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Identifying Barriers to Continued Training for Older Workers in a Production Plant: A Mixed-Method Approach

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Abstract

An aged and shrinking workforce represents one of the major challenges for companies in the next decades. Capitalizing on and developing older workers' potential will therefore be key for organizational success. Research shows, however, that older workers in companies are less likely to receive training than their younger colleagues and that knowledge transfer before retirement frequently fails. Based on these findings, we used a mixed-methods approach to investigate older workers' motivation to participate in advanced training and knowledge transfer. Older workers in a first, quantitative study (N = 176) reported being significantly less likely to participate in training and having fewer promotion opportunities. Contrary to our expectations, middle-aged workers already showed this decline in training opportunities, which may suggest that leaving workers behind because of their age is a larger problem than previously assumed. To investigate the subjective reasons for this lack of training, we conducted problem-centered interviews with older workers (age > 50; N = 15). Qualitative content analyses identified valuation, immediate job relevance, and setting work goals until retirement as key motivators to participate in continued employee training. Moreover, older workers confirmed our quantitative finding that even middle-aged workers lack training. We discuss how companies can promote older workers' inclusion in formal and informal training to improve working conditions and retain knowledge.

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The general population of many western countries is rapidly aging and companies therefore increasingly need to rely on older workers (Kunze, Boehm, & Bruch, 2013). Retaining and integrating these older workers requires continued training. Unfortunately, older workers are less likely to receive training than younger workers (Simpson, Greller, & Stroh, 2002; Stamov-Roßnagel & Lloyd, 2012). The older workers' subjective reasons for this lack of training are unclear and represent a research gap that we seek to fill.

An Aged and Shrinking Workforce

Recent forecasts for Germany (Statistisches-Bundesamt, 2015) predict that the working population, aged 20 to 64, will decrease by 15 % by 2030 and by 33 % by 2060, in comparison to 2000. Along with this overall decline of the workforce, the proportion of older workers has increased from 30 % in 2000 to 36 % in 2015, and this proportion is predicted to remain at this level throughout the next decades. Employers are thus confronted with a rapidly shrinking and already aged workforce. Older workers are innovative and perform well (Ng & Feldman, 2013), and they are willing to embrace organizational change (Kunze et al., 2013); nevertheless, common hiring practices favor young employees (Gringart, Helmes, & Speelman, 2005). The demographic change therefore demands a paradigm shift, realizing that capitalizing on and developing the skills and knowledge of older workers is key to success.

Despite increased efforts, companies frequently fail to master this challenge. Heywood and Jirjahn (2015) argue that, while employment of older German workers has improved due to changes in government policy, the labor market for older workers remains characterized by far less mobility and opportunity. Successful cooperation at work requires workers to form shared goals and to trust each other; successful cooperation also requires companies to establish a positive company climate, to design jobs adequately, and to put effective diversity management into place (Spieß, 2015). Demographic change can impede these processes as a more diverse age structure may lead to a stronger age discrimination climate, which in turn reduces performance (Kunze, Boehm, & Bruch, 2011). This leads

to a climate where older workers are less integrated in cooperative processes, are less valued, and disengage from work-related goals (Burke, Cooper, & Field, 2013; Lehr & Kruse, 2006). Currently, most companies thus fail to capitalize on older workers' potential for innovation, knowledge, and experience (Bergmann, 2001).

The Role of Continued Training

Continued training is key to integrating older workers (Stamov-Roßnagel & Lloyd, 2012). Changing technological environments and new production processes require training workers constantly. Besides these task-related factors, training older workers increases their job satisfaction (Leppel, Brucker, & Cochran, 2012) which is key to retaining them. Despite these positive training outcomes and older workers' willingness to adapt (Kunze et al., 2013), older workers receive less on-the-job training than their younger colleagues (Simpson et al., 2002), which impedes their continued integration in the work process. Zwick (2015) finds that the main reason for the differences in training effectiveness during the life cycle is that firms do not take into account differences in training motivation. Older employees get higher returns from informal and directly relevant training, and from training contents that can be mainly tackled by crystallized abilities (Zwick, 2015). Moreover, van Dalen, Henkens, and Wang (2015) found that European employers clearly use exit policies more intensively than they use development measures such as training. Despite the aging population, European employers are thus not yet promoting active aging, and mostly still take the easy way out: exit strategies.

Besides a potential lack of qualified workers, companies moreover lose the knowledge and skill sets of older workers who leave the company (Argote & Ingram, 2000). Knowledge transfer is crucial for retaining these assets and creates the potential for companies to engage older workers as instructors in (informal) training sessions (Frerichs, Lindley, Aleksandrowicz, Baldauf, & Galloway, 2012; Harvey, 2012). It is therefore also crucial for companies to motivate and include older workers in knowledge transfer.

It remains unclear how older workers perceive their training situation. This is unfortunate since training measures that fail to account for the subjective needs of older workers are likely to fail (Salas,

Tannenbaum, Kraiger, & Smith-Jentsch, 2012). In this mixed-methods-study, we thus sought to identify subjective barriers to formal and informal training that older workers report.

Overview of the Present Research

The present research uses a mixed-methods approach to identify barriers to continued employee training. We conducted an explanatory sequential mixed-methods-study (Creswell & Clark, 2011) in a production plant comprised of a quantitative survey and a qualitative interview study. This methodology uses qualitative as well as quantitative instruments to allow for the triangulation of methods and gives voice to the participants (Creswell & Clark, 2011). First, we conducted the quantitative survey to investigate whether older workers in the organization perceive that they have reduced training opportunities. In a second step, we explored individual reasons for the lack of training through in-depth, qualitative interviews with older workers. We thus put an emphasis on the second, qualitative phase of the study.

Study 1: Do Older Workers Report Fewer Training Opportunities?

A Quantitative Survey

We first sought to confirm that older workers in the production plant under investigation actually lack training opportunities. To this end, we analyzed data from a yearly company questionnaire aimed at identifying work hazards. In particular, we focused on the vocational training scale (von Rosenstiel, 1992) included in the questionnaire.

Method

Company, Sample, and Response Rate

The data analyzed in this study was collected as part of an organizational questionnaire at a medium-sized production plant in the automobile sector in southern Germany. The survey was sent to all workers employed at this point in time ($N = 510$) via mail; 251 questionnaires were completed and returned, reflecting a response rate of 49.2 %. Forty-one respondents identified themselves as temporary employees and 34 indicated having a leadership position. We excluded these participants from our analysis and focused on permanently employed workers without leadership roles ($n = 176$) because this group most likely lacks training. The company mostly employs men (94.4 %); gender

therefore was not assessed to ensure confidentiality. Also due to confidentiality concerns, the company questionnaire assessed age in three brackets: Younger than 35 years ($n = 51$, 29.0 %), 36 to 50 years ($n = 80$, 45.5 %), and older than 50 years ($n = 45$, 25.5 %). One-hundred-and-eleven (63.1 %) were blue-collar workers and 65 (36.9 %) were white-collar workers. Sixty-five workers (36.9 %) indicated working without shifts, whereas all other workers indicated working in a two-shift (25; 14.2 %) or three-shift scheme (86; 48.9 %). Participation was voluntarily and confidentiality was ensured.

Measures

The company questionnaire contained the *short questionnaire for work analysis* (Kurzfragebogen zur Arbeitsanalyse, KFZA; Prümper, Hartmannsgruber, & Frese, 1995) as well as additional items developed by the company. In this analysis, we focus on the *vocational training scale* (von Rosenstiel, 1992) consisting of two items: "Your company provides good vocational training opportunities" and "You have many career opportunities," which participants responded to on a five-point Likert scale (1: *not at all* – 5: *very much*). Although this scale is short, it reliably measures perceived training opportunities (Prümper et al., 1995) and has been used successfully in applied settings (von Rosenstiel, 1992), which suggests that it is also externally valid. Importantly, this scale assesses the perceived opportunities and not whether subjects use these opportunities. Given the small number of items, the observed reliability of $\alpha = .73$ is satisfactory. We use the categorial age measure as a predictor.

Results

Two participants failed to respond to both items on training, leaving $n = 174$ participants for analyses. An ANOVA with age group as predictor and the vocational training scale as dependent variables showed that training differed between the age groups, $F(2; 171) = 4.102$, $p = .018$. As expected, workers older than 50 years reported fewer training opportunities than workers younger than 35 years, $p = .038$. Somewhat unexpectedly, there was no difference between workers older than 50 years and workers between 36 years and 50 years, $p = .718$. Workers between 36 years and 50 years also reported fewer training opportunities than workers younger than 35 years, $p = .006$.

Discussion

A common assumption concerning demographic change is that "young workers" differ from their 50+ years old colleagues (Kite, Stockdale, Whitley, & Johnson, 2005; Voelpel, Leibold, & Früchtenicht, 2007). In our sample, workers between 36 and 50 years already report significantly reduced opportunities for training in comparison to their colleagues younger than 35 years, and the 36-50 years group does not differ from those 50 years and older. The lack of training among older employees may therefore be a larger problem than previously assumed.

A possible alternative explanation is that our cross-sectional sample included workers from different generations (i.e., a cohort effect). The motivation to participate in and seek training may differ between these generations (Macky et al., 2008). Future research should therefore confirm our finding that even relatively young workers lack training (see also Stamov-Roßnagel, 2008).

Consistent with our main hypothesis, we find that older workers report having fewer training opportunities than younger workers. At least three reasons may lead to this difference (see also Maurer, Weiss, & Barbeite, 2003). First, our findings may reflect the actual training opportunities that the company offers its workers. Second, workers may perceive their opportunities differently, for instance, because older workers may stick to their work routines and may not notice opportunities as readily as younger workers (but see Kunze et al., 2013) or because they feel that they do not need further training. Lastly, older workers may simply not be motivated to advance any further (Maurer et al., 2003) and therefore fail to recognize training opportunities. To gain insights into these individual reasons for the lack of training, we conducted problem-centered interviews with a sample of workers from this population.

Study 2: What Are the Subjective Reasons for Reduced Employee Training Opportunities? A Qualitative Interview Study

After establishing the decline of self-reported training opportunities among older workers in Study 1, we sought to investigate the underlying, subjective reasons perceived by workers. We focused on three potential factors: feeling old, particular tasks at work, and the company climate. We moreover asked whether and in which fields older workers would like to have more training opportunities. Lastly,

we extended our investigation to more informal knowledge transfer between older and younger workers.

Method

Qualitative Approach: The Problem Centered Interview

We chose to conduct *problem centered interviews* to gain access to older workers' subjective reasons for reduced training opportunities. In this approach, each single subject is considered an expert of his or her situation, and interviews help access subjects' knowledge to uncover relevant influences and connections (Mayring, 2010; Witzel & Reiter, 2012). Thereby, the qualitative analysis enables researchers to gain access to social processes and *soft data* that cannot be observed with quantitative methods (Fine & Elsbach, 2000).

In line with the problem-centered interview methodology (Witzel & Reiter, 2012), we used an interview guideline that served as a memory aid and defined the thought-space. Moreover, we used a fully structured list of items to ask participants to indicate the characteristics of their vocation (Figure 1). Along this structure, we engaged in free conversation to establish a trusting relationship with the subject to gain access to their knowledge. This way, we sought to balance our concern for systematic investigation with our aim to gain a deep understanding. We refined our theoretical constructs in line with our knowledge from the interviews, using a hermeneutic circle of induction and deduction (Lamnek & Krell, 2015).

Sample

We conducted *selective sampling* (Schirmer, 2009) based on previous research and on our quantitative study. We chose permanent workers from the same production company who were older than 50 years at the time of the interview and who did not occupy a leadership position. To gain insights into the different reasons for the lack of training in this group of employees, we selected workers from different jobs within the company. To ensure workers' motivation to participate (Gläser & Laudel, 2006), we asked division managers to suggest eligible subjects. We then contacted 20 potential subjects via email or in person, and made appointments in line with their working hours. Fifteen workers between 51 and 61 years old ($M = 56.07$, $SD = 4.57$) and with 10 to 41 years tenure (M

= 23.47, *SD* = 11.06) agreed to participate. Ten were blue-collar workers and five were white-collar workers (Table 2).

Interviews

We identified relevant topics on continued training and aging in the literature (Mayring, 2010). As the question order may influence subjects' responses (Gläser & Laudel, 2006), we began with general questions concerning age and job tasks before asking about formal training and informal knowledge transfer. We developed the guideline and the company's human resource department provided feedback. The workers' union council approved the final interview guideline. The interview guideline was structured as follows (see Appendix A, for the complete interview guideline):

1. Introduction and background
    a. Questionnaire to assess demographics
    b. Age and aging
    c. Job and vocation
2. Employee training
3. Knowledge transfer

The interviews were conducted between January 21 and January 30, 2015. The interviews took 46 minutes on average (range: 25 to 64 minutes) and were all conducted in the same room at the production plant to standardize interviews and to be close to the day-to-day work setting. We refined our interview guidelines after the first interview (Mayring, 2010; Mey & Mruck, 2010).

The first part of the interview served to establish a trusting conversation (Gläser & Laudel, 2006). We explained the aim of the study and ensured confidentiality, and participants gave their informed consent. Confidentiality was crucial to the participants, as repeated questions show. Subjects then provided demographic data, which enabled us to personalize the interview (Lamnek, 1995). The interviewer took notes during and after the interview, and made audio-recordings. *Post-scriptum* notes were taken after the interview (Flick, 2007) to serve as an aid for interpreting the interview content.

Interview Preparation: Transcripts and Analysis

The interviews were fully transcribed, with exception of the standardized introduction, sections far off-topic, and names. Names were replaced with acronyms (e.g., Subject 1) to protect subjects'

identities. Dialect was replaced with standard German to enhance readability. Lastly, the transcripts were rechecked against the audio recordings. We conducted a qualitative content analysis with the transcripts (Mayring, 2010) to identify typical patterns across single cases (Lamnek & Krell, 2015). The interview guideline was used as a starting point to deduct coding categories; further categories were developed inductively from the data (Kuckartz, 2010). During this process, the interviews were summarized and ordered according to common themes, yielding 429 coding units. Four common thematic categories emerged: Age and Aging; Vocation; Training; and Knowledge Transfer (see Appendix B). We discussed these categories with a second rater, and both raters matched central quotes to categories. The raters disagreed in 12 cases, leading to a highly satisfactory interrater-reliability, a = .94 (Krippendorff, 2004).

Results and Discussion

Our interviews began with two background sections, one on age and aging, and one on vocation. We briefly summarize these interview sections before we present and discuss the in-depth results on training and knowledge transfer. We illustrate our findings with representative quotes from the interviews (translated; see Appendix C, for German original quotes).

Background: Age, Aging, and Vocation

Most subjects reported feeling younger than their chronological age (M = -14.3 years, range -3 – -24 years), mostly because of their physical well-being. Only one subject differentiated between mental and physical age, and reported feeling mentally young but physically old. Subjects reported positive as well as negative consequences of aging. The most prominent negative aspect was physical decline due to life-long physical labor. Their decline became most obvious when subjects compared themselves to younger co-workers or colleagues with different vocations.

A further, ambivalent aspect was the change of cognitive preferences and abilities, such as being less open to change and the subjective decline in the ability to learn. On the one hand, subjects reported that their ability to learn had declined, especially regarding new media or using personal computers and other new technologies. On the other hand, many subjects emphasized that interested

workers can learn at any age. One third of the subjects believed that the motivation and ability to learn is more related to personality than age.

On the positive side, most subjects reported gaining more experience and knowledge with old age. They were proud of this asset and they felt valuable to their company because of it. They perceived that their experience is their key advantage over younger workers and that this makes up for other physical or cognitive deficits.

Quote 1: *"Young people have to prove themselves. As it is, I have seen everything; and if something changes, only one thing is new and not the entire machine. That is an advantage. And I grew up with the job from the beginning; and with this kind of experience you know many names and almost everybody by sight. And a lot of colleagues know me, too. That makes life easier."* (Participant 1, 54 years)

Participants emphasized the importance of being valued as a worker. Nevertheless, most subjects, especially blue-collar workers, reported feeling undervalued. They are aware how important their knowledge is for the company but feel that their contributions are not recognized Some even reported that the company wants to "get rid of" them.

Quote 2: "You do feel that you are not worth as much anymore. That has declined a lot in the last years. Now, everything is about performance… When you can't perform fully anymore, you are out of favor immediately. You should keep up with a 25-year old. In the past, 10-15 years ago, old humans were still worth something; he was in demand." (Participant 13, 55 years)

Most interviewed workers generally claimed that their vocation is varied, due to changing work processes and working on different machines. However, workers see the monotonous tasks and the preclusion of decision making as problems. As a subject puts it: *"We do not have any autonomy at all"* (Quote 3: Participant 9, 58 years).

Quote 4: *"We don't need to think, we need to work. Other people get paid for thinking. I must deliver my lot sizes."* (Participant 2, 52 years)

Participants further indicated characteristics of their vocation that were important to them on a fully structured list (Figure 1). Participants mostly selected intrinsic factors including trust, being valued, and passing on knowledge. Experiencing variety in one's vocation was also important to participants.

Important extrinsic factors included the company's retirement fund and, to a lesser degree, wages. Advancing one's career and self-improvement were not important to the subjects.

Subjects voiced different opinions about the potential to learn in their vocation. Two thirds were skeptical about their learning opportunities. The most frequently reported barriers to training were monotonous tasks and the work environment: rigid shifts and long tenure on a simple job. One third believed that they could acquire new knowledge or skills, such as understanding a product in greater detail, improving the production process, or working with a new machine. However, most of these subjects later negated their statements.

Quote 5: *"In principle, you can learn and learn. But asking for one training or the other, you can't really do that here. But there are always things that you can't do perfectly and that you could learn to do better, no matter how long you have been working."* (Participant 9, 58 years)

Furthermore, hard physical labor reduces the potential and the readiness to learn. Some subjects also talked about their younger colleagues, who, according to their view, also have limited opportunities to grow. Increasing pressure to perform and the physical strain of the job reduce work motivation and satisfaction, even at a young age.

Quote 6: *"To some extent, it is inhumane […]. But when the young guys are moaning already, it is certainly not normal. These poor guys need to work another 40 years. Thinking about that, I do pity them."* (Participant 13, 55 years)

Summary and Discussion

The interviewed older workers felt younger than they are but are aware of their cognitive and physical decline. Subjects complained that they are not held in high esteem. Older workers were mostly intrinsically motivated, would like to participate more in decision processes, and would like to have more autonomy. Most workers were under the impression that they cannot learn more than they already know or that learning is not relevant due to the low variety of products they work on. In sum, these qualitative findings support our quantitative observation that older workers lack training opportunities.

Formal Training

Preferred and Actual Training Opportunities

We first sought to assess how many training opportunities subjects perceive having and would like to have. Only few subjects indicated that they perceive having received many training opportunities, and all of these few subjects were white-collar workers. The majority of the subjects reported having received little training. Most of the trainings they did receive were comprised of seminars on specific topics such as safety and hazardous materials, health, or how to operate a specific type of machine.

Quote 7: *"But there is no time for that. The client is waiting for the product. The lot size must be right. And then we are understaffed at times. I have not received an offer for training." (Participant 13, 55 years)*

Some subjects criticized that current training opportunities were not geared towards older workers and suggested that informal trainings are more important for their work than formal training. Workers reported that they want to exchange their knowledge and their experience with co-workers and other companies to learn from each other. Few wished for job rotation, and most experienced changes in their workplace as stressful.

Training Motivation

Most subjects did not want to receive training and would only participate in training if *„it is absolutely necessary"* (Quote 8: Participant 2, 53 years) or *„if I really have to"* (Quote 8b: Participant 5, 61 years). The reasons for lacking training motivation were manifold. Some participants assumed that training is not necessary for older workers, either because they were satisfied with their work place as it is or because they did not have any experience with training. Many subjects wanted to retire as soon as possible, further decreasing their interest in developing their work-related knowledge and skills.

However, some subjects reported the intention to seek training or at least the willingness to participate in training necessary for their job. More than half of the subjects wanted to retire early and are looking forward to this opportunity. Subjects reported that their goals had been towards furthering their careers but that their interest has shifted toward leisure activities and family. Subjects reported

that, in retrospect, they could have advanced but that they now focus on *"life after work"* (Quote 9: Participant 13, 55 years).

Quote 10: *"As you grow older, you realize all the things that you still want to do in your life. And then, during a shift, your time vanishes. It is hard to make up for lost time. I travel a lot. There are still a few things that I can do outside of work. [...] When you are young, you have to be ambitious to advance in your job and your family. At my age, things change. I still work well. The young think ahead, about what they want to do with their qualifications, and I think about all the nice things that I can do once I don't have to work anymore."* (Participant 9, 58 years)

Barriers to Training and Recommendations for Change

Subjects generally reported few opportunities for training and the few subjects who mentioned concrete vocational interests also claimed that their employer ignores these requests. At the level of the company, subjects reported that formal training for older employees has little value because of the limited working time left before retirement. Therefore, younger workers get preferred treatment. Subjects perceived that younger workers are *"the future of the company"* (Quote 11: Participant 15, 57 years) and that it is worth investing in them because they are better educated, healthier, readier to learn, and more motivated. Subjects agreed with this line of reasoning and perceived it as fair, thus attributing their lack of training to their lack of motivation due their old age and not to their company's policy. Subjects thus seemed to be highly identified with their age group, which in turn lead them to adhere to common age stereotypes (*self-stereotyping*; Hogg & Turner, 1987; Levy, 1996; Spears, Doosje, & Ellemers, 1997).

Quote 12: "*The company is not to blame, age is to blame*" (Participant 2, 53 years)

Quote 13: "*Because workers are so expensive, it makes more sense to support a young one. It does not make sense to employ 67-year old, also because of his health. [...] In this sense, he [the older worker] would take the job away from a younger one.*" (Participant 11, 60 years)

Subjects moreover reported that training often does not meet their needs or is perceived as inappropriate for their age.

Quote 14: "*But the seminar must also cater to the needs of the participant. For instance, when a production worker gets presentation training. That does not make any sense, except if he is expecting a promotion! So, again, it is like an alibi due to the matrix. He would benefit more from project training and would participate more, too. In the other, he would just sit there.*" (Participant 1, 54 years)

More than half of the subjects reported that the core motivator for training was the immediate relevance to their individual job. Subjects further would prefer longer trainings in smaller groups. One subject suggested including workers in the design phase of the training. In general, the company should advertise available training opportunities more. In fact, subjects reported that even offering training to older workers would be *"a sign of valuation"* (Quote 15: Participant 13, 55 years), that would be highly motivating. Further intrinsic motivators include the training-climate and observing co-workers participating in training. Only a minority of workers mentioned financial incentives related to promotion opportunities as a motivation for training. Most subjects agreed that training participation must be voluntary and that the company can only help motivate workers.

Summary and Discussion

Older workers in our sample consistently reported a lack of training motivation, which is in line with a general shift of focus from work to family and retirement. Older workers also reported receiving few training opportunities from their company. A main perceived barrier to training is age: The few remaining work years make training for older workers uneconomical. Older workers' perceptions of themselves are thus a major impediment to training. This is unsettling since technological change requires training for their continued integration in the workforce. Potential motivators for training include feeling valued, learning something for one's job in an age-appropriate setting, and, to a lesser degree, attaining a better paying job. Companies thus need to change their age climate and actively engage older workers. Moreover, companies could explicitly set work-related goals and plans with their older workers, which would further engage them in work processes, keep them motivated, and help them to enact their intentions (e.g., Thürmer, Wieber, & Gollwitzer, 2015).

Informal Training and Knowledge Transfer

Motivation and Incentives

Subjects reported that their knowledge and their experience is valuable to the company, and that colleagues' and superiors' acknowledgment of this is a core motivator. More than half of the subjects reported being asked for their knowledge, and most felt that this was a sign of valuation. Superiors also praise older workers for their knowledge and for being reliable. However, one subject reported feeling used by colleagues who prefer to leave the work to older, experienced workers, and another subject reported younger colleagues' resentment because they are envious of the lighter work assigned to older workers. Most subjects reported taking initiative to pass on their knowledge to the younger generation. However, many subjects reported that some of their colleagues refuse to pass on knowledge, either because of a lack of motivation or because nobody asks them. This may point to a bias in our sample, as subjects who agreed to participate may also be generally more likely to engage in knowledge transfer.

Passing on knowledge has two main benefits for older workers: First, young workers receiving advice can then take on more work, and lighten the load for older workers. Second, older workers derive a sense of meaning and a feeling of being needed from passing on their knowledge and experience. For many of the subjects, passing on knowledge was also key to a positive company climate.

Quote 16: "*One should put a young worker next to an old worker so he can learn. And when he can do the job, the older worker can leave early, if he wants to. [...] If an older worker has to stop working from one day to the next, he falls into a sort of limbo, when he is not needed anymore.*" (Participant 11, 60 years)

Barriers to Knowledge Transfer and Recommendations for Change

Successful knowledge transfer requires the recipient's readiness to learn. Subjects acknowledged this and viewed themselves as sender as well as receiver. Despite their reported readiness to learn, many subjects complained about their colleagues' lacking readiness to take advice. To advance knowledge transfer, subjects suggested improving company climate to build trust and to facilitate communication. To achieve this, subjects suggested communication trainings and team events. Superiors also could

encourage knowledge transfer, while still keeping it voluntary. A few subjects moreover suggested appointing predecessors early to be able to pass on their knowledge on the job.

Summary and Discussion

Informal training and knowledge transfer does take place and is important to subjects for many different reasons. Subjects manage to pass on some of their knowledge, which they perceive to be important for the company. This transfer mainly concerns daily work processes and colleagueship. Equally, subjects feel valued when they can pass on their experience, which may further motivate them to contribute to work processes and to remain in the company.

Subjects seemed far more familiar and comfortable with this informal knowledge transfer than they are with formal training opportunities. Moreover, workers can contribute significantly by passing on their knowledge. Focusing on this type of training could therefore be a promising and cost-effective alternative to workshops and seminars. Team building exercises, encouragement from superiors, on-the-job training, and early successor assignment could further enhance knowledge transfer. Moreover, knowledge transfer is a great source of valuation and therefore may help keep older workers engaged in the work process.

General Discussion

Our mixed-methods approach consistently shows that older workers are not as motivated, do not feel as entitled to, and do not participate as much in training as younger workers. We moreover quantitatively observed that even middle-aged workers (30-50 years old) already report a decline in vocational training opportunities. This may suggest that workers in this production plant become disillusioned and demotivated at a relatively young age. Companies thus fail to use the potential of older workers.

Recommendations for Continued Training

Three themes emerged during the interviews that have implications for how to increase training participation for older workers. Throughout the interviews, subjects emphasized how important feeling valued is to them. The acknowledgement of past achievements, knowledge, or helping others appeared

as a key motivator. This suggests that relatively low-cost, informal training formats may increase work satisfaction and knowledge transfer by sending a sign of valuation.

A second theme was the change in work motivation. Subjects reported looking forward to retirement and focusing more on their personal life. This is in line with existing research on work motivation (Kanfer & Ackerman, 2004) that shows work disengagement close to retirement, although moderators exist (Kooij, De Lange, Jansen, Kanfer, & Dikkers, 2011). Setting specific goals and plans during training may help maintain higher work motivation (e.g., Locke & Latham, 2002; Thürmer et al., 2015), for instance, when encouraging knowledge transfer.

A third theme was the changing need for training at an older age. Subjects mentioned physical, cognitive, and technological impediments to training and work participation. Moreover, an important prerequisite for training participation is the immediate relevance for the subjects' jobs (see also Simpson et al., 2002). Companies therefore need to adapt their training to the needs of older workers (Wolfson, Cavanagh, & Kraiger, 2014), and also take context and content into account (Williams van Rooij, 2012). Not only did company stereotypes emerge as an impediment (Stamov-Roßnagel, 2009), but also the self-stereotypes of the workers. Comprehensive programs for life-long learning are therefore needed.

Strengths and Limitations

Our mixed-methods study has several methodological strengths. First, this design enabled us to shed light on the training situation of older workers from a quantitative and a qualitative perspective. This may be especially important when investigating aging as recent research shows that older subjects may differ systematically in the way that they respond to self-report questionnaires (Knäuper et al., 2016). Thus, it was crucial to go beyond our questionnaire results with qualitative interviews. Second, our qualitative interviews allowed us to give voice to the subjective needs of the older workers as well as uncover relations and possible causes easily overlooked in a fully structured, quantitative study.

Despite these methodological strengths, our approach inevitably has limitations. First, our quantitative findings are cross-sectional; therefore, it remains unclear whether age actually caused the decline in training opportunities. Similarly, our qualitative observations have a high ecological validity

but do not allow assessing which percentage of workers agrees with this view. Future quantitative research should therefore investigate whether our observations generalize.

Further, we focused on seeking training and advancement. An older workforce may also pose a challenge during training and training implementation, as age diversity reduces trust and reduced trust decreases training outcomes (Gerpott, Wenzel, Lehmann-Willenbrock, & Voelpel, 2015). Companies therefore need to take workers' age into account when designing and conducting training.

Lastly, companies will ultimately need to attract and retain older workers (Bal, De Jong, Jansen, & Bakker, 2012). Improved training and advancement opportunities are key to mastering this challenge. Other measures may include more flexible work arrangements and reducing the age discrimination climate. Beyond the existing workforce, companies may also need to adjust their recruiting processes. Unemployed older workers are less likely to find a new job, and this is partially due to their perceived lack of efficacy (Wanberg, Kanfer, Hamann, & Zhang, 2016). As attracting qualified workers becomes increasingly competitive, companies may need to adjust their hiring campaigns to directly target older workers, thereby increasing older workers' efficacy.

Conclusion

Older workers lack training, which puts them at risk for dropping out of the work process early. By giving voice to older workers in a production plant, we identified lacking valuation, changing needs, and decreased motivation as key subjective reasons for this lack of training. Informal knowledge transfer motivates older workers and helps retain their experience and knowledge within the company. These are key steps in enabling companies to master the challenge of integrating and retaining an aged and shrinking workforce.

References

Argote, L., & Ingram, P. (2000). Knowledge transfer: A basis for competitive advantage in firms. *Organizational Behavior and Human Decision Processes, 82*, 150-169. doi: 10.1006/obhd.2000.2893

Bal, P. M., De Jong, S. B., Jansen, P. G. W., & Bakker, A. B. (2012). Motivating employees to work beyond retirement: A multi-level study of the role of i-deals and unit climate. *Journal of Management Studies, 49*, 306-331. doi: 10.1111/j.1467-6486.2011.01026.x

Bergmann, B. (2001). Innovationsfähigkeit älterer Arbeitnehmer [Older employees' innovative ability]. In A. A. Arbeitsgemeinschaft Qualifikations-Entwicklungs-Management (Ed.), *Kompetenzentwicklung 2001: Tätigsein - Lernen - Innovation* (pp. 13-49). Münster; New-York; München; Berlin: Waxmann.

Burke, R. J., Cooper, C. L., & Field, J. (2013). The aging workforce: Individual, organizational and societal opportunities and challenges. In J. Field, R. J. Burke & C. L. Cooper (Eds.), *The SAGE handbook of aging, work and society* (pp. 1-20). Los Angeles u.a.: SAGE.

Creswell, J. W., & Clark, V. L. P. (2011). *Designing and conducting mixed methods research*. Thousand Oaks, CA: SAGE Publications.

Fine, G. A., & Elsbach, K. D. (2000). Ethnography and experiment in social psychological theory building: Tactics for integrating qualitative field data with quantitative lab data. *Journal of Experimental Social Psychology, 36*, 51-76. doi: 10.1006/jesp.1999.1394

Flick, U. (2007). *Qualitative Sozialforschung. Eine Einführung* [Qualitative social science: An introduction]. Reinbek bei Hamburg: Rowohlt-Taschenbuch-Verl.

Frerichs, F., Lindley, R., Aleksandrowicz, P., Baldauf, B., & Galloway, S. (2012). Active ageing in organisations: A case study approach. *International Journal of Manpower, 33*, 666-684. doi: 10.1108/01437721211261813

Gerpott, F. H., Wenzel, R., Lehmann-Willenbrock, N., & Voelpel, S. C. (2015). Age-diverse training groups: How knowledge sharing & psychological safety promote learning outcomes. *Academy of Management Proceedings, 2015*. doi: 10.5465/ambpp.2015.64

Gläser, J., & Laudel, G. (2006). *Experteninterviews und qualitative Inhaltsanalyse als Instrumente rekonstruierender Untersuchungen* (2. ed.) [Expert interviews and qualitative content analysis as tools for reconstructive investigation]. Wiesbaden: VS Verl. für Sozialwissenschaften

Gringart, E., Helmes, E., & Speelman, C. P. (2005). Exploring attitudes toward older workers among Australian employers: An empirical study. *Journal of Aging & Social Policy, 17*, 85-103.

Harvey, J. F. (2012). Managing organizational memory with intergenerational knowledge transfer. *Journal of Knowledge Management, 16*, 400-417. doi: 10.1108/13673271211238733

Heywood, J. S., & Jirjahn, U. (2015). The German labor market for older workers in comparative perspective. Trier: University of Trier, Department of Economics.

Hogg, M. A., & Turner, J. C. (1987). Intergroup behaviour, self-stereotyping and the salience of social categories. *British Journal of Social Psychology, 26*, 325-340. doi: 10.1111/j.2044-8309.1987.tb00795.x

Kanfer, R., & Ackerman, P. L. (2004). Aging, adult development, and work motivation. *The Academy of Management Review, 29*, 440-458. doi: 10.2307/20159053

Kite, M. E., Stockdale, G. D., Whitley, B. E., Jr., & Johnson, B. T. (2005). Attitudes toward younger and older adults: An updated meta-analytic review. *Journal of Social Issues, 61*, 241-266.

Knäuper, B., Carrière, K., Chamandy, M., Xu, Z., Schwarz, N., & Rosen, N. O. (2016). How aging affects self-reports. *European Journal of Ageing*, 1-9. doi: 10.1007/s10433-016-0369-0

Kooij, D. T. A. M., De Lange, A. H., Jansen, P. G. W., Kanfer, R., & Dikkers, J. S. E. (2011). Age and work-related motives: Results of a meta-analysis. *Journal of Organizational Behavior, 32*, 197-225. doi: 10.1002/job.665

Krippendorff, K. (2004). Reliability in content analysis: Some common misconceptions and recommendations. *Human Communication Research, 30*, 411-433. doi: 10.1093/hcr/30.3.411

Kuckartz, U. (2010). *Einführung in die computergestützte Analyse qualitativer Daten* (3. ed.) [Introduction to the computer-aided analysis of qualitative data]. Wiesbaden: VS Verlag für Sozialwissenschaften.

Kunze, F., Boehm, S., & Bruch, H. (2013). Age, resistance to change, and job performance. *Journal of Managerial Psychology, 28*, 741-760. doi: 10.1108/JMP-06-2013-0194

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

Lamnek, S. (1995). *Qualitative Sozialforschung: 2. Methoden und Techniken* (3. ed.) [Qualitative social science: 2. Methods and techniques]. München: Psychologie-Verlags-Union.

Lamnek, S., & Krell, C. (2015). *Qualitative Sozialforschung: Lehrbuch* [Qualitative social science: Textbook]. Basel: Beltz.

Lehr, U., & Kruse, A. (2006). Verlängerung der Lebensarbeitszeit - eine realistische Perspektive? [Prolonged working life: A realistic prospect?]. *Zeitschrift für Arbeits- und Organisationspsychologie, 50*, 240-247. doi: 10.1026/0932-4089.50.4.240

Leppel, K., Brucker, E., & Cochran, J. (2012). The importance of job training to job satisfaction of older workers. *Journal of Aging & Social Policy, 24*, 62-76. doi: 10.1080/08959420.2012.629136

Levy, B. (1996). Improving memory in old age through implicit self-stereotyping. *Journal of Personality and Social Psychology, 71*, 1092-1107. doi: 10.1037/0022-3514.71.6.1092

Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist, 57*, 705-717.

Macky, K., Gardner, D., Forsyth, S., Macky, K., Gardner, D., & Forsyth, S. (2008). Generational differences at work: Introduction and overview. *Journal of Managerial Psychology, 23*, 857-861. doi: 10.1108/02683940810904358

Maurer, T. J., Weiss, E. M., & Barbeite, F. G. (2003). A model of involvement in work-related learning and development activity: The effects of individual, situational, motivational, and age variables. *Journal of Applied Psychology, 88*, 707-724. doi: 10.1037/0021-9010.88.4.707

Mayring, P. (2010). *Qualitative Inhaltsanalyse: Grundlagen und Techniken* (11. ed.) [Qualitative content analysis: Basics and techniques]. Basel: Beltz.

Mey, G., & Mruck, K. (2010). *Handbuch Qualitative Forschung in der Psychologie* [Textbook qualitative resarch in psychology]. Wiesbaden: VS Verlag für Sozialwissenschaften.

Ng, T. W. H., & Feldman, D. C. (2013). A meta-analysis of the relationships of age and tenure with innovation-related behaviour. *Journal of Occupational & Organizational Psychology, 86*, 585-616. doi: 10.1111/joop.12031

Prümper, J., Hartmannsgruber, K., & Frese, M. (1995). KFZA - Kurz-Fragebogen zur Arbeitsanalyse [Short questionnaire for job analysis]. *Zeitschift für Arbeits- und Organisationspsychologie, 39*, 125-132.

Salas, E., Tannenbaum, S. I., Kraiger, K., & Smith-Jentsch, K. A. (2012). The science of training and development in organizations: What matters in practice. *Psychological Science in the Public Interest, 13*, 74-101. doi: 10.1177/1529100612436661

Schirmer, D. (2009). *Empirische Methoden der Sozialforschung: Grundlagen und Techniken* [Empirical methods in the social sciences]. Paderborn: Fink.

Simpson, P. A., Greller, M. M., & Stroh, L. K. (2002). Variations in human capital investment activity by age. *Journal of Vocational Behavior, 61*, 109-138. doi: 10.1006/jvbe.2001.1847

Spears, R., Doosje, B., & Ellemers, N. (1997). Self-stereotyping in the face of threats to group status and distinctiveness: The role of group identification. *Personality and Social Psychology Bulletin, 23*, 538-553. doi: 10.1177/0146167297235009

Spieß, E. (2015). Voraussetzungen gelingender Kooperation [Prerequisites for successfull cooperation]. In U. Merten & U. Kaegi (Eds.), *Kooperation kompakt* (pp. 71-87). Berlin: Budrich.

Stamov-Roßnagel, C. (2008). *Mythos: "alter" Mitarbeiter: Lernkompetenz jenseits der 40?!* [Myths about 'old' employees: Learning beyond 40?!] Weinheim: Beltz, PVU.

Stamov-Roßnagel, C. (2009). Was Hänschen nicht lernt…? Von (falschen) Altersstereotypen zum (echten) Lernkompetenzmangel [What you don't learn when you are young…? About (incorrect) age stereotypes and (actual) deficites in learning competencies]. In K. Brauer & W. Clemens (Eds.), *Zu alt?: „Ageism" und Altersdiskriminierung auf Arbeitsmärkten* (pp. 187-204). Wiesbaden: VS Verlag für Sozialwissenschaften.

Stamov-Roßnagel, C., & Lloyd, K. (2012). Anpassungsfähigkeit der Belegschaft sicherstellen - lebenslanges Lernen und Karrierepläne [Ensure employee adaptability – life long learning and career plans]. In DGFP (Ed.), *Personalentwicklung bei längerer Lebensarbeitszeit: Ältere Mitarbeiter von heute und morgen entwickeln* (pp. 55-63). Gütersloh: Bertelsmann.

Statistisches-Bundesamt. (2015). 13. koordinierte Bevölkerungsvorausberechnung: Bevölkerung Deutschlands bis 2060 [13. Coordinated population estemate: German population until 2060]. Retrieved November 13, 2016 https://www.destatis.de/DE/Publikationen/Thematisch/Bevoelkerung/VorausberechnungBe voelkerung/BevoelkerungDeutschland2060Presse.html

Thürmer, J. L., Wieber, F., & Gollwitzer, P. M. (2015). Planning high performance: Can groups and teams benefit from implementation intentions? In M. D. Mumford & M. Frese (Eds.), *The psychology of planning in organizations: Research and applications* (pp. 123-145). New York, NY: Routledge.

van Dalen, H. P., Henkens, K., & Wang, M. (2015). Recharging or retiring older workers? Uncovering the age-based strategies of European employers. *The Gerontologist, 55*, 814-824. doi: 10.1093/geront/gnu048

Voelpel, S., Leibold, M., & Früchtenicht, J. D. (2007). *Herausforderung 50 plus: Konzepte zum Management der Aging Workforce* [Challenge 50 plus: Managing an aging workforce]. Erlangen: Publicis.

von Rosenstiel, L. (1992). *Betriebsklima geht jeden an!* [Company climae concerns everybody!]. Munich: Bayerisches Staatsministerium für Arbeit, Familie und Sozialordnung.

Wanberg, C. R., Kanfer, R., Hamann, D. J., & Zhang, Z. (2016). Age and reemployment success after job loss: An integrative model and meta-analysis. *Psychological Bulletin, 142*, 400-426. doi: 10.1037/bul0000019

Williams van Rooij, S. (2012). Training older workers: Lessons learned, unlearned, and relearned from the field of instructional design. *Human Resource Management, 51*, 281-298. doi: 10.1002/hrm.21466

Witzel, A., & Reiter, H. (2012). *The problem-centred interview.* London: Sage.

Wolfson, N. E., Cavanagh, T. M., & Kraiger, K. (2014). Older adults and technology-based instruction:

Optimizing learning outcomes and transfer. *Academy of Management Learning & Education, 13*, 26-

44. doi: 10.5465/amle.2012.0056

Zwick, T. (2015). Training older employees: What is effective? *International Journal of Manpower, 36*, 136-

150. doi: 10.1108/ijm-09-2012-0138

Tables

Table 1

Means and standard deviations of self-reported training by age group (Study 1)

Age	n	M	SD
Younger than 35	50	2.510	0.137
36 - 50	80	2.025	0.108
Older than 50	44	2.091	0.146

Table 2

Sample Description Qualitative Investigation

Case Number	Age [years]	Sex	Job-Type	Tenure [years]	Education
1	54	m	Blue-collar	28	AP
2	53	m	Blue-collar	25	AP
3	51	m	White-collar	10	AP
4	62	m	White-collar	13	UE
5	61	m	Blue-collar	14	AP
6	59	m	Blue-collar	37	AP
7	52	m	Blue-collar	30	AP
8	65	f	White-collar	33	AP
9	58	m	Blue-collar	10	AP
10	51	f	White-collar	10	AP
11	60	m	Blue-collar	41	AP
12	52	m	Blue-collar	27	AP
13	55	m	Blue-collar	35	AP
14	51	m	Blue-collar	11	AP
15	57	m	White-collar	28	AP

Note. m = male, f = female, AP = apprenticeship, UE = university education
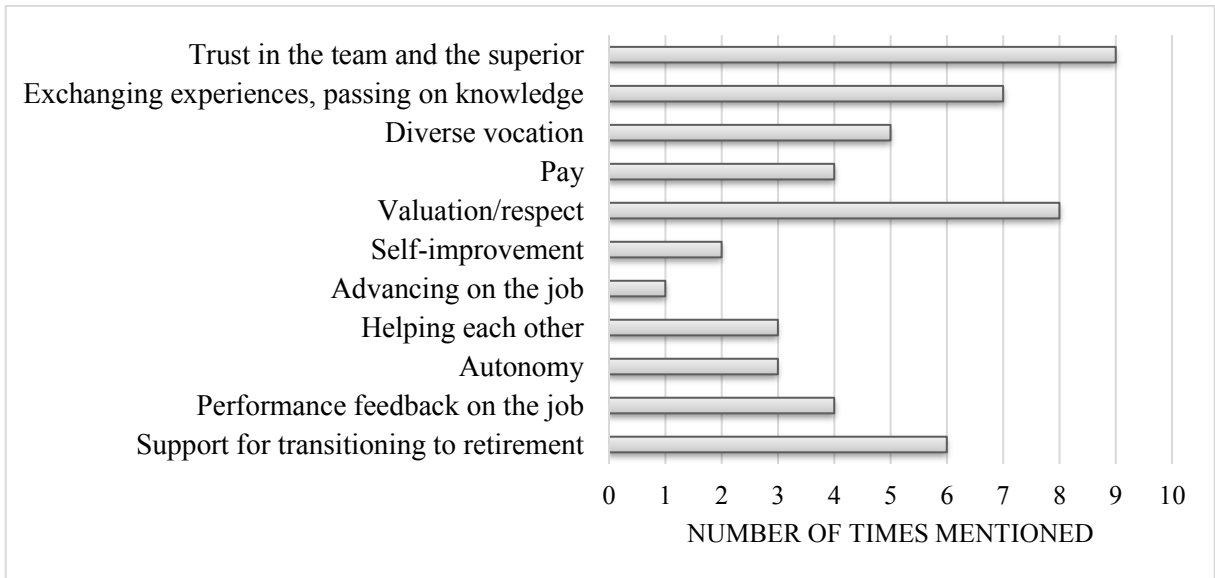
Figures

Figure 1. Job characteristics that are important to interviewed subjects (multiple answers possible)

TEXT