 2009). One downside of multiple imputation is that one can get slightly different results using the same dataset and methods. However, the most important advantage of MI is that the analysis can be done in STATA.

The ICE package (Royston 2004, 2007, 2009) implements the MICE method of multiple multivariate imputation as developed by Van Buuren et al. (1999), which stands for multiple imputation by chained equations. The authors recommend 20 equations, in the case of the Demopass dataset with less than 20 percent of missing values five equations are proven to be sufficient. In any case, the number of iterations is much lower than in modern Monte Carlo simulation techniques and therefore more computer efficient. For clarification, the procedure of ICE is as follows (see also figure 7): First, the program ignores any observations with only missing values. Second, for each variable with missing values, ICE randomly orders that variable and replicates the observed values across the missing cases. This step initializes the iterative procedure by ensuring that no relevant values are missing. Third, for each variable in the list, ICE imputes missing values by applying univariate imputation sampling with the remaining values as covariates. Finally, ICE repeats the third step at least 5 times, replacing the imputed values with updated values at the end of each cycle. The seed option of ICE ensures that a set of imputed values is reproduced identically.

3.5 Method of analysis

After multiple imputation, the full model presented in this chapter includes data from 717 employees nested in 73 working groups. Without imputation for missing values, the dataset would consist of only 579 employees nested in 70 working groups. Table 1 lists the descriptive statistics for all variables.

Due to the hierarchical structure of the sample, I employed a two-level regression model for testing my hypotheses. It might be necessary to specify a random effect for the subjective likelihood of a status decline and the likelihood for training success, meaning that both variables vary randomly within the teams (cf. Snijders 2005). However, likelihood-ratio tests comparing a random-intercept model and a random-coefficient model including both variables showed no significant difference between the models. Therefore, I decided for the more simple and computer-efficient random-intercept model. Table 2 shows the results of multilevel analysis for the total population in my sample. I proceeded step-by-step, beginning with the information on expected returns and costs (model 1).

In model 2, I included the expected likelihood of a training success for testing the Breen-Goldthorpe model, and model 3 contains all covariates needed to test Hartmut Esser's Subjective Expected Utility Theory. Model 4 includes the information on employees' educational background, as well as on age and gender. Finally, I added the information on positive affectivity, supervisor ratings on employees' training willingness and team's training participation rate (model 5). I indicated the explained variance for each intermediate step. Additionally, since I was also interested in the extent to which there are age and education differences in the subjective expectations on further training, I introduced interaction effects with educational background in table 3, as well as interaction effects with age in table 4. With the exception of the binary variables, I centered all covariates on the grand mean for an easier interpretation of the interaction effects.

Table 1: Descriptive statistics for chapter 3

	Min/Max	Mean	SD
Perceived importance of further training	1/5	3.97	0.67
Expected returns of further training (E(B))	1/5	2.53	1.06
Indirect & direct costs (C)	1/5	2.79	0.86
Expected likelihood of training success (pEP)	1/5	3.44	0.90
Management's expectations on competence and excellence	1/5	3.97	0.81
Positive job efficacy	1/4	3.33	0.66
Satisfaction with job security	1/5	3.93	0.86
Expected likelihood of status decline (pSD)	2/80	25.83	13.46
Lower education	0/1	0.15	0.36
Medium education	0/1	0.36	0.48
Higher education	0/1	0.48	0.50
Previous further training / 12 months	0/1	0.46	0.50
Age in years	21/62	38.70	8.63
Gender (1=female)	0/1	0.28	0.45
Positive affectivity	1/5	3.02	0.59
Supervisor rating of further training willingness	1/5	3.93	0.92
Team's further training participation	0/1	0.47	0.23

3.6 Results and discussion

I wished to understand the subjective motives influencing individuals' further training decisions. The results mostly support the theoretical models of Breen and Goldthorpe (1997) and Esser (2001), and go in line with previous research done on school attainment (Becker 2003; Stocké 2007; Meier Jaeger 2007; Becker 2007).

The results of the multivariate regression model in table 2 strengthen my key argument that individuals' expected returns of further training as well as the expected likelihood of training success and status decline are important preconditions for the perceived importance of further training. Only the results for the influence of direct and indirect costs differ from the theoretical models, because costs showed no significant effect on perceived importance of further training. The effect for costs became insignificant after controlling for employees' likelihood of training success. Thus, anticipated cost constraints can be effectively explained by lower confidence in training competence. However, I know from the study by Beicht and Walden (2006) that direct costs of further training participation are rather low, and firm-related training is also only rarely connected with higher indirect costs. It normally takes place during working time and requires only a few additional resources. Hence, costs might have a stronger influence on schooling decisions than for further training decisions.

Not very surprisingly, employees who expected only low returns from further training also showed a lower importance for further training. I did not recode the underlying interview statement that employees have 'good job opportunities also without any further training'. Therefore the coefficient might be a bit misleading, but in the end the results confirmed my assumption. Employees who expected high returns from further training gave also higher ratings on the importance of a further training participation.

Turning to the expected likelihood of training success, results showed a positive effect of confidence in training competence. It was even more important for the explanation of different training decisions than expected returns; the information contributed more than 35 percent of total explained variance, whereas expected returns and anticipated costs together explained only 30 percent. That is a clear indicator for the necessity of incorporating subjective expectations into statistical models of educational decisions, and provides a first hint for possible firm recommendations I will sketch out later in the dissertation. With a higher confidence in one's own training competence further training participation becomes more likely, but if the confidence level is rather low, only small costs can restrain employees from training participation.

For testing Hartmut Esser's SEU-model, I introduced the expected likelihood of status decline in model 3. The results confirmed my assumption that the motive of status maintenance has a significant influence on perceived importance of further training participation. Still, the effect size was rather small and the additional information could give only a small contribution to the explained variance.

Table 2: Determinants on perceived importance of further training participation

	(1)	(2)	(3)	(4)	(5)
Low returns from training	-0.08**	-0.09***	-0.08***	-0.09***	-0.09***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Indirect & direct costs	-0.08**	-0.03	-0.04	-0.03	-0.02
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Expected likelihood of training success		0.19***	0.18***	0.16***	0.15***
		(0.03)	(0.03)	(0.03)	(0.03)
Low expected likelihood of status decline			-0.01**	-0.01**	-0.01***
			(0.00)	(0.00)	(0.00)
Previous further training				0.07	0.07
				(0.05)	(0.05)
Medium education[1]				-0.07	-0.08
				(0.08)	(0.08)
High education[1]				-0.00	0.01
				(0.08)	(0.08)
Age				-0.01***	-0.01***
				(0.00)	(0.00)
Gender (1=female)				0.14**	0.13*
				(0.05)	(0.05)
Positive affectivity					0.10*
					(0.04)
Supervisor: Training willingness					0.00
					(0.03)
Team's previous FT					0.01
					(0.12)
Constant	4.19***	4.19***	4.21***	4.14***	4.17***
	(0.07)	(0.07)	(0.06)	(0.09)	(0.09)
N	717	717	717	717	717
R^2	0.05	0.11	0.12	0.16	0.17

Standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001.
Controlled for firms. [1] Reference: Lower education.

Furthermore, it became clear that the expected likelihood of training success has again more importance for further training decisions than the expected likelihood of status decline. The results remained stable even when I controlled for educational background and individual characteristics in model 4. Education itself showed no significant effect at all, nor did previous participation in further training. Primary effects lost their importance, but secondary effects might still be virulent. Employees with different educational backgrounds did not really differ in their reported appreciation of further training, but higher educated employees are perhaps better able to estimate costs and long-term benefits of training participation. Furthermore, it was not very surprising that the perceived importance of further training decreased with age. The coefficient is rather small, but it is also in some way alarming. Its cumulative effect with each year of age has important consequences for the involvement of an aging workforce into training consideration – especially with regard to the low participation rates as reported in the previous chapter. Finally, Beicht et al. (2004) reported that women give higher appraisals for further training than male employees; and that they seem to be more learning-oriented. I found a similar result in my models, even after controlling for positive affectivity in the final model. Positive affectivity itself showed the expected pattern, namely that enthusiastic or active people show more importance for further training participation. All effects held true when I controlled for supervisor ratings of employees' willingness to train and team's training participation. Neither variable had a significant effect at all.

So far, I have presented mean results for the total population. To me it was not very surprising that subjective expectations are important factors for an enhancement of further training participation. However, what is more interesting and also more important for possible recommendations is the question, on which 'set screws' one should adjust to strengthen the participation rates of lower skilled employees and their older colleagues. I expect that the strength and importance of my main predictors differ between employees with different age and educational backgrounds. Thus, I included interaction effects between the factors of Hartmut Esser's SEU-model and education and age for getting a better insight into the real relationships behind the mean effects I showed before.

Table 3 gives me information about the different importance of subjective expectations for employees with various educational backgrounds. The first four lines of the table show the results for my reference group, namely employees with a low educational background. In line with my hypotheses, the results in model 1 show that expected returns of further training had no significant impact for lower educated employees. Also, potential training costs showed no influence (model 2). I have already discussed possible reasons for this finding, and at this point lower educated employees did not differ from their colleagues.

Table 3: Determinants on perceived importance of further training participation – Interaction effects with educational background

	(1)	(2)	(3)	(4)
Low returns from training	-0.09	-0.09***	-0.10***	-0.09***
	(0.06)	(0.02)	(0.02)	(0.02)
Indirect & direct costs	-0.01	-0.08	-0.02	-0.01
	(0.03)	(0.07)	(0.03)	(0.03)
Expected likelihood of	0.15***	0.16***	0.27***	0.15***
training success	(0.04)	(0.04)	(0.07)	(0.04)
Low expected likelihood	-0.01**	-0.01**	-0.01**	-0.01**
of status decline	(0.00)	(0.00)	(0.00)	(0.00)
Previous further training	0.08	0.09	0.08	0.08
	(0.05)	(0.05)	(0.05)	(0.05)
Medium education[1]	-0.07	-0.10	-0.16	-0.07
	(0.08)	(0.08)	(0.09)	(0.08)
High education[1]	0.01	-0.01	-0.06	0.01
	(0.08)	(0.09)	(0.09)	(0.08)
Age	-0.01***	-0.01***	-0.01***	-0.01***
	(0.00)	(0.00)	(0.00)	(0.00)
Gender (1=female)	0.14*	0.14*	0.13*	0.14*
	(0.05)	(0.05)	(0.05)	(0.05)
Positive affectivity	0.10*	0.10*	0.10*	0.10*
	(0.04)	(0.04)	(0.04)	(0.04)
Supervisor:	0.00	0.01	0.00	0.00
Training willingness	(0.03)	(0.03)	(0.03)	(0.03)
Team's previous FT	-0.02	-0.03	-0.03	-0.01
	(0.12)	(0.12)	(0.12)	(0.12)
Low returns from FT	-0.00			
x Medium education	(0.07)			
Low returns from FT	-0.01			
x High education	(0.06)			
Indirect & direct costs		0.04		
x Medium education		(0.08)		
Indirect & direct costs		0.12		
x High education		(0.08)		

Table 3 continued

Likelihood train. success x Medium education			-0.13 (0.08)	
Likelihood train. success x High education			-0.17* (0.08)	
Likelihood status decline x Medium education				0.01 (0.01)
Likelihood status decline x High education				0.01 (0.00)
Constant	4.17*** (0.09)	4.20*** (0.09)	4.25*** (0.10)	4.17*** (0.09)
N	717	717	717	717
R^2	0.17	0.17	0.17	0.17

Standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001.
Controlled for firms. [1] Reference: Lower education.

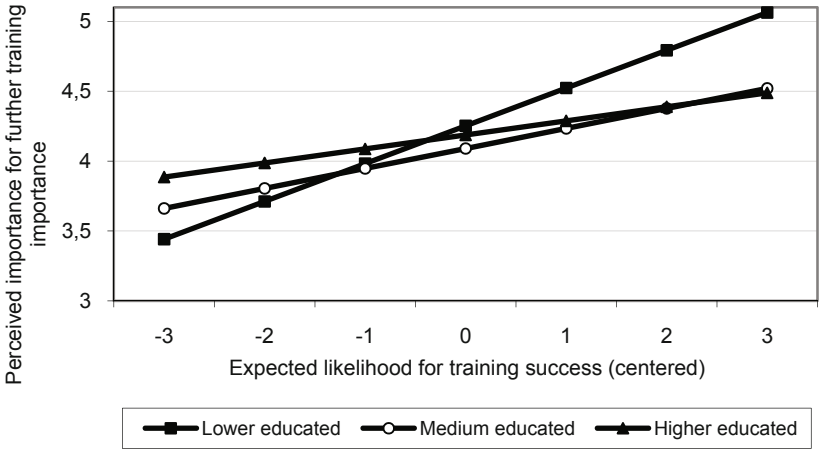
Interestingly and in line with my second hypothesis, the expected likelihood of training success or confidence in one's own training competence, however, was more important for lower educated employees than for the average employee in my dataset (model 3). Finally, a lower expected likelihood of status decline had a negative significant influence for lower educated employees (model 4), but the effect size did not differ from the result for the total population.

Except for model 3, all interaction effects in table 3 were insignificant. However, the interaction effects give only information about the difference between the slopes of the three educational groups, but there is no information about the impact of subjective expectations for medium or higher educated employees and it is of course possible for the effects of subjective expectations to be significant for medium or higher educated employees even if the interaction term is insignificant (cf. Frazier et al. 2004; Brambor et al. 2006). From the interaction term in model 1, for example, I get only the information that the slopes for the effect of low returns do not vary significantly between employees with different educational background, but I have no information about the actual effect of low returns from training for medium or higher educated employees. Thus, it is worthwhile to have a closer look at the relationships and necessary to calculate the marginal effects for the remaining two groups.

Indeed, it makes in fact a significant difference for higher educated employees whether they expect lower returns from further training or not. Perceived

importance of further training participation decreased by 0.10 points for each additional standard deviation on low returns from further training (p=0.007).
In the reverse argumentation, higher educated employees would affirm a higher importance for further training in the case of fewer job opportunities without training, or in other words, a higher return from training. A similar result depicts for the medium educated employees in my sample. With lower expected returns from training, their perceived importance of further training decreased by 0.09 standard deviations (p=0.022). Still, the effect size for both groups differed only slightly from their lower educated colleagues, and even with only low expectations on training returns all groups showed rather high importance for further training participation.

Figure 8: Interaction effect between educational background and expected likelihood of training success



In my second hypothesis I have formulated the assumption that confidence in one's own training competence, or in other words, the likelihood of training success is more important for less educated employees. Indeed, model 3 indicates a significant interaction effect for higher educated employees, and further examination showed different effects of confidence in training competence. While lower educated employees showed a 0.27 points higher importance for further training participation if they were more confident in their training competence, the effects for their medium and higher educated colleagues were much smaller (0.14 and 0.10, significant on the 5 % level). A conditional-effect-plot can ease

the interpretation and illustrates how the marginal effect of confidence in one's own training competence changes between different educational groups.
Figure 8 illustrates the interaction effect between confidence in training competence and education. The conditional-effects-plot clearly shows that there is scope for training enhancements. With a higher confidence in training competence lower educated employees can even exceed their higher educated colleagues in their perceptions of importance of further training.

The results can be taken to some extent as support for my previous argumentation that lower educated employees often get stuck in certainty-difficulty gaps. In general, employees with a higher educational background have a higher level of aspiration, they are more capable of navigating through the further training system and have superior knowledge about long term benefits from further training. In contrast, less educated colleagues often have to overcome their lower confidence first before they are able and willing to participate in further training. Only with high confidence in their own training competence can they lower their personal investment risk, which is an important precondition for future training participation.

The influence of costs showed no significant effect at all, and the likelihood of a status decline played a significant role for the further training perceptions of lower skilled employees only. I can explain this result with the relative high qualification of the German 'Facharbeiter'. They have completed an initial vocational training and are often highly skilled and specialised experts in their work with a payment and job security which is relatively high compared to other employees. Some of them have obtained also a 'Meisterbrief' (master craftsman's diploma). Nevertheless, compared to their higher educated colleagues within the firm they have a higher risk of losing their social status in the case of unemployment. It seems to be reasonable that people with lower education try to avoid a social decline and show a higher appreciation for further training.

As a first recap, my results provide some support for my first hypothesis that expected returns from further training have more importance for medium and higher skilled employees, whereas the results showed no significant effect for lower educated employees. However, in the effect size the three groups did not really differ from their lower colleagues. A higher likelihood of training success was the main important factor for lower educated employees, but had less importance for medium and higher educated colleagues. Indirect and direct costs played no role at all, and the results did also not confirm my fourth hypothesis. In contrast to my assumption, the likelihood of status decline had a significant effect only for lower educated employees. All in all, the results provide some evidence that a training decision is not a simple cost-benefit analysis.

People are different and not cut from the same cloth. Supervisors and HR managers should keep this in mind in the further training offers and their daily work.

Turning to the interaction effects with age in table 4, the main effects in the first rows now present the results for employees aged 39 years. Their perceptions on the importance of further training participation were influenced by the individuals' expectations of training returns, their confidence in training competence and the personal likelihood of a status decline. Similar to my previous models, I found no significant influence for potential costs of further training. But again it is necessary to have a closer look at the different slopes for the different age groups. In doing so, my data provides some interesting results.

First, lower participation rates of older employees can be explained by a lower importance of returns from further training. Expectations on training returns had no significant influence for the further training perceptions of employees younger than 35 years (b=-0.06, p=0.069), but they mattered already for employees aged 35 to 55 years. I plotted the interaction effect and figure 9 shows that the negative effect of expected low training returns increased with age. For employees aged 35 to 55 years, perceived importance of further training participation decreased by 0.11 points (p=0.000) for each standard deviation on (lower) expected returns from further training, for employees older than 55 years the effect was -0.13 (p=0.003)

The graph depicts clearly that the youngest employees in my survey in general show a higher training orientation than their older colleagues, independent of potential returns. Important motives for further training can be their job entry, the improvement of career opportunities, or job security. Training participation is maybe self-evident, whereas that is not the case for their older colleagues. An employee who has never stopped learning might still be willing to participate in further training, but subjective expected returns can be important thresholds for a more positive further training appreciation. In general, older employees often show lower appreciation for further training. They have a greater mastery experience, past training experience, reached the highest step in their career, and do not plan any further job changes. In the reverse argumentation, they may show a higher importance for further training if they would expect higher individual returns. In the Demopass survey, more than 50 percent of the older employees reported that they would participate in further training to improve job abilities and career prospects. In their case, potential indirect or direct costs had no relevance, and their younger colleagues did not differ in this point.

Table 4: Determinants on perceived importance of further training participation – Interaction effects with age.

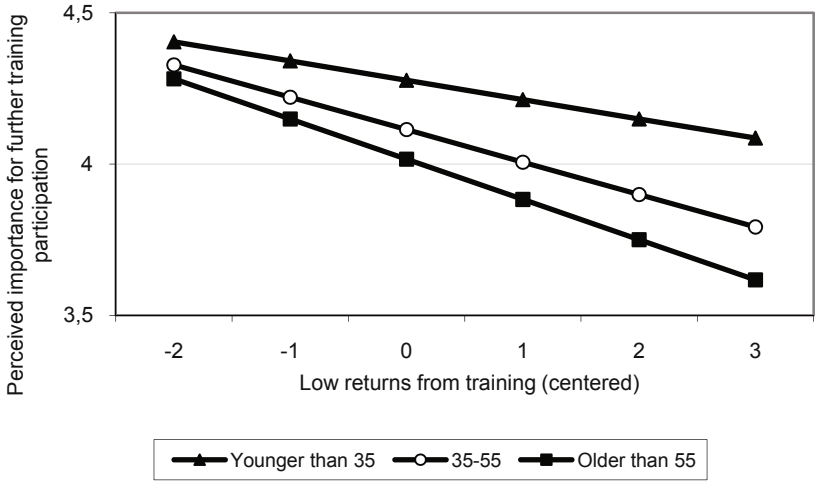
	(1)	(2)	(3)	(4)
Low returns from training	-0.09***	-0.09***	-0.10***	-0.09***
	(0.02)	(0.02)	(0.02)	(0.02)
Indirect & direct costs	-0.01	-0.02	-0.01	-0.01
	(0.03)	(0.03)	(0.03)	(0.03)
Expected likelihood of training success	0.15***	0.15***	0.15***	0.15***
	(0.04)	(0.04)	(0.04)	(0.04)
Low expected likelihood of status decline	-0.01**	-0.01**	-0.01**	-0.01**
	(0.00)	(0.00)	(0.00)	(0.00)
Previous further training	0.09	0.08	0.08	0.08
	(0.05)	(0.05)	(0.05)	(0.05)
Medium education[1]	-0.07	-0.08	-0.09	-0.08
	(0.08)	(0.08)	(0.08)	(0.08)
High education[1]	0.01	0.00	-0.00	0.01
	(0.08)	(0.08)	(0.08)	(0.08)
Age	-0.01***	-0.01***	-0.01***	-0.01***
	(0.00)	(0.00)	(0.00)	(0.00)
Gender (1=female)	0.14*	0.14*	0.14*	0.14*
	(0.05)	(0.05)	(0.05)	(0.05)
Positive affectivity	0.10*	0.11*	0.10*	0.10*
	(0.04)	(0.04)	(0.04)	(0.04)
Supervisor: Training willingness	0.01	-0.00	0.01	0.01
	(0.03)	(0.03)	(0.03)	(0.03)
Team's previous FT	-0.03	-0.00	-0.02	-0.02
	(0.13)	(0.13)	(0.12)	(0.13)
Low returns from FT x Age	-0.00			
	(0.00)			
Indirect & direct costs x Age		0.01		
		(0.00)		
Likelihood train. successs x Age			0.00	
			(0.00)	
Likelihood status decline x Age				-0.00
				(0.00)

Table 4 continued

Constant	4.17*** (0.09)	4.17*** (0.09)	4.18*** (0.09)	4.17*** (0.09)
N	717	717	717	717
R^2	0.17	0.17	0.17	0.17

Standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001.
Controlled for firms. [1] Reference: Lower education.

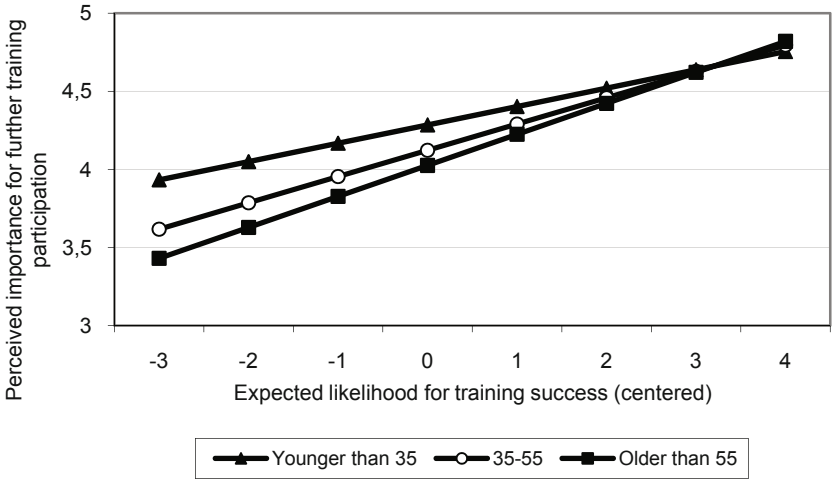
Figure 9: Interaction effect between age and expected returns from further training



Second, I have argued that confidence in one's own training competence has a higher importance for older employees than for their younger colleagues. Figure 10 shows that the effect of confidence in training competence indeed differed between age groups. The likelihood of training success had a stronger effect for employees aged 35 to 55 years (b=0.17, p=0.000) than for employees younger than 35 years (b=0.12, p=0.015), but the effect was even stronger for the older employees in my sample. For them, a one point higher expected likelihood of training success was associated with an increase of 0.20 standard deviations on employees' perceived importance of further training participation (p=0.001). Possible explanations are obvious. Just like lower educated employees, older people have difficulties in surveying the complexity of the further training sys-

tem and often have only little information about long term benefits. Still, if they expect a high likelihood of training success, they do not differ from their younger colleagues in the perception of further training importance.

Figure 10: Interaction effect between age and expected likelihood of training success



Contrary to my fourth hypothesis, the expected likelihood of status decline showed no significant effect for young employees, but a very small negative effect for employees aged 35 to 55 years. In the reverse argumentation, these employees would show a slightly higher importance for further training if they expected a status decline. The result seems to be reasonable. Especially middle-aged employees are often not free of anxiety about their future. While older employees are already settled and younger colleagues stand at the beginning of their career and have more perspectives and flexibility, these employees have already climbed up some career steps, but compete for fewer further career positions. And as I formulated earlier in this book, educational decisions are always made to minimize the risk of ending up in a lower position than direct peers. The frame of reference hereby is the status of colleagues with a similar age and educational background, in many cases in their own working group/department, with only some connections to other departments in the firm (cf. Frank 1985b). This finding goes in line with previous findings (e.g. from AES 2007) of a reverse u-shaped pattern in further training participation over the life course. Whereas the

youngest and older employees participate less in further training, the data shows a peak in midlife.

To sum up, it became clear that subjective expectations are important factors for an enhancement of further training participation. However, the motives differ between the groups and the results deserve closer attention: while for employees with a medium employees' the fear of a possible status decline seemed to be a striving force, it was expected returns and more confidence in their own training competence for senior employees. The results are in line with the formal models of Breen & Goldthorpe and Esser. A higher expected return from training and a higher expected likelihood of status decline without any training participation can both strengthen employees' educational motivation, whereas a higher likelihood of training success can help to reduce the investment risk.

3.7 Conclusion

This chapter was guided by the question of potential reasons for the low participation rates in further training and the persisting inequality in training attendance. Based on the Social Rational Choice approaches by Breen and Goldthorpe (1997) and Esser (1999), I assumed that educational motivation and investment risk are important 'set screws' for improving further training participation. My main statement was that employees have different subjective expectations regarding training returns and costs, as well as different likelihoods of training success, and different risks of a status decline in the case of a non-participation – with consequences for the perceived importance of further training and the eventual participation. My analysis largely confirmed the hypotheses. Three factors were of particular importance: A higher likelihood of training success can help to reduce individual investment risk, whereas higher expected returns from training and a higher risk of status decline increase the educational motivation. Anticipated indirect and direct costs did not play a role at all, but the other mechanisms differed between the focus groups of my analysis.

For older employees and those with at least a medium education, possible returns from further training were an important factor for their perceptions about the importance of further training. They had already reached a certain status within in their firms, and without any additional returns they might therefore be less willing to participate in training. Firms should adapt their training offers more to the needs of these employees and provide opportunities for further development after a training participation. Since traditional vertical careers are restricted in numbers, horizontal careers can be worthwhile paths of development. A possible status decline played an important role for employees aged 35

to 55 years and for employees with lower education, but showed no relevance for all other subgroups. From my point of view, this difference to the theoretical assumptions can be explained mainly by different frames of reference. While schooling decisions are influenced mostly by parents and other family members, training decisions are influenced by the work context.

In correspondence to previous findings, the results depicted the clear pattern that for senior employees a higher likelihood of training success or confidence in one's own training competence is an important precondition for an enhancement of further training appreciation. They often feel less cognitively able to learn, feel more anxiety in training situations, and have lower perceptions of themselves. The same conclusions can be made for lower skilled employees. With fewer learning experiences they are often stuck in a certainty-difficulty gap and expect a lower likelihood of training success. Thus, a higher confidence in their own training competence is probably the most important factor for increasing the low participation rates of these two groups. With higher confidence in their own training competence, older employees and those with lower educational background did not differ in their perceptions on further training importance from their younger or higher educated colleagues.

This chapter clearly pointed out that there is some scope for intra-firm policy changes. If confidence in training competence has such an importance for further training decisions, a better understanding of influences on confidence is essential to increasing the interest in further training. In the next chapter, I will therefore examine whether supervisors, the working team's training climate or the individual's educational background can influence employees' confidence in training competence. Maurer (2001) pointed out that confidence in training competence is not an immutable characteristic and can be improved by supervisor support, managerial interventions and a positive training climate.

4 Influencing confidence in training competence The impact of employees, team, and supervisors

In this chapter, I will address the question to which extent supervisors, the team's training climate or the employees' educational background can influence employees' confidence in their own training competence as an important requirement for higher further training participation in the future. Multilevel regression models with Demopass data show that supervisors and the team's training climate can both help to strengthen one's own confidence, and that older employees and those with lower educational backgrounds can especially benefit from higher perceived management support and a positive learning goal orientation within their working team. In particular, this holds true for previous non-participants in further training.

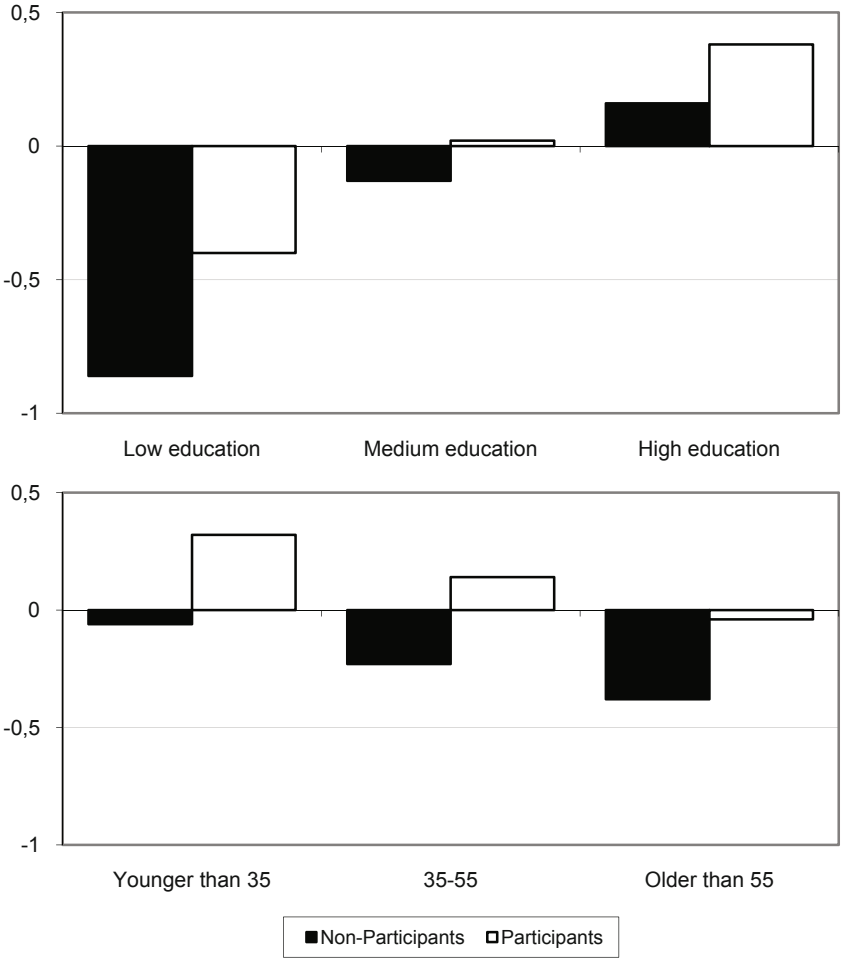
4.1 Introduction

The results I have shown in the previous chapter provoke the next question, namely whether supervisors, the working team's training climate or the employee's educational background can influence employees' confidence in their own training competence, and can help to increase the further training participation. From my point of view, a better understanding of the underlying factors of employees' confidence in their own training competence is absolutely essential for strengthening the participation rates in further training, because it should be easier to change employees' circumstances and opportunities than to change their minds (Elster 1989). This is valid especially for groups with the lowest participation rates, namely older employees and those with a lower educational background (see figure 11).

Maurer (2001) defined confidence in training competence, or learning self-efficacy, however, as the belief that one is capable of improving and developing one's skills and Maurer and Tarulli (1994) have identified key relationships of learning self-efficacy with attitudes, intentions and voluntary participation in further training. They suggested that confidence in one's own training competence can play an important role in further training participation, independent of

S. Baron, *Workplace Learning,* DOI 10.1007/978-3-531-92870-8_4 ,

Figure 11: Confidence in one's own training competence (grand mean centered). Different educational and age levels.



perceived benefits of participation. In general, self-efficacy (beliefs about one's ability to attain a goal) is a well-known and empirically tested construct in psychological literature, stating that people who think that they perform well on a task indeed do better than others who believe that they might fail (Gist and Mitchell 1992). They weigh and evaluate information about their proficiency and

then adapt their efforts accordingly. Self-efficacy influences individuals' choices and goals, effort, coping strategies and feedback. Indeed, previous research was able to show that people are more likely to engage in tasks or behaviour if they expect to perform successfully (Bandura 1986).

4.2 Confidence in one's own training competence

Confidence in one's own training competence is not static, but a dynamic construct. Employees' judgments about their own efficacy alter during the life course as new information and experiences are obtained. Hence, confidence in training competence is of special interest for further training research and should have special relevance for practitioners.

Psychological literature (cf. Gist 1987) discusses mainly four antecedents of confidence in one's own training competence: physiological influences, mastery experiences, persuasion, and vicarious experiences. The first two antecedents make clear why older employees and those with lower education participate less in training. Older employees may perceive fewer benefits of training participation than their younger colleagues, but older employees often also feel less cognitively able to learn, feel more anxiety in training situations and have lower perceptions of themselves (Maurer/Weiss/Barbeite 2003). In many cases, the last time they experienced training was some years ago already. On the other hand, higher educated employees have more experiences in mastering learning tasks than their lower educated colleagues (secondary effects, Boudon 1974), and therefore a higher confidence in their own training competence (cf. Noe and Wilk 1993). They have superior knowledge about the further training system, long term benefits of further training, as well as future skill needs. In fact, past achievements in education and the work context have been shown to enhance confidence in one's own training competence; they help to build up strategies and skills to cope with upcoming tasks. Of course, higher educated people also have higher learning goal orientations, which generate greater perceived control over potential outcomes. They believe that skills influencing outcomes can be strengthened by effort (Dweck and Leggett 1988; Button et al. 1996). Thus, I expect in my **first hypothesis** that secondary effects like educational background still play a role; they continue to be influential over the life course. Confidence is conditional on differences in ability and performance between educational groups.

The two other antecedents, persuasion and vicarious experiences, can strengthen confidence in one's own training competence. Perceptions about own performance are often a response to stimuli from the direct environment. For

instance, a training-orientated working climate can enhance further training participation if people perceive support from management and the organization for their training activities (Maurer 2001; Tracey and Tews 2005). Birdi et al. (1997) could show a clear positive influence of learning motivation and management support on training, as well as of job satisfaction and firm commitment, and Noe and Wilk (1993) demonstrated that self-efficacy and work environment perceptions have a positive effect on subjective measures of developmental activity (in number of training hours, courses, or future plans). Thus, supervisor support, encouragement or positive feedback from people at work or outside the work context can help to enhance employees' confidence in their own training competence, as well as colleagues who are similar to themselves, having a high learning goal orientation and participate in further training successfully. Supervisors and colleagues can be interpreted as social capital, which provide important social resources and therefore play an important role in the creation of human capital (Bourdieu 1996; Coleman 1988; Boxman/De Graaf/Flap 1991). Also, in training-active environments, employees with tight contact to other members of their working group or closer network relations may feel a stronger confidence in their training competence (Burt 1997).

Hence, supervisors and the working group's training climate may help to overcome potential doubts about one's own training competence (Matthews 1999). They can send clear signals concerning the importance of further training, which may influence employees' training behaviour (London 1986). Insofar, as supervisors approve and encourage further training, they play an important role but they can also diminish training motivation.

4.3 Frame-Selection Theory

To my knowledge, no study has empirically tested the influence of direct supervisors and the working group's training climate on individuals' confidence in their own training competence. In this chapter, I hope to close this gap. For tackling the research question, Hartmut Esser's Frame-Selection Theory (FST) gives an appropriate framework for further research (Esser 1996; Esser 2001; Kroneberg 2007). While normally researchers tend to ask which type of action people are likely to choose from several alternatives, rather than how and when people take action in order to exchange the possible alternatives, Frame-Selection Theory allows an integrated examination of individuals' definition of a situation, the activation of different modes and routines of information processing, and the selection of an action. According to the theory, people have various potential goals in any situation and select a dominant goal on which to concentrate. They

first define the current situation and then make their final choice of action; in between they recognize and evaluate the situation. Additionally, Esser (2001) and Kroneberg (2007) differed between the selection of a frame, a script, and an action, but I follow the argumentation of Opp (2004) that there is no real distinction between the frame selection and the script selection. In the case of further training, there are not two different mental models, one for the frame selection, and another model about adequate behaviour. Hence, employees first define their training competence, then they decide for or against further training participation. The first process determines whether the simple rule can be applied for the decision, the second whether it should.

I do not claim to test the complete Frame-Selection model, because that would require a longitudinal dataset. With the cross-sectional design of the Demopass dataset, I have to concentrate on the definition of the situation. Each individual disposes of stored information on typical situations and typical behavioural sequences, which is influenced by his own preferences and experiences. It consists of preferences, goals, norms, or attitudes, and the information can vary through the influence of the direct environment and social structures. Direct colleagues or supervisors set a frame of reference which may condition the estimation of the individual's own training confidence.

Framing stands for a strategy of simplification of a situation, a concentration on a dominant goal. It eases the interpretation of a situation and orders the selection structure depending on personal priorities (goal criteria) which allows a rational choice based on subjective calculation. Especially in situations where individuals cannot grasp the entire situation with all its advantages and disadvantages, framing is a wise answer to the problem of 'bounded rationality' (Simon 1955). Social norms and values of direct peers can act as a source of information about which goals should be prioritized. If peers follow different values, this mismatch can lead to a reflection of employees' own orientation and an adaption to the group values. Or in other words, employees adapt to the behaviour which is expected by the environment (Stachura 2006). In doing so, they simplify the decision cognitively, so that they have control of their choice of action, and often only one good reason can be sufficient for defining a situation and selecting a frame. That can be more efficient in using time and costs than complex and objective decision-making processes, and it can also be highly accurate (e.g. Gigerenzer 2007). However, since most employees have only little information about potential goals and consequences, they often follow only value-orientations and do not do maximizing but satisficing: from several alternatives they choose the alternative which is accepted in their direct environment, but do not look for the best alternative nor consider possible consequences.

Thus, employees may choose a course of action by assimilating to a social norm and by imitating their peers. Gigerenzer (2007) differentiates between two basic forms of imitation, namely following what the majority of peers do or imitating what an especially successful peer does. Both forms of imitation help to cognitively simplify the situation by functioning as a rule-mechanism, especially when the situation is characterized by a certainty-difficulty gap (Heiner1983). When individuals have only limited information about possible gains and losses, computing individual rules of action may become too complex, because too much is uncertain. In such situations, imitating others can reduce the complexity of training decisions and strengthen feelings of control. Especially older and less educated employees need more behavioural confirmation and affection by supervisors and colleagues for substituting the lack of confidence in their training competence. Whereas both younger and higher educated employees have higher levels of self-confidence, colleagues in the focus groups of my analysis are often unable to satisfy the need for positive self-esteem, which may result in feelings of insecurity (e.g. Simons 1983). Imitation of social norms can be in itself a perceived gain of following a particular course of action and therefore a successful tool for enhancing one's own confidence (Morgan 1998). One downside to this reliance on social norms can be that people ignore new (and perhaps better) possibilities of action if their peers do the same.

Further training decisions represent a context in which individuals rarely have complete information about possible gains and losses associated with participation. Therefore, individuals are often dependent on their peers and supervisors for information about the payoffs of a potential participation. Peers and supervisors can enhance employees' training participation by highlighting a general career orientation and the need for development, and thereby limit the individual risk of participation (McDill and Rigsby 1973; London 1986, Noe et al. 1990). Hence, imitation of direct peers or supervisors seems to be a likely course of action – with consequences if the signal fails to appear. Employees will not participate in training if they do not see any future need for their skills, or if they receive no support in their training (Spence 1973). The discussion can be summarized in my **second hypothesis**, namely that employees have higher confidence in their training competence if they perceive higher training support from their direct supervisors. The effect even increases for older employees and those with lower education and holds especially true for non-participants in further training. Additionally, simply the number or proportion of others who have made the decision to participate before can help to overcome the certainty-difficulty gap. The degree of confidence rises if the participation rate increases over a certain threshold, because the probability of failure decreases with a larger number of participants in further training who have succeeded previously (Granovetter

1978). The threshold level depends on the individual risk-aversion. Lower educated people have a higher threshold for participating in further training than their higher educated colleagues, and it is also a bigger step for older employees than for their younger colleagues. They have little confidence in their own training competence and their benefits are rather small. In sum, people cannot establish high confidence independent of others (Haslam 2004). Peers serve as an essential reference point for these perceptions. The direct working environment affects employees' confidence and their further training decisions to an important extent. Hence, in my **third hypothesis** I assume that people in environments with a strong further training climate have also a higher confidence in their training competence. The working group forms a normative training climate which influences the individual's motivation to learn. Again, the working group's training climate becomes more important for the aging workforce and employees with lower qualifications; previous non-participants feel more confident with their training competence in teams with a positive training climate.

Finally, it is important to note that individuals often do not define the present situation. In fact, the decisive frame is the future situation when the training takes place. They imagine the upcoming situation for an evaluation and definition of their choice of action. In this sense, the definition of the situation is performable, it helps to constitute a new and perhaps false reality (Schulz-Schaeffer 2008). Here supervisors have some responsibility and can give recognition for the upcoming decision. However, the underlying perceptions may also be incorrect or irrational. Still, wrong definitions have real consequences, too, and only the current subjective definition of the (future) situation determines the choice of action.

4.4 Operationalization of theoretical constructs

For the dependent variable of my analysis, the employees responded to the single item ‘I am proficient in the learning methods which are necessary for successful further training' on a five-point scale from 'Does not apply' to 'Applies'. As already mentioned in the previous chapter, this item is largely based on a subset of self-directed learning items developed by Straka (2005). As in many other studies with data that was collected for different purposes, I was not able to assess confidence in employees' own training competence directly. However, the item I used comes closest to the original denotation. In the further training system with its multifaceted learning methods from e-learning and job-rotation to formal courses, employees have to deal with several different learning forms and should be competent to use all learning methods for a training success.

For the measurement of educational background, I decided to include three dummy variables to indicate different educational groups. Employees with a university degree and/or 'Abitur' formed the group with a higher educational level, those with a degree from the German 'Realschule' the medium group, and employees with no school degree or only a degree from 'Hauptschule' formed the lower education group. I chose the last group as the reference group. Of course, I also included the information on previous further training participation during the last 12 months (yes/no).

For the measurement of training support from the direct supervisors I decided to use the average of three items from the General Training Climate Scale (GTCS, Tracey and Tews 2005). Specifically, employees were asked to judge the extent to which 'supervisors give recognition and credit to those who apply new knowledge and skills to their work', 'top management expects continuing technical excellence and competence', and 'supervisors match associates' needs for personal and professional development with opportunities to attend training' (Cronbach's alpha=0.74). Answers could range from 1 'Does not apply' to 5 'Applies'. The argument behind this decision is that management support matters for employees only to the extent that it is perceived. I decided to center the variable on the group mean because I was mainly interested in the relative position within the working group (cf. Kreft et al. 1995; Enders and Tofighi 2007). The assumption is that subjective motives and attitudes are strongly conditioned by the working group. The sociological literature (cf. Burstein 1980) discusses this effect as the 'frog-pond' effect: employees' attitudes are predicted from being a big or a small frog in the pond and from the size of the pond. Success is judged by the relative standing in the working group, and people tend to consider as relevant only the standards of the other people (Davis 1966, Gambetta 1987).

For the measurement of the working group's training climate, I included the working group's training participation rate in the last 12 months. Since this item covers also mandatory training courses and can therefore provide only limited information about the effective training climate, I additionally used four learning goal orientation items from Button et al. (1996), which were averaged and aggregated from the individual to the group level for modelling an indicator for the training climate in the working group (within group agreement Rwg=0.82). An example item is 'The opportunity to learn new things is important to me' (Cronbach's alpha=0.73, the Appendix lists all items). Possible answers were recorded on a scale from 1 'Not at all' to 5 'Highly'. I centered the variable on the grand mean. For differentiating between-group effects from within-group effects, I included both variables also at the individual level. Before, I centered the individual learning goal orientation on the group mean

As mentioned above, expected cost constraints of further training may be interlinked with employees' confidence in their training competence. I adopted a list of six items from the German Berichtssystem Weiterbildung IX (Kuwan et al. 2006), which includes both direct costs (loss of earnings, commuting time) and indirect costs (family constraints, leisure time) of participation in further training (see Appendix). The employees were asked for their agreement with statements relating to further training. Their responses were based on a five-point scale that ranged from 'Does not apply' to 'Applies'. Again, I built an index and centered the variable on the group mean.

I controlled also for general job efficacy and job autonomy which both have an influence on the development of job interests, goals and career decisions. For measuring general job efficacy, I used a single statement from a scale by Abele et al. (2000), in which employees were asked to estimate their ability to cope with job difficulties: 'I don't know if I really have the abilities which are needed in my job'. Answers were given on a four-point scale with the response categories 'not correct', 'marginally correct', 'partially correct', and 'correct'. For measuring job autonomy, I used an index of five single items based on Thompson and Prottas (2006) and Ahuja et al. (2007) (Cronbach's alpha=0.74). All items are listed in the Appendix. I centered both variables on the group mean. Finally, I controlled for employees' gender and age, as well as for firm belonging.

4.5 Method of analysis

Again, I used the Demopass data set and imputed for missing values using multiple imputation procedures. Since the dataset showed a larger number of missing values on the dependent variable, I checked the raw data also for a potential effect of selection bias due to non-response. However, estimating the participation probability with a probit model and including the inverse mills ratio into the final model did not change the results (see Appendix). In the end, the models presented in this chapter include data from 717 employees nested in 73 working groups. Table 5 lists the descriptive statistics for all variables.

Due to the hierarchical structure of the Demopass data, I employed a two-level regression model for testing my hypotheses. It might be necessary to specify a random effect for perceived managerial support, meaning that the support varies randomly within the teams. However, a likelihood-ratio test comparing a random-intercept model and a random-coefficient model including a random slope for managerial support, showed no significant difference between both models. Therefore, I decided again to use the more simple and computer-efficient random-intercept model.

Table 5: Descriptive statistics for chapter 4

	Min/Max	Mean	SD
Low education	0/1	0.15	0.36
Medium education	0/1	0.36	0.48
High education	0/1	0.48	0.50
Perceived management support	1/5	3.34	0.74
Working team's learning goal orientation	3.47/4.49	4.09	0.22
Working team's previous further training	0/1	0.47	0.24
Learning goal orientation	2/5	4.09	0.60
Previous further training / last 12 months	0/1	0.46	0.50
Gender (1=female)	0/1	0.28	0.45
Age	21/62	38.70	8.63
Indirect & direct costs	1/5	2.79	0.87
Negative job efficacy	1/4	1.48	0.75
Negative job autonomy	1/4	2.72	0.59
Team's further training participation	0/1	0.47	0.23

I proceeded step by step, beginning with the information on the educational level of the survey participants. In the next step I added the information on their age and gender before I included the employees' perceived management support. In the fourth step I entered the level-2 information on working team's learning goal orientation and previous further training rate as well as the level-1 information on employees' own learning goal orientation and previous further training participation in the last 12 months. Finally, I added the employees' expected cost constraints, as well as the information on their job efficacy and job autonomy. In all steps I controlled for firm belonging. In table 7, I introduced several interaction effects. In the first two steps I examined the interaction between age and perceived management support, as well as between age and team's learning goal orientation. In step three, I added the interaction effects between education and perceived management support, and finally I included the interaction effects between education and team's learning goal orientation.

Less can be said with these models about differences in the mechanisms between participants and non-participants in further training. Since three-way interaction effects are rather difficult to interpret, I decided to split up the sample into the group of participants and the group of non-participants in further training for allowing full interaction. I report the final additive models (table 8) and those models including interaction effects (tables 9 and 10).

4.6 Results and discussion

The first results in table 6 go in line with previous findings and confirm the descriptive results of figure 11 in the introduction part of this chapter. Employees with higher educational background rated their confidence 0.81 points higher than their low-skilled colleagues, likewise employees with a mid-level school degree showed a higher confidence level. 'Secondary effects' still play a role in further training and seem to have a multiplicative effect (Boudon 1974). These employees with stronger confidence may again tend to participate more often in further training than colleagues with lower education. As a result, existing social inequalities may become more and more consolidated and persistent during work life. From a 'culturalist perspective' (Bourdieu 1996), this connection between social origin and educational performance is crucial for explaining consistent education inequalities and provides further evidence of the well-documented social selection in the education system (e.g. Boudon 1974, Erikson and Jonsson 1996, Breen and Goldthorpe 1997, Hansen and Mastekaasa 2006).

Previous research makes us believe that self-confidence also declines with age. Holding all other factors constant, the regression results showed a minimal decrease in confidence for each year of age, but the effect was not significant. This leads me to assume that the individual confidence level remains quite stable over the life course; changes in the attitudes can be explained only by changes in the frame of reference. It may be easier for people with higher education and confidence in their youth to maintain confidence in old age than for people with low confidence to increase it. Furthermore, the existing literature gives some evidence for the existence of gender differences in the perception of one's own confidence (e.g. Busch 1995, Pajares 2002), but it seems that gender differences are a function of gender orientation rather than of gender itself. Gender characteristics highly interact with the occupational choice and the recruitment patterns in industrial sectors, and previous studies found no gender differences in relatively homogeneous samples (e.g. Hackett 1995, Bildung in Deutschland 2008). In this study, the female employees' confidence level did not differ from that of their male colleagues.

Table 6: Determinants of confidence in one's own training competence

	(1)	(2)	(3)	(4)	(5)
Medium education[1]	0.62***	0.59***	0.61***	0.56***	0.54***
	(0.11)	(0.11)	(0.11)	(0.10)	(0.10)
High education[1]	0.94***	0.89***	0.91***	0.81***	0.79***
	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)
Age		-0.01	-0.01	-0.00	-0.00
		(0.00)	(0.00)	(0.00)	(0.00)
Gender (1=female)		-0.06	-0.07	-0.06	-0.05
		(0.09)	(0.09)	(0.08)	(0.08)
Perceived management support			0.19***	0.14**	0.15**
			(0.05)	(0.05)	(0.05)
Working team's learning goal orientation				0.47**	0.48**
				(0.15)	(0.15)
Working team's previous further training part.				0.27	0.31
				(0.20)	(0.20)
Learning goal orientation				0.40***	0.35***
				(0.06)	(0.06)
Previous further training				0.13	0.10
				(0.07)	(0.07)
Expected cost constraints					-0.13**
					(0.04)
Negative job efficacy					-0.10*
					(0.05)
Job autonomy					-0.06
					(0.07)
Constant	2.57***	2.59***	2.59***	2.78***	2.81***
	(0.12)	(0.12)	(0.12)	(0.14)	(0.14)
N	717	717	717	717	717
R^2	0.14	0.15	0.17	0.25	0.27

Standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001.
Controlled for firms. [1] Reference: Lower education.

With regard to these results, I will now come back to my leading question about factors that can help to strengthen employees' confidence. I have argued above that confidence is partially dependent on direct peers and role models. Therefore I expected that people would show higher confidence if they received more training support from their direct supervisors as well as from their direct working environment.

The results clearly show that employees who have perceived a higher managerial support than the average of their working group also showed a significantly higher confidence in their training competence. The team's further training participation during the last 12 months showed no significant influence, but I detected a strong positive influence of the working team's learning goal orientation. Thus, I can conclude that not the effective training participation, but the overall training climate makes a difference. Keeping all other factors fixed, a one point higher learning goal orientation in the team was associated with an increase of 0.48 standard deviations on employees' confidence level. This result goes much in line with Granovetter's model of collective behaviour (Granovetter 1978). Employees are 'conservative' and show only a significant higher confidence if working group's learning goal orientation goes beyond a certain threshold. Similar results were obtained on the individual level. I did not detect any significant effect for previous further training participation, even though it is a common expectation that previous participants have a higher confidence in their training competence than employees without recent training experiences. Still, confidence was significantly higher if employees had a stronger learning goal orientation than the average of their colleagues. The learning goal items I used in the analysis strongly reflect people's ambition to improve their own competence and their ability to consider previous performance and training competence (Button et al. 1996).

I also controlled for costs of further training, employees' job efficacy and their job autonomy. It is not very surprising that expected costs had a significant negative influence on employees' confidence in their training competence. My expectation was that people confronted with higher potential costs than their colleagues need in fact a higher confidence in their training competence to overcome the financial hurdle and to decide in favour of training participation. This might explain also the negative effect of job efficacy. Employees who bear a more negative job efficacy than their colleagues need a proportionally higher confidence in their training competence before they participate (again) in further training. Regarding the effect of job autonomy, my assumption was that people with more job autonomy and the feeling that their job is controllable (Bandura and Wood 1989) maintain a stronger confidence in their training competence. However, the effect was not significant and did not show the expected direction.

Table 7: Determinants of confidence in one's own training competence – Interaction effects with age and educational background

	(1)	(2)	(3)	(4)
Medium education[1]	0.56***	0.54***	0.57***	0.49***
	(0.10)	(0.10)	(0.10)	(0.11)
High education[1]	0.81***	0.79***	0.83***	0.74***
	(0.11)	(0.11)	(0.11)	(0.11)
Age	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Gender (1=female)	-0.05	-0.05	-0.03	-0.06
	(0.08)	(0.08)	(0.08)	(0.08)
Perceived management support	0.15**	0.15**	0.56***	0.15**
	(0.05)	(0.05)	(0.11)	(0.05)
Working team's learning goal orientation	0.47**	0.47**	0.48**	1.07**
	(0.15)	(0.15)	(0.15)	(0.35)
Working team's previous further training part.	0.31	0.30	0.32	0.27
	(0.20)	(0.21)	(0.21)	(0.20)
Learning goal orientation	0.34***	0.34***	0.33***	0.34***
	(0.06)	(0.06)	(0.06)	(0.06)
Previous further training	0.10	0.10	0.10	0.10
	(0.07)	(0.07)	(0.07)	(0.07)
Expected cost constraints	-0.13**	-0.13**	-0.14**	-0.13**
	(0.04)	(0.04)	(0.04)	(0.04)
Negative job efficacy	-0.09*	-0.10*	-0.11*	-0.10*
	(0.05)	(0.05)	(0.05)	(0.05)
Job autonomy	-0.06	-0.07	-0.07	-0.07
	(0.07)	(0.07)	(0.07)	(0.07)
Management support*Age	0.01*			
	(0.01)			
Working team's learning goal orientation*Age		0.01		
		(0.02)		
Management support* Medium education			-0.55***	
			(0.13)	
Management support* High education			-0.47***	
			(0.13)	

Table 7 continued

Working team's learning goal orientation*Medium education				-0.84 (0.44)
Working team's learning goal orientation*Medium education				-0.64 (0.40)
Constant	2.79*** (0.14)	2.82*** (0.14)	2.79*** (0.15)	2.85*** (0.14)
N	717	717	717	717
R^2	0.28	0.27	0.29	0.28

Standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001.
Controlled for firms. [1] Reference: Lower education.

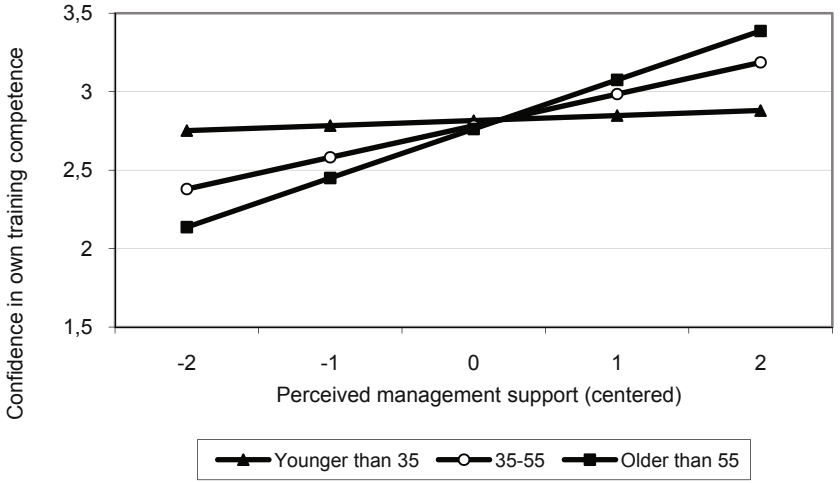
As a first conclusion, the results provide clear support for my hypotheses that lower educated employees have a lower confidence level than their higher educated colleagues, and that in general confidence in their own training competence can be strengthened by supervisor support and a positive training climate within the working team. However, up to this point I have only reported mean effects for perceived management support and team's learning goal orientation. I will now come to the interesting question whether their influence varies between the different focus groups of my analysis. The results of my models performed with interaction effects are summarized in table 7 and provide a clear picture.

The main effects in the first two models represent again the results for employees with the average age of 39 years, the main effects in the models three and four the results for employees with low educational background. The effects for employees aged 39 years did not differ from the results in the previous table, but for lower educated employees both more perceived management support and a higher team's learning goal orientation led to higher confidence in their own training competence. For the effects for other groups, it is worthwhile to have a closer look at the interaction effects.

The effect of perceived management support showed a different influence for older as well as for younger employees (model 1). While for 39-year old employees higher perceived management support increased confidence in their own training competence by 0.15 standard deviations, it became even more important for employees above this age. For the group of employees older than 55 years, confidence increased by 0.30 points for each standard deviation on perceived management support (p=0.001). For the age group 35 to 55 years the effect was 0.20 (p=0.000), but for younger employees below a certain age the influence was not significant (b=0.03, p=0.649). For the youngest employees in

my sample, confidence even decreased slightly by 0.09 standard deviations if they perceived more management support, but the slope missed any significance level. However, younger employees are under higher pressure to perform; they often have only fixed-term work contracts and compete for only a few career positions. On top of that, they have recent educational experience and therefore still high confidence in their competence. Figure 12 illustrates the discussed interaction effect between perceived management support and age. The conditional-effects-plot clearly shows that supervisor support can strengthen older employees' confidence in training competence.

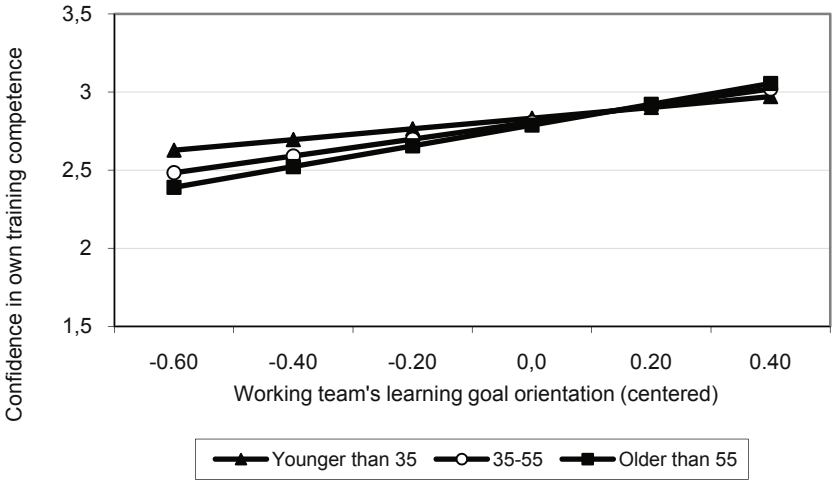
Figure 12: Interaction effect between age and perceived management support



With regard to potential effects of team's learning goal orientation for other age groups (model 2), the results showed an increasing importance with age. The team's learning goal orientation had no significant effect on the confidence level of the youngest employees in my sample, but it had already a positive and significant effect for employees aged 39 years. It became even more important with increasing age. For employees aged 35 to 55 years, confidence in their own training competence increased by 0.54 points for each standard deviation on team's learning goal orientation ($p=0.002$), for employees older than 55 years the effect was even stronger (0.65, $p=0.011$). Older employees often need their colleagues to understand their own situation and potential needs. Thus, co-workers in the same working team can give a 'push' and help to reduce doubts about the employee's own training competence. With a high learning goal orientation within

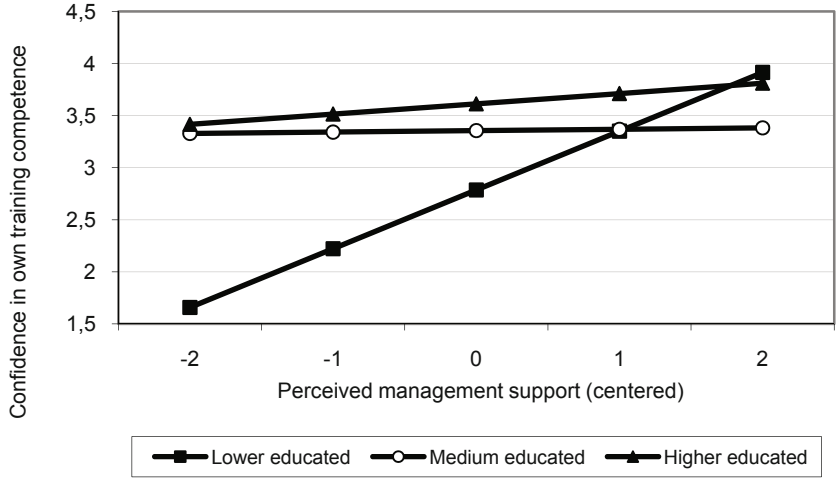
the team, older employees did not differ in their competence level from other age groups. However, the conditional-effects-plot in figure 13 shows that in the general trend, all employees benefit from a higher learning goal orientation within in the working team.

Figure 13: Interaction effect between age and working team's learning goal orientation.



Another important research finding appears from model 3. The constitutive effect of perceived management support clearly shows that employees with low education had a significantly higher confidence in their training competence if they had perceived more management support than the average in their working group. Their confidence increased by 0.56 points for each standard deviation on perceived management support. For higher educated employees, perceived management support did not affect the confidence level. They started with higher levels of confidence, but the additional effect of management support was rather low and insignificant. Again, I plotted the interaction effects and figure 14 indicates that lower educated employees can exceed their medium educated colleagues and reach the confidence level of the higher educated employees if they perceive highest management support. Nevertheless, with a lower perception of supervisor support, medium and higher educated employees still have a higher confidence in their training competence.

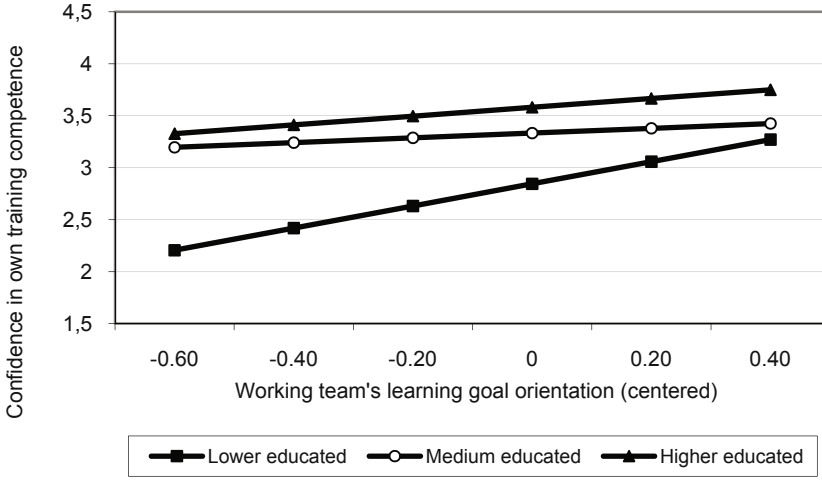
Figure 14: Interaction effect between educational background and perceived management support



Finally, model 4 reports the interaction effects between the team's learning goal orientation and education. The direct effect of team's learning goal orientation tells us that the normative learning climate within the working team was especially important for employees with only low education. With one additional standard deviation on team's learning goal orientation, employees' confidence in their training competence increased by 1.07 points. They are uncertain about their training competence, but a strong learning goal orientation in the team can help to overcome potential doubts. For medium and higher educated employees, the effect of team's learning goal orientation was weaker and had no significant effect (see figure 15).

To sum up, it has become clear that perceived management support and the team's learning goal orientation are especially important for both older and less educated employees. Firms have the possibility to increase the confidence in their own training competence. Older employees and those with a lower educational background showed a higher confidence level if they perceived more management support than their colleagues. Additionally, they were more reliant on their direct colleagues in the same working team. In working teams with high learning goal orientation, both older and less educated employees showed a higher confidence in their own training competence.

Figure 15: Interaction effect between educational background and working team's learning goal orientation



Still, the influences may be different for participants and non-participants in further training. Since I am interested in strategies for strengthening further training participation, I will now discuss my results separately for the two groups. The final results of the additive models are summarized in table 8.

Keeping all other factors constant, the results show a significant difference between lower and higher skilled employees and mixed results for the influence of team's learning goal orientation and perceived management support. Whereas the team's learning goal orientation was important for the confidence level of previous training participants, the level of perceived management support mattered for previous non-participants. The other effects did not differ between the two groups, except for the significant effect of negative job efficacy in the case of previous participants. One explanation for this result could be the further training itself, which is sometimes quite demanding and which often leaves more open questions about one's own capability and individual benefits of a single training measure than answers. Additionally, formal as well as informal training courses may provide the opportunity to evaluate one's own performance against the performance of colleagues, defining who is a 'small or a big frog in the pond'. Previous non-participants did not have the opportunity for such a self-evaluation. To do a more systematic analysis of the relative influence of supervisors and the team's influence for different age and educational groups, I again introduced

interaction effects for both sub-samples. I am starting with the results for participants in table 9, before I come to the more interesting results of non-participants in table 10.

Table 8: Determinants of confidence in one's own training competence. Differences between Participants and Non-Participants

	Participants		Non-Participants	
Medium education[1]	0.28	(0.17)	0.68***	(0.15)
High education[1]	0.56**	(0.18)	0.92***	(0.15)
Age	-0.00	(0.01)	-0.00	(0.01)
Gender (1=female)	-0.03	(0.11)	-0.05	(0.12)
Perceived management support	0.10	(0.07)	0.17*	(0.06)
Working team's learning goal orientation	0.52*	(0.22)	0.39	(0.23)
Working team's previous further training part.	0.36	(0.25)	0.24	(0.32)
Learning goal orientation	0.38***	(0.08)	0.32***	(0.08)
Expected cost constraints	-0.11*	(0.05)	-0.15*	(0.06)
Negative job efficacy	-0.12*	(0.05)	-0.07	(0.06)
Job autonomy	-0.03	(0.09)	-0.08	(0.11)
Constant	3.20***	(0.21)	2.59***	(0.20)
N	339		378	
R^2	0.21		0.27	

Standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001.
Controlled for firms. [1] Reference: Lower education.

For all subgroups, perceived management support was less relevant for employees who have participated in further training during the last 12 months and the separate analyses for the influence of team's learning goal orientation showed a positive and significant effect only for employees with the medium age of 39 years, respectively the age group 35 to 55 years (b=0.52, p=0.037). Searching for potential reasons of this finding one could again argue that especially medium aged employees have a higher pressure to perform. They have already climbed up some career steps but now compete with their colleagues for the next promotion. Moreover, they observe a first loss of capabilities – for example in the direct comparison with younger colleagues in further training courses. Confidence in one's own training competence is related to work-related performance, learning and adaptability (Gist and Mitchell 1992), as well as to past training participation and intentions to participate in future further training (Maurer 2001). In such situations, a positive team climate can help to strengthen individuals' confidence level.

Table 9: Determinants of confidence in one's own training competence – Previous participants in further training.
Interaction effects with age and educational background.

	(1)	(2)	(3)	(4)
Medium education[1]	0.31	0.29	0.34	0.26
	(0.17)	(0.17)	(0.17)	(0.17)
High education[1]	0.58**	0.56**	0.62***	0.54**
	(0.18)	(0.18)	(0.19)	(0.18)
Age	-0.00	-0.00	-0.00	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)
Gender (1=female)	-0.02	-0.03	-0.02	-0.03
	(0.11)	(0.11)	(0.11)	(0.11)
Perceived management support	0.11	0.10	0.48	0.11
	(0.07)	(0.07)	(0.25)	(0.07)
Working team's learning goal orientation	0.53*	0.52*	0.55*	1.10
	(0.22)	(0.22)	(0.22)	(0.68)
Working team's previous further training part.	0.36	0.36	0.38	0.33
	(0.25)	(0.25)	(0.25)	(0.25)
Learning goal orientation	0.37***	0.38***	0.37***	0.38***
	(0.08)	(0.08)	(0.08)	(0.08)
Expected cost constraints	-0.10	-0.11	-0.10	-0.11*
	(0.05)	(0.05)	(0.05)	(0.05)
Negative job efficacy	-0.12	-0.12	-0.12	-0.13
	(0.06)	(0.06)	(0.06)	(0.06)
Job autonomy	-0.03	-0.03	-0.04	-0.03
	(0.09)	(0.09)	(0.09)	(0.09)
Management support*Age	0.01			
	(0.01)			
Working team's learning goal orientation*Age		-0.00		
		(0.02)		
Management support* Medium education			-0.47	
			(0.26)	
Management support* High education			-0.35	
			(0.26)	
Working team's learning goal orientation*Medium education				-0.60
				(0.76)
Working team's learning goal orientation*Medium education				-0.64
				(0.73)

Table 9 continued

Constant	3.18*** (0.21)	3.20*** (0.22)	3.16*** (0.22)	3.21*** (0.21)
N	339	339	339	339
R^2	0.21	0.21	0.22	0.21

Standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001.
Controlled for firms. [1] Reference: Lower education.

The results for non-participants in table 10 depict a slightly different picture and confirm my hypotheses. In their case, team's learning goal orientation and perceived management support showed both the expected influence on employee's confidence level. Perceived management support had no relevance for younger non-participants, but has shown a significant effect for employees aged 35 to 55 years (b=0.23, p=0.004), and in the case of the oldest employees in the sample confidence increased by 0.28 standard deviations (p=0.003) if they perceived more management support (model 1). Model 2 shows that working team's learning goal orientation had no positive effect on the confidence level of employees aged 39 years, but the calculation of marginal effects brought a significant result for employees aged 35 to 55 years. The confidence level increased by 0.51 points for each additional standard deviation on team's learning goal orientation (p=0.049) and the effect became again more important with age. A separate analysis for the oldest employees showed that their confidence level increased by 0.62 points with a higher learning goal orientation in the team (p=0.044). For employees younger than 35 years I did not find a significant result and the effect size was very small.

Finally, models three and four provide the clear result that perceived management support and team's learning goal orientation were both especially important for lower educated employees, but the slopes for medium and higher educated employees missed any significance level. For them, the support of direct colleagues seemed to be less important.

Table 10: Determinants of confidence in one's own training competence – Previous non-participants in further training. Interaction effects with age and educational background.

	(1)	(2)	(3)	(4)
Medium education[1]	0.70***	0.69***	0.70***	0.61***
	(0.15)	(0.15)	(0.15)	(0.15)
High education[1]	0.95***	0.93***	0.94***	0.85***
	(0.16)	(0.15)	(0.15)	(0.16)
Age	-0.00	-0.00	-0.00	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)
Gender (1=female)	-0.04	-0.07	-0.03	-0.08
	(0.12)	(0.13)	(0.12)	(0.12)
Perceived management support	0.16*	0.17*	0.58***	0.17*
	(0.07)	(0.06)	(0.13)	(0.06)
Working team's learning goal orientation	0.36	0.36	0.37	0.96*
	(0.23)	(0.23)	(0.22)	(0.44)
Working team's previous further training part.	0.22	0.20	0.28	0.21
	(0.32)	(0.32)	(0.31)	(0.32)
Learning goal orientation	0.32***	0.32***	0.30***	0.31***
	(0.08)	(0.08)	(0.08)	(0.08)
Expected cost constraints	-0.16*	-0.16*	-0.18**	-0.16*
	(0.06)	(0.06)	(0.06)	(0.06)
Negative job efficacy	-0.07	-0.07	-0.09	-0.07
	(0.06)	(0.06)	(0.06)	(0.06)
Job autonomy	-0.08	-0.09	-0.09	-0.08
	(0.11)	(0.11)	(0.11)	(0.11)
Management support*Age	0.01			
	(0.01)			
Working team's learning goal orientation*Age		0.03		
		(0.02)		
Management support* Medium education			-0.56**	
			(0.17)	
Management support* High education			-0.50**	
			(0.16)	
Working team's learning goal orientation*Medium education				-1.01
				(0.57)
Working team's learning goal orientation*Medium education				-0.60
				(0.54)

Table 10 continued

Constant	2.57*** (0.20)	2.59*** (0.20)	2.59*** (0.20)	2.63*** (0.20)
N	378	378	378	378
R^2	0.22	0.21	0.22	0.27

Standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001.
Controlled for firms. [1] Reference: Lower education.

However, in the case of their older and less educated colleagues, supervisors and direct colleagues can help to strengthen their confidence in training competence. Employees in these groups often just require more support and some encouragement by their direct supervisors and colleagues for a higher confidence in their training competence. It is an important result for the daily HR practice that non-participants are indeed susceptible to attention from their supervisors and to others in their working team who have a higher learning goal orientation. They can give orientation, can motivate and can help to overcome possible training barriers; their encouragement is an important precondition for future training participation. As discussed in the previous chapter, a higher confidence level leads to a lower investment risk in training decisions. With a lower investment risk, future further training becomes more likely. Direct supervisors will need to take their role as mentors or coaches in further training more seriously; they are also responsible for a positive learning goal orientation in their teams.

4.7 Conclusion

Regarding the low participation rates in further training, the analysis in this chapter was guided by the question of possible influences from supervisors and the direct working environment on confidence in one's own training competence. It was the main aim of this chapter to investigate whether the direct environment can give an orientation for the definition of an employee's own further training situation. I referred to the well-established findings from psychological literature that confidence has a positive effect on further training (Noe and Willk 1993; Maurer and Tarulli 1994). I derived hypotheses by applying the Frame-Selection Theory by Hartmut Esser (2001), which distinguishes between two phases in the choice process: The phase of defining the situation and the phase of choosing an action.

The definition of the situation builds on recognition and evaluation of the right frame, which is influenced by social structures, subjective attitudes, preferences, and experiences. By estimating a two-level regression analysis based on the Demopass dataset I was able to confirm my hypotheses.

Confidence in one's own training competence is mainly influenced by educational level. However, the confidence level can be strengthened especially in the case of lower educated employees as well as for employees beyond middle adulthood. First, the self-perception of management support had a positive influence on the confidence in one's own training competence. The results highlight the importance of supervisors in firm-internal training measures and suggest that firms interested in strengthening their further training participation should support their supervisors in their task as promoters. Another important mechanism for an enhancement of the confidence was indeed the team's training climate or learning goal orientation. Direct peers can both give orientation and serve as a strong frame of reference. That is an important result, since the final and 'visible' choice of action is, in the end, only the realization of the previous definition of the situation (Esser 2001). Also learning goal orientation can be enhanced by the employer if employees are provided with realistic information regarding the benefits and features of further training participation (cf. Hicks and Klimoski 1987).

A higher learning goal orientation within the team and more support by the management and supervisors were especially important for older employees and those with lower education who had not participated in further training during the last 12 months. In contrast to their younger and higher educated colleagues with high levels of confidence, both groups often feel less cognitively able to learn, feel more anxiety in training situations, and have lower perceptions of themselves. The results in this chapter support the argumentation of Baltes et al. (2006) for older employees, that in most cases both groups of employees only need more cognitive support to attain the same training gains as their colleagues. However, the next chapter will show that supervisors run the risk of being influenced by prejudices against both older and less educated employees, and that neither group gets the support they need to participate more in further training.

5 The role of supervisors and educational credentials in further training
Bringing the boss back in!

This chapter takes a closer look at the role of supervisors in further training decisions. My argument is that supervisors often do not have the training, the time, nor the knowledge to give both older and less educated employees the support they need to succeed in further training courses. With a lack of information on employees' real willingness to train, they might be influenced by well-known age stereotypes and prejudices against lower educated employees, namely that these groups are less willing and able to train. Indeed, multinomial logistic regression models with two levels showed that younger and higher educated employees have a higher likelihood of getting a positive supervisor rating on willingness to train than their older and less educated colleagues.

5.1 Introduction

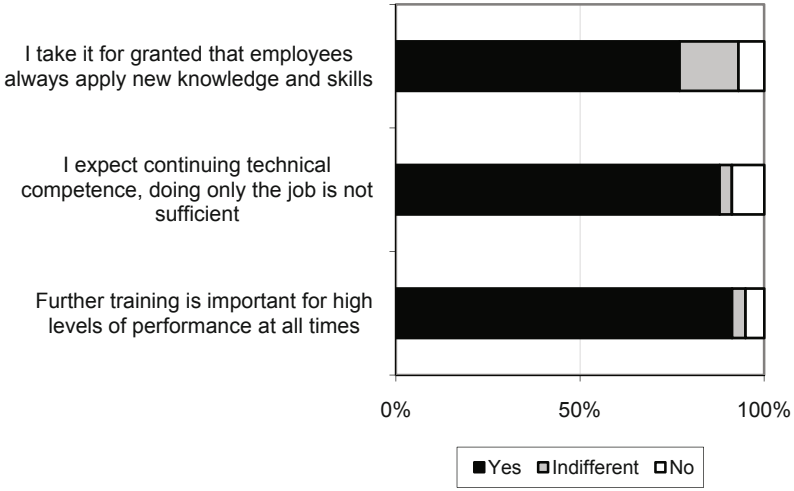
After defining, recognizing, and evaluating the situation, individuals make their choice of action. In the case of further training the choices can be training or no training, alternatively the number of courses or the amount of financial contribution. Choices can be made in two different modes, an automatic-spontaneous mode (as-mode) and a reflective-calculating mode (rc-mode). The choice between the two modes occurs more or less unconsciously and depends mainly on the degree of attention the individual pays to the situation (Kroneberg 2005). When individuals make their choice more or less spontaneously one may assume a perfect match between the situation and the frame. The frame fits perfectly to the personal goals, therefore a calculation of potential costs and benefits would not be necessary. The same is true in routine situations where people follow a simple 'rule of thumb'. Otherwise, in situations of uncertainty, individuals weigh their choices with different subjective expectations and evaluations. In this case, the reflective-calculating mode is the normal way, when individuals compare different alternatives and direct supervisors can give some orientation. They can help to overcome potential doubts about one's own training competence and can

S. Baron, *Workplace Learning,* DOI 10.1007/978-3-531-92870-8_5,

send clear signals concerning the importance of further training, which might influence employees' future training behaviour.

Supervisors fulfill an important role in strengthening participation in further training and skill development. For the members of their working team, they are often the first contact person in all training-related issues. As I argued in the previous chapters, especially older employees and those with lower education levels often act under constraints of 'bounded rationality' and cannot decipher all of the complexity of further training decisions. In the end, they decide for the frame with the highest subjective utility. Insofar, it makes a difference for a training decision if the prospective participant gets the necessary support from the supervisor, feels motivated and is highly confident of his training competence.

Figure 16: Supervisors' expectations in further training



Source: Demopass.

Direct supervisors play an important role in firm-internal decision procedures. In the top-down information flow they implement management decisions, in the bottom-up process they are the first contact in cases of job dissatisfaction, promotion matters, or further training. They have to recognise and to detect individual training demands and uncertainties, but they are also 'gate keepers' for an often limited further training budget. Direct supervisors have a 'sandwich-position' between employees and top management. They have to balance em-

ployees' needs and firm needs, and should consider training leaves and the team's workload simultaneously. During the past few years, their role has become even more important due to new responsibilities with regard to employee performance talks and performance-related wages. For most supervisors, these tasks are a challenge and in many cases they need more support and instruction for their 'job' as skill and training managers. Often they do not have the training, resources or time for an evaluation of further training in their working group, nor a structured training plan.

Hence, supervisors can motivate and coach their subordinates, but it is obvious that they can also deter them from training participation by giving less support, encouragement or flexibility to engage in further training. Especially in larger teams or teams with frequent fluctuations, it can be quite difficult to assess the real capabilities or training needs of every single employee. In the absence of this knowledge direct supervisors may follow the widespread age and education stereotypes and discriminate against their older and less educated team members. Both groups are often perceived as slow learners, inflexible, or to show poor training performance. As figure 16 shows, most supervisors have quite high expectations of further training. Nearly 90 percent expected continuing technical competence and high performance at all times. Thus, supervisors may prevent both older and less educated employees from training, although the latter need their special support. Perhaps as a consequence of their supervisors' behaviour, nearly one third of lower educated employees in the Demopass firms reported that they were rather dissatisfied with the further training opportunities in their firms. Also, in the case of older employees the share of people dissatisfied with their training opportunities was larger than the share of younger employees (see figure 17).

Figure 17: Dissatisfaction with further training opportunities.

Low education	31.53 %	Younger than 35 years	20.47 %
Medium education	22.05 %	35-50 years	23.18 %
High education	19.83 %	Older than 50 years	24.14 %

Source: Demopass

In view of my previous findings, I will now argue in favour of 'Bringing the boss (back) into' research (Baron and Bielby 1980). I intend to examine in detail what factors influence a supervisor's opinion on individuals' willingness to train. In other words, how do supervisors decide whom to support. I am interested in the question of whether these opinions differ for the aforementioned focus groups in

comparison to their younger and/or higher skilled colleagues, which might have consequences in different supervisor support in further training and, as a consequence, in different training participation rates. I assume that both groups are at a disadvantage in their daily working life, whether or not that is intended by their supervisors and the firm.

Although direct supervisors play such an important role in intra-firm (training) strategies, they are seldom in the focus of labour market policies. Research focuses more on either employees (i.e. GSOEP, Adult Education Survey) or the firm context (i.e. IAB Establishment Panel), but the 'black box' of supervisors' effects on the selection for training participation is rather unexplored. In this chapter, I will provide a step towards closing this gap, using the Demopass data.

5.2 Screening and signalling in internal labour markets

From my point of view, there is no doubt that screening occurs in internal labour markets. Although supervisors are confronted with a lot of information, they often miss relevant details on individuals' real skills, willingness to train, productivity or further training expectations. Supervisors cannot be sure about the learning capabilities of an individual, but they can observe a large number of personal data in the form of easily observable characteristics and attributes. Gender, age, education or migration background can be used as screening devices for filtering employees with different abilities.

Supervisors who seek to maximize performance or expected profit might discriminate against employees if they believe them to be less qualified (cf. Arrow 1973; Phelps 1972; Spence 1973). They often base their decisions on previous experience with individuals that showed similar characteristics, or they make their judgements on the basis of average characteristics which are typical for the group. Often, information is simply based on prejudices. Hence, they do not discriminate against single individuals, but against a whole group of employees with common characteristics. For this sort of statistical discrimination, England and Lewin (1989, 1992) suggested the term 'error discrimination', to describe the behaviour of supervisors who underestimate the average abilities of a group and, based on these false expectations, are less willing to support group members in their training efforts. In the case of further training, the error about group differences might mean that men and women, or younger and older employees, are expected to differ in their further training ability, when in fact no differences exist. The results of research on plasticity over the life span, for example, showed that the majority of healthy older adults are able to improve their performance after a few sessions of training or practice (Baltes et al. 2006). Thus,

employees with a higher training willingness or ability than their colleagues are at risk of becoming victims of error discrimination.

Especially educational credentials serve as a screening device in further training, in that they sort out individuals of different abilities (Bills 1988a). They empower higher skilled employees in occupational and firm-internal recruitments. For supervisors, credentials are of great informational value and can reduce their uncertainties about team members' training capabilities (Brown 2001); credentials signal a certain probability for a fit between expectations and actual performance (Seibert and Solga 2005). The informational value of educational credentials might perhaps be more important for job hires, but they still have some relevance for further training decisions and promotions. For example, Bills (1988b) reported results from case studies of six Chicago organizations, where more than 50 percent of managers who assigned promotions considered years of schooling or area of specialization to be an important factor. This can be explained by mainly two factors:

First, self-selection processes can play a role. As I have already argued in chapter 2, employees normally have a stronger incentive to avoid downward social mobility than to pursue upward mobility (cf. Breen and Goldthorpe 1997; Need and de Jong 2001). Employees with a high educational background try to maximize the chances to hold their job status, whereas employees with a medium educational background try to avoid a status decline, and those employees with only a low educational background have no or only small incentives. In comparison to their higher skilled colleagues, they have no or only a small risk of status decline. Their jobs can be done with any kind of educational degree, often also without any degree. Additionally, employees with an advantaged educational background often also show a higher learning ability, because the cultural and economic resources of their social backgrounds can give a 'push' towards more training (Gambetta 1987), give orientation, and facilitate a better insight into general perspectives of the labour market.

Second, supervisors and their firms rely on the educational system and its filtering function for the labour market. Schools, universities, and the vocational system have enough time to observe pupils' educational ability, competence and other attributes; and sort them into different education tracks accordingly. To sum up, educational attainment and time spent in education often serve as a proxy for higher educational motivation or productivity (Riley 1976), as well as for positive characteristics like a stronger sense for responsibility or reliability (Graff 1996). As Brown (2001) argued, supervisors accept educational degrees as a representation of something else, such as substantive knowledge, trustworthiness or loyalty. Direct information about these characteristics would be quite difficult and expensive to acquire, but Berg (1971) insisted that there is little

evidence that better educated employees actually show higher capability than their less educated colleagues. However, in general, from the supervisor's viewpoint an individual certified to be more valuable is more valuable. Thus, screening might have productivity returns, but it definitely tends to manifest the persistent inequality in the employment market (Stiglitz 1975). Those employees who are already disadvantaged in the labour market tend to receive less employer-sponsored training, leading to poorer career prospects, lower wages and less employability (Lassnigg 2007), whereas employees with an already high educational background tend to receive more and more education ('Matthew Effect'). The discussion can be summarized in my **first hypothesis**, namely that supervisors filter their co-workers using the guideline of educational certificates as a proxy for the actual willingness to train. Higher educated employees are expected to be better prepared for training participation than their lower educated colleagues.

Of course, it is also reasonable to argue that employees with higher self-perceived willingness to train have an interest to spend resources to provide their supervisors with this information (Stiglitz 1975; Riley 1976). This may lead to a self-selection process, which brings employees with higher self-perceived willingness to the attention of their supervisors, and this will sort out colleagues with lower willingness to train. They may bridge the 'structural hole' (Burt 1992, 1997) between supervisors and employees and may profit from this position within the firm's social network by having higher supervisor support and better promotion chances. However, higher self-ratings relative to the ratings of others may also face the problem of social desirability. Empirical studies have shown that employees who provided inflated self-ratings are in fact poorer performers (cf. Atwater et al. 1998). This fact can increase supervisors' uncertainty about an individual's real willingness to train. Hence, in my **second hypothesis** I assume that educational screening by supervisors mainly occurs for employees who provide a higher self-rating as compared to others in the working team.

Still, screening for age, gender, or migration background may be even more discriminating than education. In contrast to education as an alterable signal in which employees can invest over their life course, Spence (1973) defined the three criteria age, gender and migration background as fixed attributes or indices. All three groups, elderly, women and migrants, are often afflicted with stereotypes and have only poor chances of overcoming these patterns. Many supervisors have an implicit or explicit 'taste for discrimination' (Becker 1971) and are prejudiced against members of these particular groups. I have already mentioned the well-known age stereotypes. Additionally, employers' taste for discrimination against women can be caused by the apprehension that women have more difficulties in balancing their career and family than their male colleagues. They may

argue that time-insensitive family responsibilities are only hardly compatible with further training efforts. Also, discrimination against migrants and a stronger supervisor's preference for native co-workers can be explained mainly by an ethnicized expectation of employees' performance. In many cases, supervisors assume poorer language skills, learning competence, social skills, as well as a lower work ethic in terms of punctuality or effort (Seibert and Solga 2005). However, apart from this theoretical assumption, I do not expect any significant effect for migration status and gender. Any possible discrimination of migrants almost disappears when controlling for education and the dataset also shows no distinct job segregation of migrants. Instead, they are integrated on different educational levels and are not expected to differ from their native colleagues. In addition, gender differentiations mainly result from occupational characteristics and within the same firm and working group women are not expected to differ from their male colleagues. Nevertheless I expect in my **third hypothesis** that age still plays a role in firm-internal screening processes. Missing real information, supervisors follow established age stereotypes and have lower expectations of older employees' willingness to train (cf. Levy 2003). They believe that these employees do not want to learn anymore and therefore give less support and encouragement to this group (Maurer et al. 2003).

To sum up, supervisors may be subject to leniency (Schriesheim 1979) and simply tend to favour their 'in-group' at the expense of other groups in terms of own evaluation or supervisor support (Becker 1971). Previous research by Dasgupta and others (2004) clearly reported people's tendency to associate positive attributes with people of the same age or education more easily than with out-groups, and the other way round, to associate negative characteristics more easily with out-group members than with members of the same group. Thus, based on the discussion above my **fourth hypothesis** would be that screening effects vary between in-group and out-group fellows. Whereas positive screening effects are strengthened for in-group members, discrimination is more likely for out-group members.

Implicit beliefs and stereotypes are omnipresent in the daily working life. However, as I have argued above, these prejudices are especially prevalent in large working teams or groups with frequent fluctuation. In smaller working teams with fewer personnel fluctuations supervisors may have the opportunity to learn more about the true capabilities of their team members, which makes the informational value of educational credentials and age less important. Therefore, I will finally test my **fifth hypothesis**, namely that smaller team size and longer joint duration of a supervisor-employee relationship weaken potential screening effects.

5.3 Operationalization of theoretical constructs

For each employee I asked supervisors to rate how willing she/he was to train. Ratings were given on a five-point scale from 1 'Very good' to 5 'Inadequate'. Additionally, employees answered four learning goal orientation items from Button et al. (1996) (please see the Appendix for a complete list), which were averaged to form a single score for subjective willingness to train. Based on these two items I created a typology of fits and misfits between supervisor's opinions on willingness to train and employees' self-perception. I centered both variables on the group mean, because I was mainly interested in the relative standing within the work group and people often tend to consider as relevant only the standards of the other people in their group (Burstein 1980).

Figure 18: Fit/Misfit in training willingness expectations

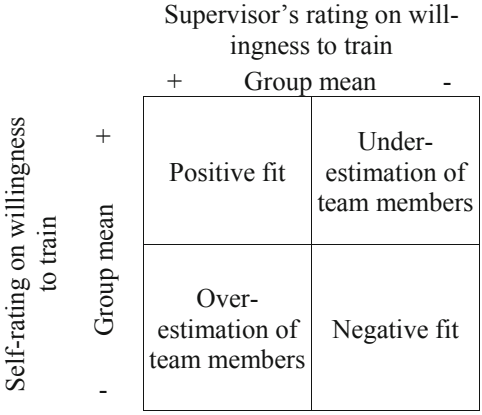


Figure 18 depicts this set of fits which I used as a structure for employing a multinomial logistic regression in order to model the supervisor's decision process. The two fields on the left are of special interest for my research question. In both fields, supervisors rate employees' willingness to train higher than the group mean, but the fields differ in employees' own opinions on their willingness to train. While in the upper left field, as a positive and effective fit, both supervisor's and self-ratings are high, employees feel less willing to train in the lower left field (Over-estimation of team members). Hence, I was able to examine potential influences on supervisors' opinions, while holding employees' expectations constant. To conclude, the lower field on the right shows a negative fit.

Employees show a lower learning goal orientation than the group mean, and their supervisors subscribe to that view. Finally, the upper right field (Underestimation of team members) hosts all employees with a higher self-perceived learning goal orientation, but lower expectations by their supervisors.

I included several covariates to capture potential screening devices: educational background, age, gender, migration background, and previous further training during the past 12 months. Due to my data structure, I decided to include a dummy variable for education. Employees with low and medium education constituted the reference category for their higher educated colleagues who hold at least 'Abitur'. I decided to center employees' age on the group mean, because I was mainly interested in the screening effect for employees above team's mean age. Also, I checked for possible non-linear effects, but the relationship proved to be linear. A dummy item was used to differentiate between men and women, as well as between employees with and without migration background. Employees with at least one parent born in a foreign country outside Western Europe were coded as migrant. Another dummy variable distinguished between non-participants and participants in further training during the last 12 months.

To control as much as possible for unobserved variance in employees' self-ratings, I also introduced information on positive affectivity, employees' expectations on the importance of further training and related direct and indirect costs. All variables have already been established in the previous chapters. First, I used the mean of 10 items for positive affectivity taken from Kessler and Staudinger (2009). For example, employees were asked to rate how often during the last few weeks they had felt at work 'euphoric', 'relaxed' or 'full of élan'. Second, to capture perceived importance of further training participation, the Demopass project asked the participants in the survey for a rating of different goals, which might be important reasons for a participation in further training. The original items were taken from the German Socio-Economic Panel Study (GSOEP) (Wagner et al. 2007) which I supplemented by a five-point scale. Responses to eight items were averaged to form a single score for perceived training importance. Finally, for the assessment of expected costs I used an index of six items from the German Berichtssystem Weiterbildung IX (Kuwan et al. 2006), measuring both direct and indirect costs of further training. On a five-point scale, employees were asked for their agreement with several potential reasons for non-participation. For all listed control variables, the Appendix reports the underlying items.

Of course, the effect of screening can also be influenced by supervisors' characteristics. Hence, I included information on supervisors' educational background, age, and gender into my analysis. I did not use the direct information of education and age, but included dummy items for common group belonging

(1=same age/education group). Supervisors and employees with an age difference of less than 5 years defined the common age group. Furthermore, I controlled for supervisors' attitude towards further training and their evaluation of potential benefits from further training for the firm. For the former information, I used a single item in which supervisors were asked if they can agree with the statement that 'it is taken for granted that employees always apply new knowledge and skills'. Answers ranged from 1 'Do not agree' to 5 'Agree'. The single item was adapted from the General Training Climate Scale (GTCS) by Tracey and Tews (2005). For the measurement of potential benefits, I included a single item and answers ranged from 0 'No benefit' to 10 'High benefit'.

Finally, I included supervisors' ratings of overall job performance, joint duration of supervisor-employee relationship and team size as additional control variables. For the latter I used the information on real team size given by the supervisors, instead of the smaller number of survey-participants nested in working teams. While I centered team size on the grand mean, I again decided to center supervisors' rating of job performance and the information on joint duration on the group mean. Especially supervisors' judgements on job performance are always relative to the average of the group, they tend to consider as relevant only the standards of the other employees in their working group (Davis 1966; Gambetta 1987).

5.4 Method of analysis

As in the previous chapters, I used the Demopass data for my analysis and imputed for missing values (see chapter 3). I dropped working groups with less than four members and lost some cases due to denied supervisor interviews. The final data set includes data from 717 employees nested in 73 working groups. Table 11 lists the descriptive statistics for all variables.

As aforementioned, I employed a multinomial logistic regression model (MLM) with two levels to model supervisors' decision processes. This method allows me to estimate the likelihood of a positive supervisor evaluation by incorporating the influence of employees' self-perceived learning goal orientations (cf. Schimpl-Neimanns 2000; Breen and Jonsson 2000; Long and Freese 2003). I restricted the analysis to the three most interesting relationships between an underestimation of team members and a positive fit, a negative fit and a positive fit, as well as between a negative fit and an overestimation of team members. The first two relationships describe the likelihood of ending up in a positive fit between self-rating and supervisor rating. From my point of view, effectiveness of further training is highest for employees ending up in this field. However, I was

Table 11: Descriptive statistics for chapter 5

	Min/Max	Mean	SD
Low education	0/1	0.15	0.36
Medium education	0/1	0.36	0.48
High education	0/1	0.48	0.50
Age	21/62	38.70	8.65
Gender (1=female)	0/1	0.28	0.45
Migration background (1=Yes)	0/1	0.14	0.35
Previous further training /last 12 months	0/1	0.46	0.50
Positive affectivity	1/5	3.02	0.59
Perceived importance of further training	1/5	3.97	0.67
Perceived direct and indirect costs	1/5	2.82	0.88
Supervisor: Low education	0/1	0.08	0.28
Supervisor: Medium education	0/1	0.26	0.44
Supervisor: High education	0/1	0.66	0.47
Supervisor: Age	31/59	43.50	5.73
Supervisor: Gender (1=female)	0/1	0.06	0.23
Supervisors: Attitudes towards further training	1/5	4.14	0.96
Supervisor: Benefits from further training	3/10	8.21	1.44
Supervisor: Evaluation of job performance	1/7	5.26	1.22
Team size	4/26	11.48	4.48
Joint duration of supervisor-employee relationship/years	0.04/17	4.90	3.51

also interested in determinants for a positive supervisor rating for those employees showing a lower self-rating than their team colleagues. With regard to the role of supervisors in strengthening further training, the results in model 3 are even more important. For the sake of completeness, I will add also the results of the relationship between an underestimation and an overestimation. The multinomial logistic regression model is similar to a series of binary logit models for all possible relationships among the four fields in figure 17, but the results differ slightly. The problem of binary logit models is that each model is based on a different sub sample. In comparison, multinomial models use the complete sample and the results in table 12 are related to the log odds of all other transitions as compared with the base outcome.

Unfortunately, multinomial logistic regression models do not allow for the correct estimation of interaction effects. Ai and Norton (2003) and Norton et al. (2004) argued that interaction effects are difficult to interpret in all non-linear

models, because interaction effects would require computing cross derivatives of the expected value of the outcome variable. Additionally, a test for significance must be based on the estimated cross-partial derivative; a test based on the coefficients of the interaction term would be misleading. Fortunately, Norton et al. 2004) have developed the inteff-routine for STATA, which can deal with the problems mentioned for binary logit models and provides corrected coefficients and standard errors for interaction effects. Thus, I decided to use three binary models for testing the likelihood of getting a better supervisor rating versus a poorer rating. I split up the sample in those having a higher self-rating on further training willingness and those having a lower self-rating, and in a third model I analyzed transitions between a negative fit and a positive fit. I tested for interaction effects of employees' age and educational background with team size and common job experience with the supervisor.

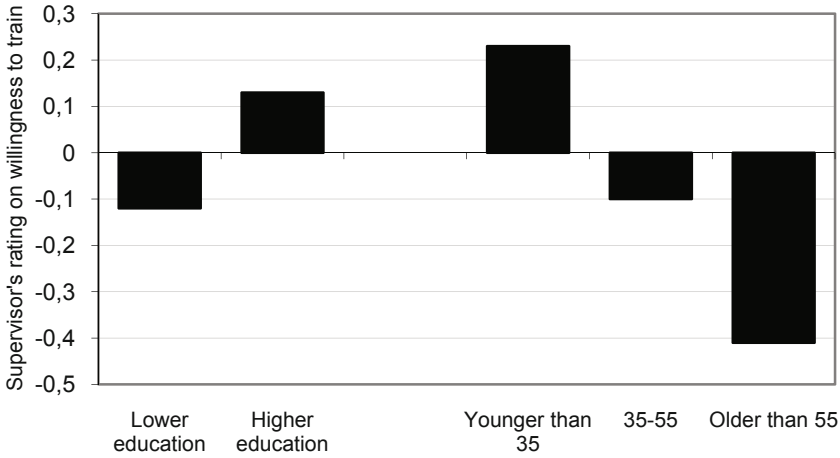
5.5 Results and discussion

It was my aim to examine what factors influence supervisors' opinions on their team members' willingness to train. I argued that supervisors' responsibility in firm-internal training is increasing and that they are taking over more and more functions of a training manager. However, I also expected that supervisors often do not have the resources, time and training for this challenging task. Indeed, they often have to decide about their team members' potential training measures without having full information about their real training capabilities. In many cases they may therefore make their decisions based on easily observable characteristics and attributes.

Figure 19 gives a first impression of the screening processes in working teams. In line with my assumptions, the descriptive charts make clear that both older and lower educated employees were rated as less willing to train than the average employee in the firm, and even employees in the 35-55 age group got lower ratings than their younger colleagues below age 35. Still, for validating this result, again multivariate regression models would be necessary.

First of all, I tested whether supervisors follow common policies or strategies in their further training support. A check of the variance components in my main model showed only minor variance between the groups, but higher variance within the groups. Additionally, I checked for an agreement pattern within the supervisor ratings, but the majority of supervisors showed a rather low agreement in their ratings. I can conclude that most variation in my dependent variable can be explained by individual characteristics of team members.

Figure 19: Supervisor ratings on willingness to train for different groups (centered on the grand mean)



The findings of the multinomial logistic regression models provide clear support for my hypotheses on firms' internal further training practice. In accordance with my first hypothesis, table 12 shows that signalling effects of higher education strongly correlated with supervisors' opinions on employees' willingness to train. The likelihood of ending up in a positive fit, namely to get a better supervisor rating, was significantly higher for higher educated employees than for their colleagues with at most a degree from the German 'Realschule'. Although I could not test whether there is real discrimination going on, the results seem to confirm the manifest 'Matthew Effect' (Merton 1968; 1995) in the educational system, namely that educational attention will usually be given to employees who are higher educated and often have already participated in training.

Of course, from the supervisor's point of view, employees with higher willingness to train can be in fact poor performers. Since that may be true also for higher educated employees, the results for educational background in the first two models can be interpreted as an additional filtering function by the supervisor. I take it for granted that employees with higher self-perceived willingness to train provide their supervisors with this information, but higher willingness to train does not necessarily correlate with higher training effectiveness and capability.

Table 12: Determinants for positive supervisor rating on willingness to train, estimated with multinomial logistic regression

	(1) Under-Estimation to Positive Fit		(2) Negative Fit to Positive Fit		(3) Negative Fit to Over-Estimation		(4) Under-Estimation to Over-Estimation	
Higher education[1]	0.94***	(0.28)	0.91***	(0.25)	0.64*	(0.31)	0.67*	(0.33)
Age	-0.04**	(0.02)	-0.06***	(0.02)	-0.08***	(0.02)	-0.07***	(0.02)
Gender (1=female)	-0.00	(0.27)	-0.11	(0.30)	-0.03	(0.28)	0.08	(0.27)
Migration background (1=Yes)	-0.35	(0.35)	0.16	(0.33)	-0.10	(0.37)	-0.61	(0.37)
Previous further training /12 months	0.18	(0.27)	0.18	(0.27)	0.34	(0.27)	0.35	(0.26)
Positive affectivity	-0.12	(0.23)	0.28	(0.21)	-0.21	(0.18)	-0.61**	(0.23)
Importance of further training	0.03	(0.20)	0.88***	(0.19)	0.01	(0.16)	-0.83***	(0.20)
Direct and indirect costs	-0.11	(0.16)	-0.36**	(0.14)	-0.03	(0.13)	0.22	(0.15)
Supervisor:								
- Same educational background	-0.37	(0.30)	-0.50	(0.29)	-0.57	(0.32)	-0.44	(0.37)
- Same age group	-0.42	(0.27)	-0.03	(0.25)	0.27	(0.31)	-0.12	(0.28)
- Gender (1=female)	0.31	(0.58)	-0.05	(0.69)	-0.46	(0.71)	-0.10	(0.56)
- Attitude towards further training	-0.25	(0.14)	-0.24	(0.18)	-0.16	(0.17)	-0.16	(0.14)
- Cost-benefit ratio of further training	0.06	(0.09)	0.11	(0.11)	-0.04	(0.11)	-0.09	(0.08)
Evaluation of job performance	0.70***	(0.12)	0.76***	(0.12)	0.68***	(0.14)	0.62***	(0.13)
Joint duration	-0.11*	(0.05)	-0.13**	(0.05)	-0.09	(0.06)	-0.07	(0.06)
Team Size	0.06	(0.03)	0.04	(0.03)	0.03	(0.04)	0.05	(0.03)
N	717							
Pseudo-R^2	0.13							

Standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001. Controlled for firms. [1] Reference: Lower education

To avoid this uncertainty problem, supervisors may follow well-known stereotypes for assessing their opinions on the training capability of their team members. They rely more on the efficiency of higher educated employees than of those with lower education. However, in doing so, supervisors increase educational inequality.

But what is the real rationale behind the supervisors' opinions? As Kenneth Arrow argued in 1973, the filtering role of education might have a productivity-adding role from the supervisor's viewpoint, educational attainment may signal information about the employees' productivity (Riley 1976). Or do supervisors have real prejudices against lower skilled team members, in other words, a taste for discrimination? To answer this question, I added supervisors' rating of overall job performance to the model. Not very surprisingly, the coefficients showed the expected positive direction. Employees with higher performance ratings had also a higher likelihood of a positive assessment of their training willingness by their supervisors. Even more interestingly, also under control for evaluation of job performance, the effects for educational background remained stable. As I also controlled for potential in-group effects, I may conclude that the filtering function of education itself has a high impact on the likelihood of ending up in a positive fit or not.

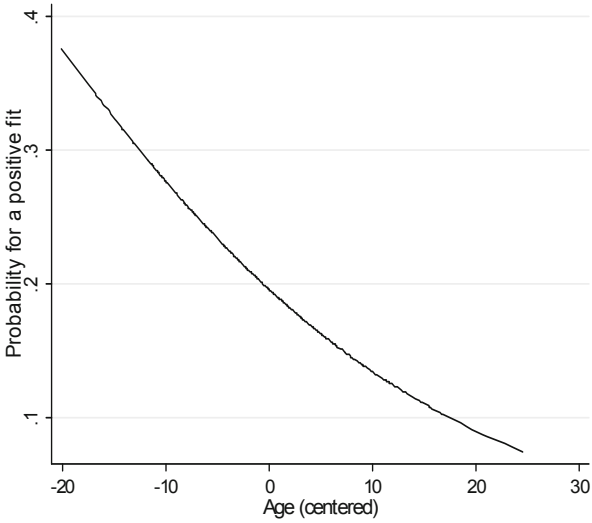
In line with my second hypothesis, educational background had a smaller effect on supervisor ratings for employees with self-ratings below the team mean. In their case, social desirability effects played no role, instead they probably showed a lower willingness to train because of a lower confidence in their own training competence. As Bandura (1986) pointed out, people are more likely to engage in tasks or behaviours if they expect to perform successfully. In such situations with lower perceived willingness to train, supervisors can compensate for potential doubts and motivate their employees.

The results of the second model in table 12 clearly show that employees' self-ratings on willingness to train highly interact with their perceptions of potential costs and the importance of further training. In 1964, Gary Becker argued that in general individuals are more likely to participate in training if they perceive higher benefits and lower costs. Indeed, the results show that the likelihood of a transition from a negative fit to a positive fit strongly increased with higher perceived importance of training participation, but decreased with higher cost expectations. Not surprisingly, model 4 gives us the information that predictors for an overestimation instead of an underestimation are not only people's educational background and age, but also a less positive affectivity and a lower perceived importance of further training.

All models showed clear age effects. It is quite embarrassing that age stereotypes seem to be prevalent in firm-internal further training strategies, inde-

pendent of employees' self-ratings on their willingness to train and after controlling for the evaluation of overall job performance. The single effect per year is small, but the cumulative effect has clear consequences for lifelong learning. The chance for a positive supervisor rating and therewith the chance for higher supervisor support decreased with each year of age. While the youngest employees in my sample have a chance for a positive fit of nearly 40 percent, the chance of the oldest employees is only two percent (see figure 20).

Figure 20: Chance for a positive fit. Clear cumulative age effects with consequences for lifelong learning



Source: Demopass

In the reverse argumentation, the results depicted the clear pattern that older employees above the team's mean age have a significantly higher risk of getting a poor supervisor rating. Older employees beyond a certain point of age can in fact be less willing to train. Shortly before retirement they do not see any need for additional training. Still, for older employees with self-ratings above the team average, the results give some evidence for existing implicit or even explicit age stereotypes in firm-internal further training. With regard to this finding, supervisors should rethink their attitude toward older employees. They have to keep in mind that older employees are affected by a reduced speed of information recep-

tion, a reduced ability to react and an increased risk for jobs under time pressure, but that they also dispose of higher grades of crystallized intelligence like discernment and a higher capability for integrative thinking. Age alone does not predict the level of functioning. Rather, intelligence allows successful adaptations to the new environment and future challenges. Already Cicero argued that old employees have mind, sense and wisdom.

The age effect was stronger for employees with self-ratings below the team average. They had a lower likelihood of a positive supervisor rating than their colleagues who expressed a high willingness to train. However, as I showed in the previous chapter, these are often those employees who need, in fact, special support from their supervisors. The data can give the impression that they do not get this support.

In my fourth hypothesis, I have argued that supervisors may favour employees of the same age or educational background as their own. However, the results did not confirm my assumption that supervisors are more likely to associate positive attributes with staff members of the same in-group. Employees did not have a higher likelihood of a better supervisor rating if they belonged to the same age or education group. Thus, the supervisor ratings seem to be more dependent on perceptions of an employee's age and educational background than on their and the supervisors' real age and educational background.

Finally, I tested whether team size or a longer joint duration of the supervisor-employee relationship have an influence on the likelihood of getting a positive supervisor rating. Team size had no significant influence at all, and a longer joint duration of supervisor-employee relationship showed a negative significant influence on the likelihood of ending up in a positive fit, namely for the chance to get a positive supervisor rating while having a high self-perception. However, an interpretation of the mean effect of both variables holding all other factors constant is quite meaningless. Instead, as formulated in my fifth hypothesis, a meaningful interpretation of team size and joint duration of supervisor-employee relationship makes sense only with regard to their effect on the discrimination pattern I have described in this paper. Following this argumentation, I examined whether smaller team size or longer joint duration decrease the screening effects of educational background and age. The answer is negative, no single interaction effect in my binary logit models showed any significance (please see the Appendix for all models). Thus, I can conclude that smaller team size has no reducing effect on the screening effects of age and education, and supervisors still rely on stereotypes even if they can dispose of more information about real capabilities than only educational degrees and employee's age.

5.6 Conclusion

It was the aim of this chapter to look for potential factors influencing supervisors' opinions of their team members' willingness to train. In the previous chapter, I showed that supervisors fulfill an important function in firm-internal further training strategies. They are not only gatekeepers and promoters of further training courses, they can also give orientation especially to those with fewer further training experiences. Supervisors can help older employees and those with less education to overcome potential doubts in their own training competence, but they can also deter them from training.

I found support for the well-known function of educational credentials as a screening device. Educational credentials seem to provide clear signals about employees' willingness to train. In all three models, the chances for higher educated employees to get a positive supervisor rating on willingness to train were significantly higher than the chances for their lower educated colleagues. I also detected well-known age stereotypes, which follow the popular belief that the ability to learn decreases with age. The coefficients were small, but their cumulative effect is of high importance for 'silver' workers. Surprisingly, all interaction effects with team size and joint supervisor-employee relationships have proved to be insignificant. Hence, older employees and those with lower educational background cannot profit from additional information supervisors can gain about them in smaller working teams or during a longer joint job tenure.

The findings are of special importance, although I was unable to test whether supervisors really discriminate against older and less educated employees. The results give us only correlations, so longitudinal data would be necessary for further examinations. Still, I was able to show that supervisors have lower opinions on willingness to train for groups who need in fact more support to attain the same training gains as their younger and higher educated colleagues. Supervisors prefer clear indicators for the information that their employees can perform a special task, but from my point of view, it is also reasonable to argue that supervisors' prejudices can have consequences for the effectiveness of training policies. Thus, regarding the upcoming demographic change and predicted lack of skilled labour, a rethinking concerning possible education and age discrimination is important for future further training enhancements, as is an involvement of supervisors in further training planning.

6 Concluding remarks

The findings of my dissertation provide new knowledge about subjective learning expectations as an important precondition for further training participation. The results supported the Breen-Goldthorpe model for explaining educational differentials in further training. Individuals act under 'bounded rationality', they are unable to estimate their potential costs and benefits of further training decisions. These are therefore not only determined by objective reasons like potential costs or returns, but depend also on subjective expectations, such as confidence in an employee's own training competence or the expected likelihood of a status decline. High confidence in one's own training competence is especially important for older employees and those with lower educational background. Without confidence relatively small costs can result in a high investment risk and prevent these people from training participation.

The analysis also clearly showed that confidence in one's own training competence is not an immutable characteristic and can be improved by supervisor support, managerial interventions and a positive training climate. Especially older and less educated non-participants benefit from higher perceived management support. Hence, employers should rethink their strategies and adapt their training offers to this situation: In times when there is a shortage of skilled employees, maintaining the competence of older employees will become more and more important, as will be enhancing the competence of lower skilled employees through further training.

Further training offers should be more learner-oriented; firm policies should pay more attention to individual learning competence and training demands should fit existing capabilities and performance. The learning situation should follow experience and relevant work situations of training participants. With only small effort firms have the possibility to affect employees' training expectations and to create a different learning environment.

Most employees are not notorious non-participants. Under certain conditions they are willing to participate in a training course. In the Demopass questionnaire we had the opportunity to question previous non-participants in further training about their preconditions for future participation. The answers are shown in figure 21. For a better visualization of the results, I centered the answers (from 1 'Does not apply' to 5 'Applies) on the grand mean.

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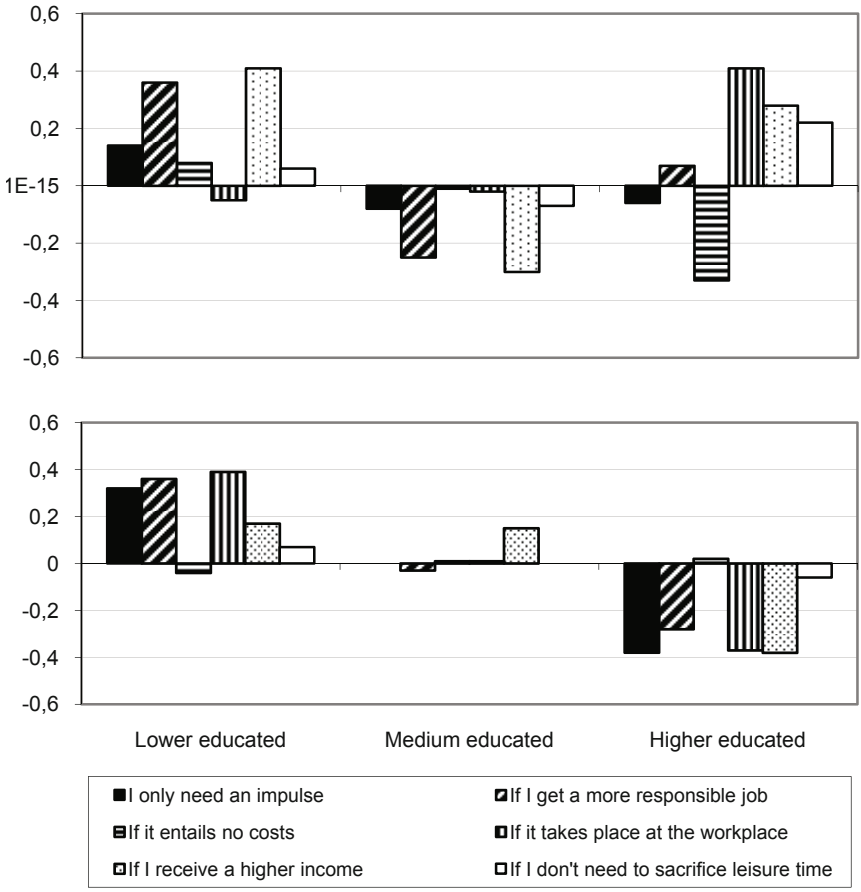
Figure 21: Previous Non-Participants in further training: Preconditions for future participation. Centered on the grand mean.



From the first chart it becomes clear that in comparison to the average non-participant, further training at the workplace had a higher importance for older employees aged 55 years plus. Also, they were more likely to participate in further training for a higher income and if they do not need to sacrifice leisure time. A higher income and a more responsible job were less important for medium-aged employees, whereas it is the opposite case for their younger colleagues. Moreover, they are willing to participate but need an impulse.

Similar to their older colleagues, further training at the workplace also had higher importance for lower educated employees. Additionally, they showed a higher importance for more responsible jobs and a higher income, but in comparison to their higher educated colleagues they were also more responsive to impulses from their supervisors or others. Interestingly, higher educated employees seemed to be more willing to train if a possible further training measure would entail no (additional) personal costs.

There is some scope for intra-firm policy changes, but the results of chapter 5 also give evidence for existing discrimination on the part of supervisors against both older and less educated employees, even though I cannot answer the question of whether there is real discrimination ongoing, or 'only' statistical discrimination. Still, firms should try to assemble as many employees as possible in a perfect fit between employees and supervisors, namely that employees and supervisors agree on employees' willingness to train. From a positive fit, very positive outcomes should result, such as higher productivity and better performance (Atwater et al. 1998). In practice, scheduled employee-supervisor talks once a year have proved to be a valuable tool for achieving a better fit. In my view, a higher responsibility for such an agreement rests with the supervisors. They have to encourage team members with lower self-perceptions and should not discriminate against such groups as lower educated and older employees, who are in fact quite interested in training. Unfortunately, in firm reality this interest is often ignored.

Sure, different studies with the Work Ability Index (WAI) show a constant decrease with age (BAuA 2009), and especially sensory functions or physical abilities tend to decline over the life course. Thus, age stereotypes are not completely false, but it is important to note that individual capacities can vary widely between different individuals, dependent on job tasks, job complexity, educational background, and age. Employees aged 60 years can show higher work ability than many of their younger colleagues, and an older trained employee can in fact outclass a younger but untrained colleague. Supervisors often do not realize this considerable variability within age classes nor that the 'average' older worker does not exist (Warr 1994). Moreover, not so much is known about the special needs of older employees and many employers or supervisors fail to recognize the older employees' different interests and needs.

They are, for example, more interested in informal training forms, whereas younger employees prefer formal further training (Schiersmann 2007). Table 13 shows the learning form preferences for different subgroups of the Demopass sample. The results might be a bit biased due to the firm selection, but they are still interesting.

Table 13: Preferences for learning forms.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Lower education	Reference group						
Med. education	0.22	0.14	-0.19	-0.09	-0.08	0.03	**-0.51****
	(0.14)	(0.13)	(0.12)	(0.08)	(0.10)	(0.14)	(0.15)
Higher education	**0.46****	0.19	**-0.43****	**-0.21***	-0.18	-0.24	-0.29
	(0.15)	(0.15)	(0.14)	(0.10)	(0.12)	(0.15)	(0.18)
Age: < 35 years	Reference group						
Age: 35-55 years	0.15	**0.35****	0.06	0.04	-0.07	-0.01	-0.07
	(0.11)	(0.11)	(0.10)	(0.07)	(0.08)	(0.11)	(0.12)
Age: > 55 years	**0.74****	0.14	**-0.45***	-0.17	-0.09	0.12	-0.00
	(0.24)	(0.23)	(0.21)	(0.15)	(0.18)	(0.23)	(0.29)
Job Tenure	**-0.01***	-0.01	-0.00	**-0.01***	-0.00	-0.00	**-0.02****
	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
Previous further	0.15	**0.43*****	0.04	**0.13***	0.06	0.10	0.16
training	(0.09)	(0.09)	(0.08)	(0.06)	(0.07)	(0.09)	(0.10)
Migrant	-0.01	-0.03	0.16	-0.09	0.06	**0.33****	**0.43****
	(0.12)	(0.12)	(0.11)	(0.08)	(0.09)	(0.12)	(0.14)
Female	**-0.28****	**0.23***	**0.51*****	0.07	0.04	-0.09	**0.26***
	(0.10)	(0.10)	(0.09)	(0.06)	(0.08)	(0.10)	(0.12)
Blue-White collar	0.24	**0.53*****	0.07	**0.23****	0.04	0.16	-0.19
(1=White Collar)	(0.13)	(0.13)	(0.11)	(0.08)	(0.10)	(0.13)	(0.15)

Results of OLS-Regressions.
*Standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001.*

1=Reading prof. publications; 2=Participation in job-related external training; 3=Learning at the workplace; 4=Exchange of experiences with colleagues; 5=Learning by doing; 6=Computer- or internet based learning programs; 7= Systematic job rotation

The employees rated a list of different learning forms on whether these were suitable for them or not (answers ranged from 1 'Not at all' to 5 'Highly'). The table shows high variance between the different education and age groups. For example, higher educated employees preferred the reading of professional publications, while lower skilled colleagues preferred to learn at the workplace, the exchange with colleagues and systematic job rotation. In comparison to their younger colleagues, employees aged 55 years plus showed higher preferences for reading professional literature and employees aged 35-55 years preferred to participate in job-related external training courses. The youngest employees in the sample asked for more learning at the workplace. Interestingly, longer job tenure seemed to lead to lower preferences for reading of professional publications,

exchange of experiences and systematic job rotation, while previous further training participants would like to participate in external training courses and to share their experiences with colleagues.

Still, many supervisors follow the common perception that older employees automatically become less motivated and worth training. This misconception is connected with the risk of a self-fulfilling prophecy since these beliefs also influence the older employees' own perceptions and expectations about aging (Maurer et al. 2003). They tend to conform more and more to their employer's or supervisors' expectations, even though they are quite able to compensate for age-related deficits (cf. Baltes and Baltes 1990). Physical capabilities or cognitive abilities like numerical ability or perceptual speed (fluid intelligence) decline over the life course, but the work output of older employees is often equal to that of younger ones. It is a common finding in literature that on average older employees show higher levels of conscientiousness, loyalty, work ethic, emotional stability, and agreeableness (cf. Hedge 2006; Staudinger and Baumert 2007). They can dispose of more working experience and knowledge (crystallized intelligence) that can help compensate for any age-related loss in other abilities (Baltes et al. 2006). A good example is provided by a study by Salthouse (1984) on the effects of age in typing. He showed that older typists were slower in tapping rate and reaction time, but did not differ from their younger colleagues in the speed of typing, because they read ahead farther in advance of the current character than younger typists.

The majority of older employees can strengthen their fluid intelligence after a few sessions of task-related training (Baltes et al. 1986; Willis and Schaie 1986). They may show a lower learning speed, but learn more accurately than their younger colleagues and are better able to integrate the new knowledge into their working experiences. Hence, it should be worthwhile for firms to support older employees in further training, because they could help to meet the upcoming challenges of the demographic change and the expected lack of skilled labour. Many firms do not use this potential yet.

To foster lifelong learning in the firm, supportive learning cultures are needed. These new learning cultures should allow more self-directed training at different learning speeds and enough time for further training. Further training should be integrated into the daily work, be connected with previous working experiences and highlight the practical relevance (Clemens 2001). They should also include younger employees at the beginning of their working life, especially those employees with a lower educational background. Fluid intelligence starts to decline around age 25, thus lifelong learning should start pretty early. With positive learning experiences at a younger age, people will also be more willing and able to participate in further training at an older age.

Most employers, especially larger firms with their own HR departments, already offer a wide range of further training measures that cover the specific training requirements of older and less educated employees. In smaller firms, it is more difficult to meet these demands, simply because of the firm size. Larger firms, like the three firms in the Demopass survey, conduct systematic demand analyses with qualification talks and supervisor evaluations, but they are also faced with the problem that many specific training offers have to be cancelled for lack of interest. However, while conducting expert interviews with HR managers of the three firms I got the impression that they emphasise the training needs of older and less educated employees, but do not have a clear plan on how to reach the target groups. They referred to a detailed further training program with a large variety of offers, but seemed to fail in communicating it to their staff.

At this point, works councils could act as opinion leaders; they can motivate their fellows to participate more often in further training. The German Works Constitution Act entitles the works councils to codetermine in further training issues, but codifies also some responsibilities. “The employer and the works council shall promote the vocational training of the staff within the framework of the manpower planning for the Establishment and in collaboration with the bodies that are competent for vocational training and for the promotion of vocational training” (§ 96 (1) BetrVG). They shall ensure “that employees are given an opportunity to participate in vocational training programmes inside or outside the Establishment (...)” (§ 96 (2) BetrVG), and “the works council may propose employees or groups of employees of the Establishment for participation in such vocational training” (§ 98 (3) BetrVG).

However, in reality the existence of a works council does not lead to more further training (Jirjahn 2006). In the past, further training was not an important and 'stand-alone' action field for most works councils, but rather a supplement to firm agreements on different topics like job security or flexibility (Tippelt and von Hippel 2009). Bahnmüller and Fischbach (2006) reported for the metal and electrical industry in Baden-Württemberg that 58 percent of works councils did not have a special committee for further training issues. Perhaps as a result, in the same study 85 percent of works councils reported that they were not, or only little, involved in the demand analysis for further training, and 90 percent reported that they were not or only little involved in the development of work contexts which promote learning.

The main problem of interest representation of works councils is that all employees have different and specific interests, but works councils have to represent all these individual interests and try to transform them into collective action. In doing so, works councils are rational decision-makers and try to increase the benefits for their colleagues with as little as possible costs. However, in com-

plex bargaining situations, as in firm agreements, it is almost impossible to satisfy all interests. In such situations, relatively strong insider-groups try to strengthen their own position in the internal labour market at the cost of weak outsider-groups (Swinton 1977, Sengenberger 1979). Since works councils normally strive for re-election, one can assume that the job-stability of younger full-time employees have a higher importance for the works councils' work than further training participation of older employees.

Still, the results of my dissertation have clearly shown that supervisors play an important role in firms' further training practices. Supervisors take over more and more responsibilities of human resource management, e.g. in employee talks and with regard to performance related wages. They can give support and orientation in training, but they also tend to show more preferences for privileged groups like younger or higher educated employees, and a bias against employees from less privileged groups (Dasgupta 2004). They often have neither the resources and time, nor the knowledge required for their new responsibilities. As a consequence they may fall back into the well-known stereotypes about older and less educated employees, with the effect that neither group gets the support needed to engage more often in further training. Supervisors might also feel less of a need for special training support, if the general perception in the firm is that both older and less educated employees are less motivated or less able to train. These implicit stereotypes influence their daily behaviour. Thus, supervisor attitudes are a key problem in the implementation of job-related further training (Matthews 1999), and more supervisor training is probably the most important tool in reducing the existing stereotypes.

Supervisors are normally not trained as managers, and they often have problems in assessing the employees' true willingness to improve their skills and demand to train. However, they can be taught to recognize and avoid potential bias in their training decisions. Maurer and Rafuse (1993) suggested workshops or other training interventions to address the problem of stereotypes and potential effects on behaviour and decisions, as well as helping supervisors to understand and overcome existing stereotypes and unfair treatments. For example, such training can include information about how the benefits of an aging workforce affect the workplace, and helps recognizing the real capabilities of both older and less educated employees. Also, self-assessment of such misconceptions can help to correct existing stereotypes and reduce discrimination at the workplace (Hedge et al. 2006). Furthermore, supervisors need (better) social and communicative competence, because direct communication with subordinates and transparency about skill development are probably two of the most important and, at the same time, the easiest preconditions for encouraging both older and less educated employees to take part in further training. To sum up, it is possible with

relative little effort to make supervisors less susceptible to stereotype activation. Perhaps that is the step needed to break the vicious circle of having inadequate supply and demand in lifelong learning.

Unfortunately, the cross-sectional Demopass data does not allow for an examination of causal effects. Therefore, I cannot provide any information about the influence of supervisors' attitudes on the effective training participation of employees in their working team. However, the results have confirmed the assumptions I had derived from well-tested theories. For more detailed examination, representative datasets with several data points would be helpful. At least three time points would allow for separate measurements of supervisors' attitudes, employees' subjective expectations, and the effective training participation. Instead, all variables were measured at the same point in time. Still, at the moment the Demopass dataset provides the best opportunity for testing my hypotheses, and my findings provide fresh knowledge about the preconditions of further training. One of the advantages of the dataset is its hierarchical structure. While most of the other available datasets only provide either individual or firm data, the Demopass dataset combines employees' and supervisors' information and allows for a detailed look into the 'black-box' of supervisors' influence on employees' further training decisions.

One may criticize the use of subjective expectations as dependent variables in all three studies. It is a common argument that subjective expectations can only provide information of what people think or say, but not what people will really do. In general, I would agree that information from choice data is more desirable, but it does not necessarily enable us to understand people's underlying expectations on further training. Sometimes the actual further training participation is inconsistent with subjective intentions, for example if the training is mandatory. However, it was my interest to learn more about subjective expectations than about the final choice. At this point, I follow the argumentation of Ajzen and Fishbein (1980) that intention is a mental state that causally precedes behaviour if intention has not changed prior to performance of the behaviour.

Finally, some questions remain unanswered. First, I was unable to include other socio-cultural resources that are not directly related to the job but might also influence employees' attitudes or supervisors' opinions (e.g. family background or previous jobs). The strong effect for the evaluation of job performance in chapter 5 shows that supervisors are also led by an overall picture of their team members. Second, the sample was restricted to employees and working teams of only three firms from two different industrial sectors and can give only a first insight into the issue. A larger representative sample would be desirable, but such hierarchical data is very hard to collect in firms. This is even more so with comparative data from different national and industrial settings. The dataset

was restricted to German firms, but as a third point on my list I could add the question of whether the influences of educational credentials and age stereotypes differ between countries. For the effect of educational credentials, I would expect a higher relevance in the United States, where most job definitions and vocational training are undertaken within firms. In contrast to the US, the German educational system is much more differentiated in specific educational tracks with a clear link to specific occupations, and offers better preparation and qualifications for the working life (Breen et al. 1995). With regard to age stereotypes, the research by Harper et al. (2006) provides some interesting impulses. One question might be, whether there is a relationship between countries' mean attitudes toward aging and the support older employees receive in further training. The Scandinavian countries in particular, or the United States, would be interesting candidates for a case study. However, all three of these questions cannot be answered by this dissertation and are waiting for answers from further research.

Appendix

Overview of Survey Items

Important reasons for further training participation, adapted from GSOEP 2004 (Wagner et al. 2007)

1. Brush up on professional skills that have partly become obsolete.
2. Adjust to constant changes in the job.
3. Receive more qualifications as an attempt for further career.
4. Become acquainted with new subjects so as to not be too narrowly confined professionally.
5. Individual development
6. More job security

Learning goal orientation (Button et al. 1996)

1. The opportunity to learn new things is important to me.
2. I try hard to improve on my past performance.
3. The opportunity to extend the range of my abilities is important to me.
4. When I have difficulty solving a problem, I enjoy trying different approaches to see which one will work.

Supervisors' training attitudes, adapted from GTCS (Tracey and Tews 2005)

1. It is self-evident that employees always apply for new knowledge and skills.
2. I do not expect continuing technical excellence, it is sufficient if employees do their job.
3. Further training is not necessarily important for high level of job performance.
4. Only management discusses about further training.

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Reasons against further training, adapted from BSW IX (Kuwan et al. 2006)

1. If I have to give leisure time.
2. If it is exhausting.
3. If there are no job offers nearby.
4. If it entails costs or loss of earnings.
5. If I have no time due to job obligations.
6. If I have no time due to family obligations.

Positive affectivity, adapted from Kessler and Staudinger (2009)

1. Relaxed
2. Full of élan
3. Serene
4. Excited
5. Resting in oneself
6. Euphoric
7. At ease
8. Delighted
9. Relieved
10. Elated

Job autonomy, adapted from Thompson and Prottas (2006), Ahuja et al. (2007)

1. I have the freedom to decide what I do on my job.
2. I have a lot of say about what happens on my job.
3. I decide when I take breaks.
4. It is basically my own responsibility to decide how my job gets done.
5. I set my own schedule for completing assigned tasks.

Table 14: Determinants of confidence in one's own training competence. Test for selection bias, including the inverse mills ratio.

	(1)	(2)	(3)	(4)	(5)
Medium education[1]	0.26	0.78***	0.69***	0.62***	0.62***
	(0.74)	(0.13)	(0.10)	(0.10)	(0.11)
High education[1]	1.04***	0.93***	1.04***	0.89***	0.89***
	(0.12)	(0.11)	(0.11)	(0.11)	(0.11)
Age		-0.01	-0.01	-0.00	-0.00
		(0.00)	(0.00)	(0.00)	(0.00)
Gender (1=female)		0.18	-0.05	-0.05	-0.02
		(0.15)	(0.10)	(0.08)	(0.08)
Perceived management support			0.17**	0.12*	0.13*
			(0.06)	(0.05)	(0.05)
Working team's learning goal orientation				0.44**	0.41**
				(0.15)	(0.15)
Working team's previous further training part.				0.17	0.15
				(0.16)	(0.17)
Learning goal orientation				0.41***	0.35***
				(0.07)	(0.06)
Previous further training				0.20**	0.17*
				(0.08)	(0.08)
Expected cost constraints					-0.14***
					(0.04)
Negative job efficacy					-0.11*
					(0.05)
Job autonomy					-0.05
					(0.07)
Lambda	7.76	-3.29	0.90	0.84	0.66
	(14.07)	(2.44)	(1.68)	(0.72)	(0.69)
Constant	2.74***	2.84***	2.76***	2.64***	2.65***
	(0.17)	(0.13)	(0.13)	(0.12)	(0.13)
N	646	637	618	612	591
R^2	0.15	0.16	0.18	0.26	0.28

Standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001.
Controlled for firms. [1] Reference: Lower education

Table 15: Determinants for a transition from an underestimation to a positive fit, estimated with logistic regression

	(1)		(2)		(3)		(4)	
Higher education[1]	1.08***	(0.30)	1.06***	(0.28)	1.07***	(0.28)	1.07***	(0.28)
Age	-0.05*	(0.02)	-0.05**	(0.02)	-0.05**	(0.02)	-0.04*	(0.02)
Gender (1=female)	-0.10	(0.30)	-0.07	(0.29)	-0.09	(0.29)	-0.07	(0.29)
Migration background (1=Yes)	-0.40	(0.35)	-0.39	(0.34)	-0.40	(0.35)	-0.42	(0.35)
Previous further training /12 months	0.24	(0.29)	0.24	(0.29)	0.24	(0.29)	0.24	(0.29)
Positive affectivity	-0.07	(0.22)	-0.08	(0.22)	-0.07	(0.22)	-0.07	(0.21)
Importance of further training	0.04	(0.21)	0.04	(0.21)	0.04	(0.21)	0.03	(0.20)
Direct and indirect costs	-0.09	(0.16)	-0.09	(0.16)	-0.09	(0.16)	-0.10	(0.16)
Supervisor: Same educ. background	-0.49	(0.30)	-0.48	(0.30)	-0.48	(0.30)	-0.50	(0.30)
Supervisor: Same age group	-0.52	(0.28)	-0.53	(0.28)	-0.53	(0.28)	-0.51	(0.28)
Supervisor: Gender (1=female)	0.35	(0.64)	0.34	(0.63)	0.33	(0.63)	0.36	(0.63)
Supervisor: Attitude towards FT	-0.34*	(0.15)	-0.33*	(0.15)	-0.34*	(0.15)	-0.34*	(0.14)
Supervisor: Cost-benefit ratio of FT	0.09	(0.09)	0.09	(0.09)	0.09	(0.09)	0.09	(0.09)
Evaluation of job performance	0.68***	(0.11)	0.69***	(0.11)	0.69***	(0.11)	0.69***	(0.11)
Joint duration	-0.08	(0.05)	-0.08	(0.05)	-0.09	(0.05)	-0.06	(0.07)
Team Size	0.05	(0.03)	0.07	(0.04)	0.06	(0.03)	0.06	(0.03)
High education x Team Size	0.03	(0.07)						
Age x Team Size			-0.00	(0.00)				
High education x Joint duration					0.03	(0.10)		
Age x Joint duration							0.01	(0.01)
Constant	-1.62	(1.69)	-1.62	(1.69)	-1.61	(1.70)	-1.62	(1.68)
N	377		377		377		377	

Standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001. Controlled for firms. [1] Reference: Lower education

Table 16: Determinants for a transition from a negative fit to an overestimation, estimated with logistic regression

	(1)		(2)		(3)		(4)	
Higher education[1]	0.55	(0.31)	0.58	(0.31)	0.59	(0.31)	0.58	(0.30)
Age	-0.10***	(0.02)	-0.10***	(0.02)	-0.09***	(0.02)	-0.10***	(0.02)
Gender (1=female)	-0.07	(0.31)	-0.09	(0.31)	-0.08	(0.31)	-0.09	(0.31)
Migration background (1=Yes)	-0.11	(0.40)	-0.10	(0.40)	-0.09	(0.40)	-0.09	(0.40)
Previous further training /12 months	0.27	(0.28)	0.27	(0.28)	0.26	(0.28)	0.28	(0.28)
Positive affectivity	-0.32	(0.25)	-0.32	(0.25)	-0.36	(0.25)	-0.33	(0.25)
Importance of further training	-0.04	(0.20)	-0.01	(0.20)	0.00	(0.20)	-0.02	(0.20)
Direct and indirect costs	-0.04	(0.16)	-0.02	(0.16)	-0.02	(0.16)	-0.03	(0.16)
Supervisor: Same educ. background	-0.52	(0.28)	-0.55	(0.28)	-0.54	(0.28)	-0.55	(0.28)
Supervisor: Same age group	0.42	(0.29)	0.43	(0.29)	0.41	(0.29)	0.40	(0.29)
Supervisor: Gender (1=female)	-0.89	(0.77)	-0.66	(0.69)	-0.66	(0.70)	-0.67	(0.69)
Supervisor: Attitude towards FT	-0.06	(0.16)	-0.05	(0.16)	-0.04	(0.16)	-0.04	(0.16)
Supervisor: Cost-benefit ratio of FT	-0.13	(0.10)	-0.13	(0.10)	-0.13	(0.10)	-0.13	(0.10)
Evaluation of job performance	0.75***	(0.14)	0.75***	(0.14)	0.76***	(0.14)	0.74***	(0.14)
Joint duration	-0.12	(0.08)	-0.12	(0.08)	-0.06	(0.09)	-0.12	(0.08)
Team Size	0.05	(0.04)	0.02	(0.03)	0.02	(0.03)	0.03	(0.03)
High education x Team Size	-0.12	(0.07)						
Age x Team Size			-0.00	(0.00)				
High education x Joint duration					-0.18	(0.16)		
Age x Joint duration							-0.00	(0.01)
Constant	-2.72	(1.52)	-3.00	(1.51)	-3.02	(1.52)	-2.87	(1.52)
N	340		340		340		340	

Standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001. Controlled for firms. [1] Reference: Lower education

Table 17: Determinants for a transition from a negative fit to a positive fit, estimated with logistic regression

	(1)		(2)		(3)		(4)	
Higher education[1]	0.94***	(0.27)	0.95***	(0.28)	0.95***	(0.28)	0.91**	(0.28)
Age	-0.06**	(0.02)	-0.06**	(0.02)	-0.06**	(0.02)	-0.06**	(0.02)
Gender (1=female)	-0.15	(0.33)	-0.21	(0.31)	-0.21	(0.31)	-0.20	(0.32)
Migration background (1=Yes)	0.30	(0.34)	0.29	(0.33)	0.30	(0.34)	0.33	(0.34)
Previous further training /12 months	0.20	(0.31)	0.22	(0.32)	0.19	(0.32)	0.20	(0.32)
Positive affectivity	0.25	(0.26)	0.28	(0.26)	0.28	(0.26)	0.29	(0.26)
Importance of further training	0.91***	(0.23)	0.91***	(0.22)	0.92***	(0.23)	0.92***	(0.22)
Direct and indirect costs	-0.34*	(0.15)	-0.32*	(0.14)	-0.32*	(0.14)	-0.33*	(0.14)
Supervisor: Same educ. background	-0.31	(0.33)	-0.34	(0.33)	-0.33	(0.33)	-0.35	(0.33)
Supervisor: Same age group	0.13	(0.27)	0.12	(0.28)	0.13	(0.28)	0.14	(0.28)
Supervisor: Gender (1=female)	0.12	(0.65)	0.23	(0.63)	0.25	(0.62)	0.28	(0.63)
Supervisor: Attitude towards FT	-0.17	(0.17)	-0.17	(0.17)	-0.16	(0.17)	-0.16	(0.18)
Supervisor: Cost-benefit ratio of FT	0.09	(0.13)	0.10	(0.14)	0.09	(0.14)	0.09	(0.14)
Evaluation of job performance	0.77***	(0.13)	0.74***	(0.13)	0.75***	(0.13)	0.75***	(0.13)
Joint duration	-0.11	(0.06)	-0.12	(0.06)	-0.06	(0.06)	-0.11	(0.06)
Team Size	0.09**	(0.03)	0.05	(0.04)	0.05	(0.04)	0.05	(0.04)
High education x Team Size	-0.10	(0.08)						
Age x Team Size			0.00	(0.00)				
High education x Joint duration					-0.14	(0.12)		
Age x Joint duration							0.01	(0.01)
Constant	-7.07***	(1.84)	-7.03***	(1.78)	-7.19***	(1.82)	-7.25***	(1.81)
N	382		382		382		382	

Standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001. Controlled for firms. [1] Reference: Lower education

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