UvA-DARE (Digital Academic Repository)

A phase model of intergenerational learning in organizations

Gerpott, F.H. ; Lehmann-Willenbrock, N.; Voelpel, S.C.

DOI

[10.5465/amle.2015.0185](https://doi.org/10.5465/amle.2015.0185)

Publication date

2017

Document Version

Final published version

Published in

Academy of Management Learning & Education

License

CC BY-NC-ND

[Link to publication](#)

Citation for published version (APA):

Gerpott, F. H., Lehmann-Willenbrock, N., & Voelpel, S. C. (2017). A phase model of intergenerational learning in organizations. *Academy of Management Learning & Education*, 16(2), 193-216. <https://doi.org/10.5465/amle.2015.0185>

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

A Phase Model of Intergenerational Learning in Organizations

FABIOLA H. GERPOTT

Vrije Universiteit Amsterdam, The Netherlands

NALE LEHMANN-WILLENBROCK

University of Amsterdam, The Netherlands

SVEN C. VOELPEL

Jacobs University Bremen, Germany

Demographic changes challenge organizations to qualify employees across all career stages and to ensure the transfer of company-specific knowledge between experienced and young workers. Human resource development programs for employees from different generations may help address these challenges. However, there is a lack of insight into what types of knowledge employees in intergenerational training groups acquire from one another, as well as how these learning processes differ at different time points. Over a span of 3 years, we conducted 31 interviews at an automobile company involving young (16–19 years) and experienced participants (41–47 years) of a full-time intergenerational learning program and their instructors. Our findings show that both generations possess distinct expert, practical, social, and metacognitive knowledge, and that they exchange different types of knowledge at different time points. We integrate these findings into a phase model of intergenerational learning comprising three phases: (1) familiarization, (2) assimilation, and (3) detachment. Our results suggest that intergenerational learning should be conceptualized as a bidirectional process with different foci of mutual knowledge exchange across different temporal phases. To facilitate intergenerational learning, instructors should adapt their teaching methods to employees' phase-specific needs and find ways to systematically map older and younger employees' specific knowledge contents.

Generational phenomena manifest themselves in many ways and have significant effects on individual, team, and organizational performance (Joshi, Dencker, Franz, & Martocchio, 2010). A *generation* is defined as a group of individuals born around the same time who share specific

attitudes and values that can influence their behavior and expectations at work (Benson & Brown, 2011; Bristow, Amyx, Castleberry, & Cochran, 2011; Schullery, 2013; Twenge, Freeman, & Campbell, 2012). *Intergenerational learning* is a generational phenomenon in the workplace that is of particular interest to human resource development. It concerns individuals' joint construction of knowledge through an exchange of information with one or more individuals from different generations (Findsen & Formosa, 2011; Ropes, 2013; Thomas, 2009). Previous research has argued that generations differ in their attitude toward training and

This research project was supported by the WDN-WISE Demographic Network, which is gratefully acknowledged. An earlier, abridged version of this paper was included in the *Academy of Management Best Paper Proceedings 2015*. We appreciate the initial feedback by Amy Kenworthy and Christine Quinn Trank, as well as the constructive comments from Lisa Burke-Smalley and our three anonymous *AMLE* reviewers.

their learning styles, which implies that researchers need to add another layer to the analysis of adult learning processes (Bartley, Ladd, & Morris, 2007; Deery, 2012). Furthermore, a growing research base suggests that human resource development programs should account for generational shifts in career expectations (Callanan & Greenhaus, 2008; Lyons, Ng, & Schweitzer, 2014). Yet, how learning outcomes are affected when employees from different generations learn *together* has received limited attention (Pinto, 2011; Ropes, 2012).

Our study's aim is to deepen our understanding of the learning processes taking place over time in intergenerational training groups. Specifically, we investigate the processes that occur when young and experienced workers jointly engage in a learning experience. By exploring what types of knowledge are exchanged between employees participating in long-term intergenerational training groups, we address recent calls for research that can account for the temporal dynamics of group processes (Cronin, Weingart, & Todorova, 2011; Ployhart & Ward, 2011). Building on the information-decision-making perspective of diversity (Williams & O'Reilly, 1998), we argue that members of intergenerational training groups are challenged to discuss the training content more deeply to align their perspectives. Furthermore, they can combine their extended range of expertise to learn from and with each other. Consequently, they might develop knowledge that goes beyond the formally stated training content.

Understanding the processes occurring in intergenerational training groups is crucial for organizations for at least two reasons. First, owing to worldwide demographic shifts in the human population, a higher average age and longer lifetime employment characterizes the workforce (McGuire, By, & Hutchings, 2007). For example, by 2018 approximately one fourth of the labor force in the US will be aged 55 years or older (Toossi, 2009). Simultaneously, the share of younger employees is expected to decrease significantly. To maintain a skilled workforce under these circumstances, organizations have to adapt their understanding of human resource development. They simultaneously must accommodate the needs of young workers at the beginning of their careers and of old workers with later-in-life career shifts or transitions to new jobs (Kulik, Ryan, Harper, & George, 2014; Lyons et al., 2014; Wolfson, Cavanagh, & Kraiger, 2014). Consequently, training groups are becoming increasingly diverse, meaning the development programs of organizations are

regularly visited by young and old employees with different career goals.

Second, apart from the necessity to develop instruments to educate older workers, organizations must eventually also find ways to cope without the retiring employees. This implies a challenge to retain older workers' *company-specific knowledge*, defined as personalized information about facts and procedures that employees gain through the course of their work life (Alavi & Leidner, 2001; Callanan & Greenhaus, 2008; Calo, 2008). Company-specific knowledge constitutes an important source of competitive advantage that is difficult to imitate (Grant, 1996, 1997). Because employees are the principal repositories of knowledge, the upcoming retirement wave of the "baby boomer" generation (born between 1946 and 1964; Cogan, 2012) posits a high risk in terms of organizational knowledge loss. Although policy, public, and private organizations have become increasingly aware of the potential ramifications of demographic changes in the workforce (McKinnon, 2010; Starks, 2013; Winkelmann-Gleed, 2009), a focus on fostering intergenerational learning as a strategy to prevent company-specific knowledge loss is far from prevalent in contemporary organizational practice (Kulik et al., 2014; Ropes, 2013).

To summarize, our study contributes to the literature by investigating intergenerational learning in organizational training groups as a means to develop new knowledge in different generations and to enhance knowledge exchange between generations. Besides investigating *which* types of knowledge employees from different generations develop, we are also interested in *when* they engage in different types of knowledge exchange. To this end, we interviewed 31 individuals, comprising young (16–19 years) as well as experienced (41–47 years) participants enrolled in an organizational training program over a span of 3 years, along with their company and vocational school instructors. To evaluate the interview data, we conducted an in-depth qualitative analysis using MAXQDA (VERBI Software, 2016). We discuss the theoretical implications of our findings for intergenerational learning research, as well as the managerial implications for organizational training practice.

THEORETICAL BACKGROUND

Generational Differences in the Workplace

Rooted in sociology, generational cohort theory argues that individuals from one generation have

experienced the same historical events and social conditions at key developmental stages, and that these shared experiences influence their behavior and expectations at work (Benson & Brown, 2011; Bristow et al., 2011; Schullery, 2013; Twenge et al., 2012). This conceptualization implies that generational divides created by common historical trends can differ between countries. This implies that Western countries such as those in Western Europe, as well as Canada, the US, and Australia overlap more with each other with respect to generational cohort patterns than they do with Eastern countries such as China and Japan (Lyons et al., 2014). Note that we do not intend to resolve the long-standing controversy regarding the conceptualization of generations (Costanza, Badger, Fraser, Severt, & Gade, 2012; Costanza & Finkelstein, 2015; Parry & Urwin, 2011). In other words, we do not focus on analyzing *why* individuals from different age groups vary in their attitudes, values, and expertise. For the purpose of this study, it is only important *that* these differences exist, and that they can be a potential resource for learning processes in organizations. We acknowledge the difficulty of pinpointing the extent to which differences in employees' attitudes, values, and learning characteristics are the result of their generational affiliation, rather than other factors such as chronological age or life phase (Costanza & Finkelstein, 2015; Parry & Urwin, 2011). For instance, individuals of the same age tend to experience the family formation phase at around the same chronological time and also tend to retire during a similar time span due to biological reasons. Accordingly, not only societal events, but also age-related biological, psychosocial, or cognitive developments across the lifespan can influence individuals' preferences and knowledge (Ropes & Ypsilanti, 2012). Such conceptual discussion aside, we apply the "generational terminology" in line with the current discourse on generation management in academia and practice.

Intergenerational Learning in Organizations

Since the beginning of humankind, intergenerational learning has occurred in families in terms of knowledge transfer from grandparents or parents to their children (Hoff, 2007; Newman & Hatton-Yeo, 2008). In the past few decades, owing to demographic changes and shifting family structures, intergenerational learning outside the family context has grown in relevance (e.g., in schools, community settings, and child or elderly care centers;

Newman & Hatton-Yeo, 2008). Research on extra-familial intergenerational programs, such as university initiatives (Bratianu, 2014; Tam, 2014), service learning (Fiebig, 2014; Karasik, 2013), and game-based education (Pappa et al., 2011), provides preliminary evidence for the positive effect that intergenerational learning has on the development of individuals' knowledge and attitudes outside family relationships.

Organizational scholars have only recently become aware of the opportunities inherent in intergenerational learning (Ropes, 2013). Particular attention has been paid to the directionality of interaction processes between individuals from different generations (Harvey, 2012; Knight, Skouteris, Townsend, & Hooley, 2014; McCrea & Smith, 1997; Tempest, 2003). The traditional perspective on intergenerational relationships as occurring in families assumes that intergenerational learning is a unidirectional knowledge transfer process from one generation to another. This understanding is rooted in the idea that older advisers (e.g., grandparents, parents, or teachers) socialize younger individuals (e.g., children, adolescents, students). In the organizational context, mentoring is a typical example of a relationship in which younger employees are expected to learn from their older colleagues' experience (Hunt & Michael, 1983). Yet, scholars have also looked into reverse mentoring relationships in which younger employees teach their older colleagues new concepts, trends, and technological skills (Baily, 2009; Chen, 2013; Murphy, 2012). No matter which generation is the instructor or the scholar, the basic understanding of the unidirectional approach is that a more knowledgeable person transfers information to a less experienced individual.

By contrast, more recent research emphasizes that intergenerational learning should be framed as a bidirectional development process rather than a "one-way street," because both generations can benefit from intergenerational exchange (Fair & Delaplane, 2015; Knight et al., 2014). From this point of view, all employees—irrespective of their age or position within the company—possess unique knowledge that they can share with their colleagues (Fuller & Unwin, 2004; Senge, 1990). Accordingly, interactions between employees of different generations are an opportunity for a bidirectional learning process in which individuals from both generations can learn from the unique knowledge of the other.

To date, the mutual construction of knowledge through a bidirectional interaction process between

generations has not received much attention in organizations. Tempest (2003) notes that a wisdom-related image of older employees dominates the language in everyday working life. Her study of production teams¹ in the television industry shows that concepts such as "expert" or "wisdom" imply that older workers are more knowledgeable than their younger colleagues. This notion can impede bidirectional learning processes, because younger employees may feel that when they raise their voices or share their knowledge, it is not appreciated (Tempest, 2003). In such an environment, younger workers are at risk of continuously asking themselves whether others are judging them based on stereotypes (Ryan, King, & Finkelstein, 2015). These beliefs about stereotypes that out-group members hold against themselves are also referred to as "metastereotypes" (Vorauer, Main, & O'Connell, 1998) and can disrupt interpersonal interactions (King, Kaplan, & Zaccaro, 2008). Of course, older workers may also be hindered by metastereotypes, for instance when they assume to be judged as not capable to successfully participate in learning-and-development activities (Lamont, Swift, & Abrams, 2015). Training employees in intergenerational groups can be a first step toward changing both stereotypes and metastereotypes. By exposing individuals from one generation to individuals from another, participants might realize that their implicitly held beliefs about the other generation turn out to be wrong (Penick, Fallshore, & Spencer, 2014).

Looking beyond the directionality and obstacles of intergenerational learning, it is also of interest to understand what types of knowledge are exchanged in intergenerational relationships. Theoretical perspectives commonly differentiate between explicit and tacit knowledge (e.g., Harvey, 2012; Starks, 2013; Wagner & Sternberg, 1985, 1987). In their seminal work, Nonaka and colleagues state that explicit knowledge is encoded and decoded relatively easily, whereas tacit knowledge is often messy and subconsciously understood through experiences and social relationships (Nonaka, 1994; Nonaka & Konno, 1998; Nonaka & Takeuchi, 1995; Nonaka, von Krogh, & Voelpel, 2006). *Explicit knowledge* comprises information that can be articulated and written down. To illustrate, older workers have often

acquired expert knowledge in their jobs that they can pass on verbally or in written form to their colleagues. The younger generation may have more recent experience with and access to a larger amount of school and technology knowledge that they can share with their older colleagues (Chen, 2013). Since explicit knowledge in the occupational context is mostly related to professional expertise, we use the term *expert knowledge* here to refer to those knowledge contents that can be easily articulated by an individual.

Tacit knowledge is a multidimensional concept consisting of several aspects. First, it has been referred to as practical intelligence or *practical knowledge* (Sternberg, Wagner, Williams, & Horvath, 1995). For example, this aspect of tacit knowledge manifests in knowing how to use a tool for building an automotive part (without necessarily being able to verbalize this knowledge step-by-step). Because practical experience is obtained through repeated actions, older employees presumably possess more practical knowledge than their younger counterparts. In line with this idea, previous findings from intergenerational service-learning programs suggest that older individuals can serve as role models for younger individuals, who learn from the older individuals' practical knowledge through imitation and cooperation (Schotter & Sopher, 2003; Zuccherro, 2011).

Second, scholars have called for more attention to the social aspects of tacit knowledge in organizational research, because employees do not perform work tasks in a social vacuum (Insch, McIntyre, & Dawley, 2008). *Social knowledge* comprises skills such as knowing how to effectively interact with others and how to manage (long-term) relationships. Indeed, previous research suggests that caring behavior and knowledge about how to behave in specific social situations can be improved by means of intergenerational learning programs (Underwood & Dorfman, 2006).

To summarize the current state of research, we observe that extant work on different types of knowledge exchanged during intergenerational learning has mostly been limited to family or educational environments. The systematic support of intergenerational learning in organizations is a rather new concept, and previous scholarly work investigating these processes has tended to apply a unidirectional understanding of knowledge transfer from more knowledgeable employees to less informed colleagues. Furthermore, to date, researchers and practitioners alike have not

¹ We acknowledge that teams and groups are not necessarily the same (e.g., Hinds, 2015). Yet, here we extrapolate from several previous team studies to derive arguments for the context of intergenerational groups.

considered the temporal nature of intergenerational relationships in organizations. This is surprising, given the considerable amount of research showing that relationships between individuals of different ages develops over time (e.g., Bales, Eklund, & Siffin, 2000; Couper, Sheehan, & Thomas, 1991). For instance, participants in an intergenerational learning program reported a more positive attitude toward the other generation after a few interactions (Hwang, Wang, & Lin, 2013; Penick et al., 2014). Similarly, developmental psychologists have proposed the notion of an "incubation effect," meaning that the beneficial effects of peer collaboration on individual learning oftentimes only become apparent after some time has elapsed (Howe, McWilliam, & Cross, 2005). In the following, we build on social identity theory, knowledge management approaches, and the group development literature to argue that it is of particular importance to understand not only *what* types of knowledge are exchanged in intergenerational learning groups, but also *when* different types of exchange processes take place.

First, social identity theory argues that individuals define their identity by continuously comparing themselves to others (Ashforth & Mael, 1989; Tajfel & Turner, 2004). To confirm their self-image, individuals generally prefer others who are similar to themselves (ingroup members) to dissimilar others (outgroup members; Fiske & Lee, 2008). Perceived similarity is oftentimes assessed by using highly visible cues, such as age, to form a first impression of other individuals (Zellmer-Bruhn, Maloney, Bhappu, & Salvador, 2008). Thus, in newly formed groups, employees from different generations will initially be likely to prefer colleagues from the same generation. They might require some time before feeling safe enough to start interacting with the "outgroup," with the members from a different generation. Over time, the members of a group can become better acquainted with each other and start using more opportunities to exchange personal information (Harrison, Price, Gavin, & Florey, 2002). As a result, group members may begin to feel more alike, which can reduce emotional conflict (Pelled, Eisenhardt, & Xin, 1999). In line with this argument, research shows that the negative effects of surface-level diversity attributes—such as group members' age—on group outcomes decrease as time passes (Harrison et al., 2002).

A second argument for the dynamics of intergenerational exchange processes can be extrapolated from the knowledge management literature. For

knowledge sharing to occur, individuals must possess at least a certain amount of shared understanding (Alavi & Leidner, 2001; Kelly, Schaan, & Joncas, 2001). Similarly, research on shared mental models in groups suggests that employees need to develop an understanding of where expertise is located within their group to purposefully ask others for information, help, or instruction (Ellwart, Bündgens, & Rack, 2013). Transferring this finding to intergenerational learning processes, knowledge exchange activities are likely to intensify as members of different generations start developing a common knowledge base.

Third, the group development literature provides ample evidence that groups develop over time and that their interaction processes change according to specific group phases (e.g., Gersick, 1988, 1989; Michinov & Michinov, 2007; Tuckman, 1965; Tuckman & Jensen, 1977). As common for developmental programs, participants in our study were part of training groups that consisted of members who did not know each other before the program start, collaborated intensively over a longer time period, and had to work on problem-solving tasks together. To begin with, it is commonly agreed that groups need to go through an initial group-building phase before they can operate effectively (Raes, Kynndt, Decuyper, Van den Bossche, & Dochy, 2015). This initial group period is also referred to as the forming phase in Tuckman's predominant model of small-group development (Tuckman, 1965; Tuckman & Jensen, 1977). Tuckman (1965) posited that, after coming together as a group and orienting themselves toward the task, groups undergo a storming phase characterized by intragroup conflict. Individuals feel they may have to give up their individuality by becoming part of the group and often (over)react with hostility toward other group members (Bonebright, 2010). These overreactions might be particularly strong against others perceived as dissimilar, because individuals who think differently provide a higher threat toward one's identity (Fiske & Lee, 2008). After some time has passed, groups start developing shared mental models, ingroup feelings, and ways to optimize collaboration in the norming phase (Neuman & Wright, 1999; Tuckman, 1965). The emergent group cohesion builds the foundation for the performing phase, in which groups concentrate on their tasks and become problem-solving entities (Tuckman, 1965). Finally, as Tuckman and Jensen (1977) added

in their amended model, groups undergo an adjourning phase in which they separate once the task at hand has been fulfilled. By transferring small-group development theory to intergenerational learning settings, we consider it likely that the members of an intergenerational training group will first get to know each other (forming phase) and then figure out the similarities, differences, and status distribution between the generations (storming and norming phases). An engagement in effective intergenerational learning processes (performance phase) may follow these periods. When intergenerational groups finally disband, members are challenged to negotiate their future frequency of contact and the nature of their interactions (adjourning phase).

By integrating these three different streams of research and applying them to the phenomenon of intergenerational learning, we assume that intergenerational learning processes do not remain stable, but are subject to changes over time. In other words, we aim to advance our understanding on how the types of knowledge exchanged in intergenerational learning groups connect to different temporal phases. To summarize, our work is guided by the following research question:

RQ: How are specific types of knowledge exchanged in intergenerational learning groups across different temporal phases?

METHODS

Sample and Procedure

We collected our data at the German production plant of an international car manufacturer that has approximately 275,000 employees worldwide. In reaction to the steadily increasing average age of the company's workforce, the management of the plant decided to retrain a number of experienced assembly line workers for less physically demanding jobs. To foster intergenerational exchange, the manufacturer chose to integrate the training of older assembly line workers into an 18-month apprenticeship program that qualifies high school graduates to become toolmakers. The company employs toolmakers to build custom-made machine tools for company-specific machines. Their job requires a mixture of engineering knowledge and mechanical skills, and it is less physically demanding than working in car production.

The intergenerational apprenticeship program commenced in September 2011 with eight young and four experienced employees. In the following years, the company continued to educate intergenerational apprenticeship groups, meaning that every September, eight young and four experienced apprentices began the full-time qualification program. The young apprentices (16–19 years) were recent high school graduates. The experienced participants (41–47 years) had been working at the company's assembly lines for 21.18 years on average ($SD = 4.32$) prior to the program. In Germany, an apprenticeship is usually designed for young job starters who are aiming to become skilled workers in a specific area. Apprentices spend 3 days a week on the shop floor to acquire practical skills. During the remaining 2 days per week, they visit a vocational school to acquire theoretical knowledge relating to their jobs. The plant management designed the structure of the intergenerational training program in such a way that young and experienced participants collaborate on all their learning activities, both at the vocational school and on the plant's shop floor. All faculty members involved in the program (i.e., the company and vocational school instructors) were asked beforehand if they were willing to educate an intergenerational apprenticeship group. The application process for the toolmaker apprenticeship program is highly competitive and consists of attending an assessment center for 1 day and completing both practical and theoretical tests.

Our research aimed to include all relevant stakeholders' perspectives (young and experienced apprentices, company and vocational school instructors) on the intergenerational learning processes taking place over the course of the program. To this end, we employed a purposeful sampling process (Palinkas et al., 2015; Patton, 1990), using the criterion "enrolled in or teaching the intergenerational learning group" to select participants. Hence, we interviewed all instructors concerned with the intergenerational program ($n = 4$), all older apprentices (except one worker) who had started the program since 2011 ($n = 11$) and a sample of young apprentices enrolled in the intergenerational program for 1 or 2 years ($n = 8$). In particular, we conducted face-to-face interviews with four older participants and four instructors before the first cohort of apprentices started the program (i.e., in June 2011). The same individuals were interviewed again in January 2014. At that time, the older participants had successfully completed the program and were working in the area in

which they had specialized during their apprenticeship. Moreover, to gain deeper insights into intergenerational learning processes at different stages of the program, the data collection in 2014 also comprised interviews with four older employees who had started their participation at the end of 2013 (i.e., they were in their first year of apprenticeship) and three older employees who had started in 2012 (i.e., they were in their second year of apprenticeship).

We complemented these perspectives with the experiences of four younger apprentices who had just begun the intergenerational program (first year of apprenticeship) and four younger apprentices who had already collaborated with the older participants for a year (second year of apprenticeship). Because of company restrictions, we could only interview the younger apprentices during our second data collection in 2014. Overall, however, our study design provided insights into the comprehensive learning processes occurring at different points in time during the intergenerational training program (see Figure 1).

We conducted the 31 interviews with 23 subjects in separate meeting rooms at the plant ($M = 29.61$ min, $SD = 15.32$ min, ranging from 12 to 69 min). Participation in the interviews was voluntary, and the workers' council approved the research project. Table 1 provides an overview of the demographics of our interviewees. The first author of the paper undertook the vast majority of the interviews; a research assistant who had received intensive training for this task conducted eight interviews. Prior to starting the interviews, we informed the participants that we would treat their data confidentially and guaranteed that we only report the findings on an aggregated level. The interviews were carried out in German, and all interviewees agreed to be tape-recorded. We took extensive notes during the interviews and transcribed the recordings in full. The transcripts that appear in this paper have been translated and back-translated in collaboration with a native English-speaking research assistant to ensure

the accuracy of the translation. The interviews followed a semistructured guideline consisting of four elements:

1. Introductory questions to get to know the interviewee (age; length of apprenticeship; tenure; occupational experience)
2. Framing questions on (intergenerational) learning (general meaning; previous learning experiences on and off the job)
3. Focus questions on intergenerational learning in the apprenticeship program (strengths and weaknesses of older and younger workers; types of knowledge learned from each other; descriptions of how intergenerational learning took place; differences and similarities between the generations)
4. Interviewees' concluding remarks (evaluation of the apprenticeship program; suggestions for improvement; additional comments)

We used the interview guideline in a flexible way. All participants were asked all questions; however, we adapted the questions according to the stage of the participant's apprenticeship. For instance, we asked interviewees before the start of the qualification about their positive and negative expectations of intergenerational learning, during the apprenticeship about their current learning experiences with the other generation, and after the program about their retrospective evaluation of learning in an intergenerational training group.

Data Analysis Strategy

Following the transcription of all interviews, we used MAXQDA software (VERBI Software, 2016) to analyze our data. We began by coding the first-order "in vivo" interview data, meaning we categorized participants' original sentences into groups of statements dealing with related topics (Gioia, Corley, & Hamilton, 2012). In particular, we adhered to our theoretical framework and coded the data in terms of each generations' perceptions of expert, practical, and social knowledge-exchange processes. However, although we had a general theory-driven focus of analysis, our coding approach was not purely deductive, meaning that we were willing to adapt our theory-based coding scheme

FIGURE 1

Interviewees were interviewed twice, before and after the apprenticeship program. Total $N = 23$.

TABLE 1
Demographics of Interviewees (N = 23)

	Younger employees (n = 8)	Older employees (n = 11)	Instructors (n = 4)
Age (in years)			
Average age (SD)	18.00 (1.07)	43.73 (1.95)	58.00 (4.24)
Age range	16–19 years	41–47 years	54–64 years
Sex			
Male	7	11	4
Female	1	0	0
Work experience (in years)	0.96 (0.58)	27.50 (2.21)	37.25 (6.90)
Tenure (in years)	0.96 (0.58)	21.18 (4.32)	29.75 (14.75)

during the process as needed. Given that “data is inextricably fused with theory” (Alvesson & Kärreman, 2007:1265), we followed recommendations by Gioia and colleagues (2012) to consult the literature again after our first coding phase. The goal of this step was to see whether the grouped first-order statements fit theoretical concepts, or whether new themes might have emerged that had not been considered in previous work (see also, Rowley, 2012). This procedure uncovered that participants talked about one additional type of knowledge—metacognitive knowledge—that was not included previously in the intergenerational learning literature. Thus, we extended our coding scheme to be able to code the participants’ statements in this area, too.

In the next step, we summarized the grouped first-order statements into second-order categories (Lockett, Currie, Finn, Martin, & Waring, 2014). These categories combine a number of first-order categories in a more theoretical and abstract way, but are still close to the interviewees’ meaning systems (Costas, 2012; Pratt, 2009). Furthermore, we returned to the company to clarify ambiguous statements and to discuss the grouped first-order statements and second-order categories with the interviewees and human resource experts on vocational education.

To analyze intergenerational learning processes at different time points, we applied two strategies. First, we made a note for each interview indicating at which stage of the intergenerational apprenticeship program the interview was conducted (i.e., before the start of the program, in the first year of the apprenticeship, in the second year of the apprenticeship, or after completing the apprenticeship). In other words, we assigned interviewees’ statements to different phases according to their temporal embeddedness

within the apprenticeship program. Second, when participants talked about their past experiences, we assigned these statements to the time point they were referring to. By way of illustration, we coded the following statement of an older apprentice in the second year of the program as belonging to the middle phase of the intergenerational learning experience:

Yes, somehow they [the younger apprentices] had some advantages at the vocational school in the beginning. But when you become older, you see things a bit differently, a bit more ambitiously. You do not want to look stupid in front of the kids. That’s why you start practicing a bit more, even if your brain can’t really remember it, and after a while, you think that it works out quite well.

Furthermore, if an instructor talked about the changes in learning behavior in retrospect, we also classified this statement as belonging to the middle phase:

With regard to the learning speed, they [the younger and older apprentices] become more similar. In the beginning, there is some insecurity. [. . .] They [the older apprentices] have to get used to it again. If they have to read a book and write some things down. . . . When was the last time they did something like this? That’s 20 to 30 years ago. That’s difficult at the beginning. They [the older ones] need a bit more time than the younger apprentices to get into it. [. . .] But then, after six to nine months, they say, “I am glad that I did it.”

Last, to ensure that our coding procedure did not only reflect our perceptions and to avoid systematic confirmatory bias (Johnson & Harris, 2002), we trained a research assistant to recode 26% of all interviews (n = 8) using our second-order category scheme. Following accepted guidelines (e.g., Schreier, 2012), we provided the coder with the segmented interviews, meaning that transcripts were cut into segments that the coder had to assign to our second-order categories. The double-coded transcripts reached a satisfactory agreement rate of 87%.

RESULTS

The following results are structured according to our research question. Through systematic coding of our

data, we first extracted the different types of knowledge that interviewees mentioned as relevant for intergenerational learning processes. Based on these findings, we then investigated how these types of knowledge are exchanged across group phases.

Outcomes of Intergenerational Learning Processes

Table 2 provides an overview of the four types of knowledge exchanged during the intergenerational learning program (second-order themes). Furthermore, it gives an impression of exemplary first-order statements that build the foundation for the aggregated second-order categories.

Expert Knowledge

The interviewees regarded young apprentices as possessing unique expert knowledge about general topics required for vocational education (e.g., mechanics, languages, mathematics) and as having a good technical understanding. The older participants owned a considerable amount of company-specific expertise and knowledge about materials used in everyday working life.

In six out of the eight instructor interviews (75%), the young apprentices' school knowledge was emphasized as a potential source for intergenerational knowledge exchange, for example by mentioning that "the younger apprentices have advantages at vocational school." As the instructors noted, young job starters who came directly from high school could access comprehensive knowledge about topics such as the Pythagoras' theorem more easily. Furthermore, one instructor emphasized that the younger apprentices' technical knowledge was well developed (e.g., about simulation technology, computer hard- and software, 3D technology). Likewise, all interviewed young apprentices ($n = 8$) pointed out that "the younger ones have an easier time at school" because "we just graduated from high school and are still used to it." In a similar vein, in the 11 interviews with the older apprentices who were either enrolled in the program or had recently completed it, interviewees expressed the opinion that "of course, in the beginning the younger ones are better at school, they have just finished their final secondary-school examinations, and they make a lot of progress very quickly." This topic was not mentioned in the four interviews before the program start with the experienced workers in 2011; participants emphasized that they could only speculate

about the collaboration at school at this early point and first needed to gain some experience.

The instructors emphasized participants' company-specific expertise (e.g., about characteristics of a specific car model or assembly line specifics) in four of the eight interviews (50%). One instructor pointed out that this information was not only new for the younger apprentices, but also for the instructors themselves, because vocational instructors are usually not involved in the plant's day-to-day operational work. Three of the eight young apprentices (37.5%) noted that the older apprentices possessed expert knowledge about the company that was helpful, such as knowledge about employment rights, working hour laws, and procedures in the company. The experienced apprentices did not talk much about how they passed on company-specific knowledge to their younger colleagues; this topic was only mentioned in two interviews.

The interviews also dealt with *how* expert knowledge was exchanged between the apprentices of different generations; namely, through (1) discussion (e.g., "they [the young and old apprentices] discuss about the class content"); (2) asking questions (e.g., "in school, they [the older apprentices] wanted more help, they asked for things they did not know—and with regards to practical information, it often was the other way around"); (3) private learning sessions (e.g., "there is a readiness to help each other; for example they [one young and one experienced apprentice] went home to one older colleague to give him one or two private lessons"); and (4) the instructors' encouragement of knowledge sharing (e.g., "it's important to motivate them [the older apprentices] to talk about their experiences").

Practical Knowledge

The interviewees pointed out that the young apprentices possessed practical knowledge about how to access knowledge at vocational school (e.g., search techniques, information management). The older apprentices had strong practical skills at work, because they were familiar with many procedures and hand movements needed to create tools.

With regard to the young apprentices' practical knowledge, the instructors mentioned that the older apprentices often did not know where to find information or how to work with texts. The young apprentices could explain to them how to systematically access information (mentioned in two of eight interviews; 25%). One of the eight young

TABLE 2
Types of Knowledge Learned in the Intergenerational Training Group

Associated second-order categories		First-order statements
Expert knowledge	Provided by the younger generation	<p>Y: Of course, we sat down together and helped them [the older apprentices] with the homework for school. In particular, we had to do mathematical tasks, over and over again.</p> <p>I: Younger workers contribute knowledge about new technical devices, which is not the case with older employees. For example, knowledge about simulation technology and so on.</p> <p>O: I had a manual calculator, Texas Instruments, that was very modern 20 years ago. A younger colleague politely told me that I would need a new one, and she patiently explained the new model to me.</p>
	Provided by the older generation	<p>Y: Well, they [the older apprentices] possess considerable expert knowledge, most of them have already completed an apprenticeship. A profession in metals, whether as a metal worker or car mechanic, is an optimal prerequisite for the apprenticeship. The knowledge they previously acquired is still there. The basic expert competences can still be accessed.</p> <p>I: Knowledge exchange is important; I need to be able to motivate the older apprentices to share their expertise. They have worked on the assembly line for years and have gained a lot of company-specific knowledge.</p>
Practical knowledge	Provided by the younger generation	<p>O: I did not know how to quickly find information that I needed to solve tasks at school. However, over time I saw that my younger colleagues had a clever system of Post-it notes in their books. I adopted this system and was soon able to solve tasks much faster.</p> <p>O: I was sitting next to a younger colleague who always wrote down everything that the instructor said in a very structured way. In the beginning, I did not make any notes, but over time I imitated my younger colleague's behavior and noticed that I could remember much more.</p>
	Provided by the older generation	<p>O: With regard to practical tasks, we had a few advantages, because we had already completed an apprenticeship. If you own a house, or ride a motorcycle, or repair your car, or something comparable. . . our younger colleagues didn't have experience with all that.</p> <p>I: The younger apprentices imitate many of the older ones' work practices.</p>
Social knowledge	Provided by the younger generation	No example given.
	Provided by the older generation	<p>O: We were asked a lot of questions [by younger apprentices], because we already possess a lot of knowledge about the procedures at the plant. . . Whom to ask if you need something. . . We sometimes took on a kind of paternal role.</p> <p>O: The younger employees are. . . how should I explain it. . . Everybody wants to have their own way, they are not that prepared to make a compromise, because they simply lack life experience. [. . .] And we already have 20 years of work experience. We do not get upset as quickly as our younger colleagues, and we know how to deal with difficult social situations to solve conflicts.</p> <p>Y: Sometimes they remind us of what is really important in life. Having friends, a reliable social network—and not just excellent grades.</p>

(table continues)

TABLE 2
Continued

Associated second-order categories		First-order statements
Metacognitive knowledge	Provided by the younger generation	<p>Y: We were able to let the older employees know how to deal with unknown problems by developing solutions systematically.</p> <p>Y: Yes, there were many things. We acquired, for example, specific methods to learn at school. For instance, we learned how to memorize facts effectively. Our older colleagues, of course, hadn't heard about that before. We could pass this knowledge on to them.</p> <p>O: They [the younger employees] had already experienced learning through group work. That was different for us [the older employees]. We only knew teaching approaches based on direct instruction or lecturing.</p> <p>O: I remember from when I was younger that you do not want to work on the task when the instructor is away but instead chat to your colleagues. We [the older employees] tried to gently push the younger to organize themselves: Do it now, then you can have the afternoon off!</p>
	Provided by the older generation	

Note. Statements from Y = Younger apprentice, O = Older apprentice, I = Instructor.

interviewees (12.5%) also referred to this topic by saying that they taught their older colleagues methods for acquiring knowledge. The older workers provided examples of how they imitated the young workers' way of accessing information in three of fifteen interviews (20%). For instance, one older apprentice stated that he was impressed by the younger apprentices' idea of using Post-It notes to indicate what types of information can be found in particular book chapters and that he copied this behavior to become more efficient.

According to the apprentices' and the instructors' descriptions, older workers had a wide range of practical knowledge. Six of eight interviews with the instructors (75%) contained elaborations on the experienced apprentices' practical know-how. For example, one instructor noted that "the old apprentices were far ahead with regards to on-the-job tasks" and another one pointed out that the older apprentices could show their younger colleagues "how to work with the grinders or how a tool should be used." Seven of eight interviewed young apprentices (87.5%) pointed out that their experienced colleagues had a lot of practical knowledge that they could pass on to them. In a similar vein, 13 of 15 older apprentices (86.7%) mentioned that "we were much faster in practical tasks" so that "when they [the young apprentices] had questions, we showed them how to deal with it [the tool or machine]."

A number of statements by young and old apprentices also related to how practical knowledge

was exchanged between the generations. The learning process was described as occurring through (1) demonstration (e.g., "the old apprentices show you how to do it [the task]"); (2) feedback (e.g., "they [the old apprentices] notice of course when you fumble with a tool or you are not using it correctly. They come over and suggest how to do a movement differently, and then you can work faster."); and (3) imitation (e.g., "they explain it to you and ask you to copy their behavior).

Social Knowledge

The described instances of social learning exemplified unidirectional knowledge transfer processes from the older to the younger apprentices, meaning that no evidence for the bidirectional exchange of social knowledge was given. In particular, the interviewees mentioned two topics. First, three of eight younger interviewees (37.5%) acknowledged that the older apprentices had a positive influence on dealing with conflict and disagreement within the group. Furthermore, two younger interviewees reported that their older colleagues made them aware of the importance of friendship and integrity at work. Similarly, in three of eight instructor interviews (37.5%), it was emphasized that the age-mixed apprenticeship group was characterized by a positive learning climate of mutual support, and that the older workers helped the group to solve conflicts. In six interviews (40%), the older workers

explained their advantage in dealing with interpersonal problems by pointing out that through the years they have had enough time and opportunities to develop the necessary social skills for facilitating teamwork.

Second, the older workers' large company-internal network was appreciated as a valuable source for career planning. For example, two young apprentices pointed out that their older colleagues could help them if they wanted to be placed in a particular department during the practical phase of their apprenticeship. This notion was also supported in one interview with an instructor and two interviews with older apprentices. To illustrate, one experienced worker said that "your network can help to some extent, you know many people after 25 years in the company. You walk through the production hall and [...] then you can already make a couple of arrangements for them [the younger apprentices]."

Interviewees mentioned that social knowledge was transferred between participants through (1) older apprentices acting as role models (e.g., "once in a while the young apprentices notice that there is an older colleague behaving differently, and they start thinking about changing their [social] behavior"), and (2) by means of conciliatory interventions (e.g., "when they [the younger apprentices] had problems among each other and one noticed that you [as an older apprentice] calmed them down or spoke a few clarifying words").

Metacognitive Knowledge

The fourth category that we added to the coding scheme concerns the monitoring of individual thought processes, or "thinking about thinking." Two different types of metacognitive knowledge were exchanged in the intergenerational groups. On the one hand, the younger generation could learn from the older workers' strategies for staying focused at work and for coping with stressful situations or problems. For example, the younger participants initially stopped engaging in their learning task as soon as the instructor was absent; however, after a while, they recognized that the older workers kept on working even in the absence of the instructor, and thus, had less homework and more leisure time. Upon observing this, the younger workers kept working on their task even when no authority figure was present. This observation was also supported by three of eight interviews (37.5%) with the instructors, who portrayed the intergenerational

apprentice group as much more disciplined and self-organized than apprentices' groups of the same (i.e., young) age. Four of eight young apprentices (50%) were impressed by the older workers' abilities to structure their work day, and they reported that their experienced colleagues showed them how to stay calm in demanding situations. Also, in five of eleven interviews conducted with the older apprentices during and after the program (45.5%), the interviewees noted that their presence could help their younger colleagues to learn how to organize and motivate themselves at work.

On the other hand, in four of eleven interviews with experienced participants (36.4%) who were currently enrolled in the program or had recently graduated from it, the interviewees talked about their growing ability to monitor their learning processes and how they "learned how to learn" through their interactions with the younger apprentices. Two of eight interviewed young employees (25%) mentioned that they were more familiar with strategies to memorize information and that they could pass this knowledge on to their older colleagues. These reports about the transfer of metacognitive knowledge were also confirmed by one instructor (12.5%). In addition, apprentices from both generations reported that they became more aware of their unique knowledge and skills through their interactions with one another.

Both types of metacognitive knowledge were acquired through a combination of being a role model for the other generation and explaining the reasons for a particular behavior (e.g., "we learned a lot [for vocational school], even at the weekends and explained to our younger colleagues that this apprenticeship is a unique opportunity. A few of them did not care, but some also became more disciplined, according to the motto 'if this old guy can do it, I can do it even better'").

Intergenerational Learning Processes Across Different Group Phases

Beyond the different types of knowledge acquired in the intergenerational training groups, we were also interested in how specific types of knowledge are exchanged at different time points. The interview data revealed an interesting pattern of three sequential phases that followed the chronological course of the program, as depicted in Figure 2. The phases in this model should be understood as potentially overlapping time periods. They do not necessarily possess precise chronological boundaries,

FIGURE 2
Participants' Sequential Learning Phases

but are characterized by distinct attributes. Indeed, many participants used general time references, such as "in the first months" or "after a while" to refer to knowledge-exchange processes at different time points. Yet, although the phases vary in length, intergenerational learning groups generally went through three predictable phases: a *familiarization* phase, during which the relationships between group members were defined; an *assimilation* phase, during which similarities between apprentices of different age groups were developed and emphasized; and a *separation* phase, during which the established nature of intergenerational learning was substantially altered and participants changed their psychological focus to concentrate on their new jobs.

Phase 1: Familiarization

Based on our qualitative findings, we labeled the first phase of the intergenerational learning process as "familiarization." In this phase, the apprentices met for the first time and carefully got to know each other. Temporally speaking, the familiarization phase started with the commencement of the apprenticeship program and lasted for approximately 5 to 9 months. The four interviewed instructors referred to the transition from Phase 1 to Phase 2 as occurring (1) after "half and three-fourths of a year," (2) after "some

time, when one has adapted," (3) when "the initial reservations [to come into contact with members of the respective other age group] are gone," and (4) after "the beginning, the first half year." The 11 older apprentices did not mention a particular time frame, but all noted that "in the initial period" they needed to get used to the program and their younger colleagues. For instance, one of the older apprentices who had been in the program for 5 months at the time of the interview indicated that "you very much needed to get used to everything for the first two, three months, but now it gets better with every day." In a similar vein, the eight younger apprentices pointed out that "in the beginning" they had to get accustomed to the day-to-day working life and the collaboration with their older colleagues. Illustrative quotations are as follows: "from the outset we [the elder and younger apprentices] had to communicate with each other, and after some time you found the right level, on which you can talk to each other," or "when we started, it was strange that the older colleagues were also attending, but in the end it became more fun than without them."

The knowledge exchange during the first phase was focused on expert knowledge and practical knowledge. When older and younger workers talked, they mostly spoke about work-related (rather than private) topics. Participants did rarely engage

in social or metacognitive knowledge sharing during this first phase.

Concerning participants' expectations about the program, the older apprentices' statements indicated low learning-related self-esteem and anxiety about not being able to pass the qualification. They seemed to have adopted a negative picture of aging that associates age with lower cognitive ability and adaptability. The instructors mostly agreed with this perspective before the first intergenerational apprenticeship group started (i.e., in 2011). They were worried that the older apprentices would need additional lectures to acquire the necessary knowledge. In particular, as one instructor emphasized, older workers were expected to face greater difficulty acquiring expert knowledge: "With regard to practical skills, I think they can manage. [...] But with regard to theoretical knowledge, I see little chance that they can reach an acceptable result. To do so, they lack too much basic knowledge." The older apprentices shared the view of possessing an advantage in their level of practical skills before the start of the program: "With regard to vocational knowledge, or working, I think we cannot learn much from them [the younger apprentices]." Yet, the older workers expected their younger colleagues to have better technical knowledge and to provide new solutions for problematic company procedures.

Furthermore, during the familiarization phase, the older workers still struggled with less traditional forms of learning, such as group work and group discussions. They were more used to lectures and learning by heart instead of reflective learning experiences: "We now get a lot of feedback, and they [the instructors] ask us to reflect on our own, and so on. I have not been confronted with this; that's difficult. Speaking without notes, sometimes I still feel self-conscious." In comparison, the younger apprentices had a positive outlook and expressed excitement about learning with and from their older colleagues. However, they also raised some doubts regarding the intergenerational collaboration and were concerned that the older workers might act like "smart-alecks."

Phase 2: Assimilation

After 5 to 9 months, the nature of the intergenerational exchanges took a different shape. Because older and younger workers increasingly recognized their similarities in this second phase, we chose the label "assimilation." A young worker summarized the

situation as follows: "They [the older apprentices] are just like us, only with a house, a family, and gray hair." Timewise, the second phase lasted the longest and ended only a few months before the qualification program concluded.

The focus of intergenerational interactions in the second phase was on practical, social, and metacognitive knowledge. Most participants emphasized a balanced level of intergenerational exchange, with both generations obtaining approximately the same amount of knowledge from each other. For example, a younger apprentice stated: "The first days when we were working at the company's shop floor, I thought we would learn more from the older colleagues. After vocational school started, I then thought that the older would learn much more from us, but now I would say it's relatively balanced."

The instructors noted that when the group needs to split into smaller groups to solve a task, younger and older apprentices often spontaneously form intergenerational groups. In contrast to the instructors' assumption in the first phase stating that the learning speed and learning outcomes are mostly determined by the apprentices' age, they now emphasized the influence of individual differences and educational background. For instance, a vocational school instructor pointed out: "When I am teaching the class, I only have one age group. I only recognized the age differences in the first year of the apprenticeship. At this point in time, I get the opportunity to let the group become an entity." Whereas the instructors had initially raised doubts about the older workers' ability to participate successfully in the qualification program, in this phase they expressed confidence in the experienced apprentices' capacities.

In addition, a change in the self-image of both the younger and the older apprentices became apparent during this second phase. The younger participants mentioned that they feel proud and competent when they can pass on their school knowledge to their older colleagues. The older workers switched from mainly talking about age-related deficits to acknowledging the possibilities of lifelong learning. Nine of them talked about a "breakthrough" in their learning capabilities, meaning that "in the beginning, your brain was literally hurting from thinking too much, but after a while you got used to it and learning became much easier." In line with this notion, in three of the eight interviews with instructors (37.5%), interviewees mentioned that the older workers experienced a notable change in their

learning behavior. To illustrate, one instructor explained that "it took some time, but suddenly the older apprentices got used to learning again. They found their individual learning speed and developed learning strategies, sometime on their own, sometimes together with their older and younger colleagues."

Phase 3: Detachment

A different picture emerged when analyzing the statements of individuals who had already completed the program, or were about to do so. The young and experienced apprentices then transitioned to a third phase, which comprised the last few months of the qualification program and continued beyond the program. Although the participants emphasized appreciation for the unique opportunities that the apprenticeship provided, the focus of their talk shifted to their new workplaces and future work tasks. Based on these findings, we labeled the third and last phase as "detachment."

The younger and older apprentices again split into subgroups within the vocational training group. They concentrated on the time after the apprenticeship and aimed to be placed at a department with their same-aged colleagues, meaning that the young apprentices wanted to stay with their young colleagues and the older apprentices preferred to be placed together with their older colleagues. The amount of knowledge exchanged between generations decreased in this final phase. When helping each other out, the conversations mostly concerned social advice regarding final job placements in the plant. For instance, the younger apprentices asked the older apprentices about their experience with particular departments or about contact persons from the older workers' social networks within the firm.

The older apprentices maintained a positive image of their lifelong learning capabilities, yet they also emphasized that the training program is not suitable for all older workers, but only for those with an above-average motivation and intelligence. They also critically reflected on the cost-benefit ratio of retraining experienced workers. For example, one older worker shared his experience about the acquisition of technical skills as follows: "The younger ones, they really try to teach us [how to work with computers], and some of the older ones like dealing with computers, but not all of them. Because that takes time. For example, why teach the knowledge to someone who has only five years left until

retirement?" To some extent, interviewees in this phase lost their earlier positive bias or "rose-tinted glasses" regarding their participation in the program. As such, they evaluated the program in a balanced way by considering both advantages and disadvantages.

DISCUSSION

This in-depth qualitative study contributes to research on intergenerational phenomena in the workplace by uncovering which types of knowledge are exchanged between generations in organizational training groups and by investigating how intergenerational learning processes change at different time points. Whereas previous work has focused mainly on unidirectional knowledge transfer from more experienced to less experienced individuals (e.g., Davenport & Prusak, 1998; Lave & Wenger, 1991), our findings highlight that both age groups possess unique types of expert, practical, social, and metacognitive knowledge. Notably, our findings show that not all types of knowledge are exchanged equally at all points in time. In particular, our data suggests that acquiring expert and practical knowledge from one another is most important during the familiarization phase of an intergenerational learning program. In line with this finding, knowledge management and diversity researchers have argued that a common (expert) knowledge base needs to be established before groups can engage in effective interactions (Alavi & Leidner, 2001; Kelly et al., 2001; van Knippenberg, De Dreu, & Homan, 2004). Once familiarization has been accomplished and intergenerational participants know each other better, they enter the assimilation phase. At this stage, employees from different generations still exchange practical knowledge, but social and metacognitive learning processes gain relevance. Talking about expert knowledge becomes less relevant at this point in time. Last, in the detachment phase, employees from different generations stop engaging in intensive intergenerational learning efforts and focus on the exchange of social knowledge. Both generations reorient themselves toward their own age group, and intergenerational differences become salient again. Our findings possess important theoretical implications for conceptualizing intergenerational learning in organizations and practical implications for managers and instructors concerned with the design of intergenerational learning initiatives.

Furthermore, several implications for future research accrue from our exploratory study.

Theoretical Implications

First, our qualitative findings show that a wide range of knowledge beyond the formal training content is exchanged between training participants from different generations in a bidirectional process of mutual knowledge exchange. Indeed, our results suggest that neither generation is generally more knowledgeable than the other. Both younger and older employees can be experts in particular subject areas and novices in others. As such, scholars should take care to consider both pathways (i.e., knowledge exchange from older to younger employees as well as from younger to older employees) when investigating intergenerational programs. A focus on unidirectional transfer carries the risk of potentially omitting a wide range of organizational learning processes.

Second, previous research investigating the intergenerational exchange of tacit knowledge in familial or educational settings mainly focused on practical and social skills (e.g., Harvey, 2012; Schotter & Sopher, 2003; Underwood & Dorfman, 2006; Zuccherro, 2011). In addition to these two types of tacit knowledge, we found that individuals developed the ability to "think about thinking" through intergenerational interactions. This type of skill is also referred to as metacognition (Hartman, 2001; Johnson, Archibald, & Tenenbaum, 2010) and manifests in participants' improved ability to monitor and align their learning processes (Hartman, 2001; Johnson et al., 2010). Metacognitive knowledge concerns knowledge about managing oneself in learning-related situations. Thus, our research emphasized that tacit knowledge in intergenerational interactions should be considered in terms of how to get along at work (practical knowledge), how to manage interpersonal relationships (social knowledge), and how to reflect on one's abilities and their development (metacognitive knowledge). Related to our findings, Wagner (1987) differentiated between tacit knowledge in work-related situations about managing tasks, managing others, and managing self. Our findings can be seen as an extension of this initial categorization in the learning context, such that tacit knowledge about managing tasks is equivalent to practical knowledge, tacit knowledge about managing others is related to social knowledge, and tacit knowledge about managing self is concerned with metacognitive knowledge about

organizing and monitoring one's learning processes. Thus, an important contribution of this work is the differentiation of tacit knowledge into three dimensions, with varying degrees of relevance for intergenerational learning processes at different time points.

Third, the three phases of intergenerational learning show some overlap with (but also some divergence from) prevalent models of group development (Tuckman, 1965; Tuckman & Jensen, 1977). The first familiarization phase in intergenerational learning, as identified in this study, corresponds to the forming phase in Tuckman's (1965) model, in which individuals come together as a group. However, we did not find evidence of a storming phase (Tuckman, 1965) among the apprentices. Instead, the level of intergenerational conflict remained relatively stable over time and tended to increase toward the end of the apprenticeship program. Furthermore, the establishment of group norms (Tuckman's norming phase) was not restricted to a unique phase within our data, but also occurred during the familiarization phase. The lack of interpersonal conflicts and the immediate focus on the establishment of group norms at the beginning of the apprenticeship may have been due to the learning program's high degree of uncertainty. For example, members of a project group usually have an established status based on their expert knowledge or experience and try to defend this status when they come together as a group, which may generate relationship conflict (Kauffeld, Lehmann-Willenbrock, & Grote, 2015). By contrast, the intergenerational apprenticeship program examined here constituted a completely new environment for all participants. As such, participants likely were not challenged to maintain their predefined status and identity in the group, but rather were concerned with finding their identity in this new organizational learning context. The exchange of expert and tacit knowledge at the beginning of the apprenticeship aligns with the idea that group members need to develop shared mental models as a basis for knowledge sharing (Ellwart et al., 2013). Furthermore, the swift establishment of group norms in intergenerational training groups, as observed in our study, provides a secure social context in which individuals can find their identity within the group, rather than defending it (as would be the case in Tuckman's storming phase).

However, although Tuckman's forming, storming, and norming phases were not distinguishable in our sample of intergenerational learning groups, the

assimilation phase in our descriptive model does bear a resemblance to Tuckman's (1965) performing phase. In the assimilation phase, the intergenerational groups focused on the training content and on exchanging practical, social, and metacognitive knowledge that helped improve their learning outcomes. Attaining these learning outcomes corresponds to group performance in Tuckman's (1965) group development model.

Moreover, the final detachment phase of intergenerational learning as described in our model is comparable to the adjourning phase of Tuckman and Jensen's (1977) amended model. Similar to dissolving the group in Tuckman and Jensen's (1997) adjourning phase, the separation of group members was particularly evident between the apprentices of different generations in the final detachment phase of our model. Whereas age-homogenous subgroups tended to remain together after the end of the apprenticeship program, the interactions between members of different generations decreased and often ceased entirely. Thus, when individuals transition into a new organizational context (in our case, their permanent workplaces) age differences become more apparent again, and individuals orientate toward others who are similar. This development is in line with previous research arguing that individuals are more likely to orient toward similar others in stressful situations than in stable environments (for an overview, see Blanton, Burkley, & Burkley, 2014). Furthermore, the older participants' evaluation of the efforts needed to pass the qualification is more realistic at the end of the program than at earlier stages of the apprenticeship. The "rose-tinted glasses" may have helped older workers to remain motivated during the apprenticeship and to defend their program participation against former coworkers' potential criticism. However, a more balanced judgment, as evidenced by participants' interview responses after completing the qualification program, may be more useful for other experienced workers who seek realistic insights into the challenges of a requalification. These findings highlight the importance of longitudinal research designs, because the point in time at which data are collected from participants may have a significant impact on program evaluations.

Practical Implications

We hope that our findings will encourage practitioners to embrace intergenerational learning as an

opportunity for ensuring that employees from all generations possess the necessary skills for dealing with business challenges in a complex and ever-changing business environment. Yet, human resource management research and practice has only recently become aware of the opportunities for knowledge building inherent in intergenerational learning processes (Ropes, 2013). To date, programs involving learners from different generations are often conceptualized as a unidirectional knowledge transfer process from knowledgeable experts to novices (e.g., trainings, mentoring). Because intergenerational learning provides a promising avenue to prevent organizational knowledge loss (e.g., Calo, 2008; Starks, 2013), managers may want to invest more effort into enhancing bidirectional learning between generations through formal support for this kind of knowledge exchange. Instructors or managers could systematically map the expert, social, and metacognitive knowledge content of the different generations to uncover where knowledge of particular value for the organization is located. For example, in the apprenticeship setting, instructors could aim to make the informal knowledge exchange between generations explicit by writing down and visualizing the topics discussed in intergenerational interactions. Research on strategy development has suggested that using frameworks, clustering knowledge, or visualizing information can help to structure data and explore novel insights in collaborative settings (e.g., Eppler & Platts, 2009; Heracleous & Jacobs, 2008). Thus, instructors can selectively focus on particular topics (e.g., by elaborating how to use a tool or discussing what is specific about a particular type of car) and map the explicit knowledge that individuals from different generations have about this area. Furthermore, they may want to encourage participants to reflect on the similarities, differences, strengths, and weaknesses of different generations (Franz, 2009; Sánchez & Kaplan, 2014).

Our findings also emphasize the importance of adapting training methods to the different phases of intergenerational learning. Forming age-diverse groups does not automatically result in learning but calls for instructors' or supervisors' active engagement (Tempest, 2003). Specifically, our results suggest that in the first phase (familiarization), instructors need to create a safe learning environment in which intergenerational differences are discussed openly. The aim should not be to eliminate differences between generations, but to appreciate them as a source of

learning (Franz, 2009). Such a reflection on the differences and similarities between generations in intergenerational learning processes can be an important first step for reducing age stereotypes (Penick et al., 2014). This is of particular importance during the early stages of intergenerational learning in groups, because members need to develop a common knowledge base to engage effectively in knowledge exchange (Alavi & Leidner, 2001; Kelly et al., 2001). Conversely, in the second phase (assimilation), instructors may want to step back and assign more responsibility to the trainees, such that group members can enlarge their knowledge base through intergenerational interactions. Instructors can focus on teaching expert knowledge and on providing the space for collaborative learning experiences between the generations. In the third phase (detachment), instructors need to be aware that generations tend to reorient themselves toward colleagues of a similar age. To avoid a disruption of contact between the generations, instructors should encourage a discussion of how individuals from both generations want to interact with each other once the group disbands. For example, instructors might encourage intergenerational mentoring tandems or collegial coaching dyads in which an older employee is paired with a younger colleague and which continue their exchange even after a program has ended. Such an initiative might include regular weekly lunch meetings or coffee breaks that focus on informal knowledge exchange and mutual support. Given participants' prior socialization and development of work relationships through the intergenerational learning program, such peer coaching activities as follow-up measures could prove very fruitful (see, Parker, Hall, & Kram, 2008).

Third, our findings point to obstacles that may prevent older workers from engaging in lifelong learning. In particular, prior to the program, older workers were afraid of acquiring theoretical knowledge and thought that their cognitive capabilities would not be sufficient for acquiring the qualification. Initially, even the instructors shared this negative view of older workers' capacity for learning. However, after a few months the older workers recognized that they had retained their abilities to concentrate and learn. In combination with the development of metacognitive skills through interaction with their younger colleagues, their learning capabilities increased. This observation suggests that positive role models could

increase older workers' participation in trainings through the reduction of age-related stereotypes.

Limitations

Conducting a qualitative field study has its inherent limitations, but the richness of the real-world data that can be obtained from such an approach helps counterbalance this downside. An opportunity for field research typically implies that scholars have to deal with organizational restrictions, such as not being able to investigate a control group in the case of our study. As a consequence, we cannot completely rule out that the observed changes in knowledge result not solely from intergenerational exchange processes, but rather from other factors, such as maturation effects or events outside the apprenticeship program (Shadish, Cook, & Campbell, 2001). Nevertheless, our qualitative evidence strongly indicates that the contact with the other cohort constituted the main source of learning. First, it is well established in the literature that practical knowledge is transferred through observations and shared work experiences (Nonaka, 1994; Nonaka & Konno, 1998; Nonaka & Takeuchi, 1995; Nonaka, von Krogh, & Voelpel, 2006). By definition, these processes are difficult to verbalize, but we used follow-up questions to encourage participants to explain in-depth how knowledge was transferred between individuals. Second, interactions with peers have repeatedly been identified as a main source of (informal) learning in groups (e.g., Chan, Li, & Pierce, 2014; Liang, Moreland, & Argote, 1995; Peeters et al., 2014). Similarly, the participants of the investigated program were trained full-time together as a group, and thus, had ample opportunities to observe and communicate with each other, which indicates that learning processes outside the program may have played only a minor role for the types of knowledge investigated here.

Furthermore, as in all research based on interview data, our findings might be influenced more strongly by the longer interviews. Of course, these sources contained more information than the shorter ones, but we took particular care to code and treat every conversation equally. Closely following the recommendation of Gioia and colleagues (2012) for creating qualitative rigor, we treated interviewees as "knowledgeable agents," who will explain as much of their thoughts as they think is necessary to provide a picture of the situation. To avoid systematic confirmatory

bias (Johnson & Harris, 2002), all three authors converged upon the same interpretations during the analysis phase, the categories and interpretations were discussed with participants after the analysis phase, and a student assistant double-coded part of our interview data.

Related to the previously mentioned concern, the experiences reported in our interviews reflect the subjective reality of the participants; that is, their perceptions and attitudes. We acknowledged all interviewees' experiences by understanding them as active constructors of their organizational realities and assuming that they "know what they are trying to do and can explain their thoughts, intentions, and actions" (Gioia et al., 2012: 17). Nevertheless, their statements might be biased by (meta-) stereotypes about their own behavior as well as the behavior of the respective other generation (Finkelstein, King, & Voyles, 2015; Finkelstein, Ryan, & King, 2013). Although it is important to recognize this limitation, it is worth highlighting that perceptions guide behavior, and not objective events. For instance, it has long been argued that group members' diversity characteristics can only influence outcomes if individuals recognize that others differ from them (Ashforth & Mael, 1989; Harrison & Klein, 2007; Homan & Jehn, 2010; Shemla & Meyer, 2012). Indeed, research shows that perceptions of diversity mediate the effects of team members' actual differences on team outcomes (Harrison et al., 2002).

Last, our sample mostly contained white male apprentices. Although this can be seen as a limitation, it strengthens our assumption that the learning processes occurred due to generational differences, and were not confounded by other diversity characteristics. Yet, we might note that intergenerational exchange processes can look different in other cultural settings (Lyons et al., 2014). For instance, in collectivistic nationalities that place more importance on hierarchies, younger individuals may be more afraid to speak up than individuals from an individualistic country (current study). To enable the reader to assess the transferability of our findings, we took particular care to offer a thorough description of the study setting and rich contextual information. Given that intergenerational learning experiences are a prevalent issue in today's workforce (Joshi et al., 2010; Sánchez & Kaplan, 2014), we are confident that our findings are relevant to a range of organizational situations beyond the specific training setting investigated here. The processes we observed might

represent general occurrences, which are similar or even structurally equivalent across domains (Gioia et al., 2012).

Future Research

This study has provided meaningful findings that point to several avenues for future research. First, we conducted our interviews at two time points and included apprentices who were at different stages of the qualification (before/during/after the program). This design allowed us to develop some initial ideas about intergenerational learning processes at different stages of the apprenticeship program. However, given that only a small number of apprentices and instructors were interviewed twice, future research could investigate the nature, triggers, and results of changes in intergenerational learning in a longitudinal research setting with numerous measurement points (Ployhart & Ward, 2011). For instance, the timing of the shifts between the different phases may vary across groups or individuals. Moreover, a number of group-level antecedents (cohesion, size) or individual characteristics (openness to experience, self-consciousness) may affect when and how the transitions between the different phases occur. Furthermore, the actual behavioral interactions between apprentices from different generations could be examined, for example by means of interaction analysis during group discussions (e.g., Kauffeld & Lehmann-Willenbrock, 2012). Although such an analysis is beyond the scope of this study, it could yield interesting insights into fine-grained behavioral group dynamics in intergenerational learning contexts.

The training program investigated here was purposefully designed to bring together young and older workers at an automobile manufacturer in a stimulating learning environment. A substantial amount of financial and personnel resources were spent on the program to allow highly professional supervision of the trainees. Although our results highlight the potential of intergenerational learning, the concept is certainly not a silver bullet to solve every problem related to demographic changes (Ropes, 2013). Future research could examine potential "dark sides" of intergenerational learning relationships in less supportive learning environments. For instance, informal intergenerational learning might take place in multigenerational project groups that provide the opportunity for intergenerational exchange without explicitly structuring the learning process (Enberg, Lindkvist, & Tell, 2006). In less

positive learning environments, learners of different generations may be more likely to interact only with others from the same generation. According to the similarity-attraction paradigm (Byrne, 1971), individuals generally prefer others who are similar to themselves to those who have different characteristics. Consequently, the quality of social interaction processes and the development of a shared knowledge base may be impaired in intergenerational learning groups that are not supported by a structured learning environment (Liebowitz, Ayyavoo, Hang, Carran, & Simien, 2007; Sivasubramaniam, Liebowitz, & Lackman, 2012). Thus, bringing together individuals from different generations may not automatically result in intergenerational learning processes, and future research should investigate which circumstances stand out in encouraging intergenerational interactions.

CONCLUSION

Due to societal demographic changes, organizations need to tackle the dual challenges of qualifying older workers and transferring their knowledge to subsequent generations. This in-depth qualitative study provides useful insights into the potential of intergenerational learning for knowledge exchange in organizations. In particular, our findings show that individuals from different generations possess distinct expert, practical, social, and metacognitive knowledge, and that they exchange different types of knowledge at different time points. In closing, we hope that our study encourages future longitudinal work on the opportunities and pitfalls of intergenerational learning in the context of human resource development.

REFERENCES

- Alavi, M., & Leidner, D. E. 2001. Knowledge management and knowledge management systems: Conceptual foundations and research issues. *Management Information Systems Quarterly*, 25: 107–136.
- Alvesson, M., & Kärreman, D. 2007. Constructing mystery: Empirical matters in theory development. *Academy of Management Review*, 32: 1265–1281.
- Ashforth, B. E., & Mael, F. A. 1989. Social identity theory and the organization. *Academy of Management Review*, 14: 20–39.
- Baily, C. 2009. Reverse intergenerational learning: A missed opportunity? *AI & Society*, 23: 111–115.
- Bales, S. S., Eklund, S. J., & Siffin, C. F. 2000. Children's perceptions of elders before and after a school-based intergenerational program. *Educational Gerontology*, 26: 677–689.
- Bartley, S. J., Ladd, P. G., & Morris, M. L. 2007. Managing the multigenerational workplace: Answers for managers and trainers. *CUPA-HR Journal*, 58: 28–34.
- Benson, J., & Brown, M. 2011. Generations at work: Are there differences and do they matter? *International Journal of Human Resource Management*, 22: 1843–1865.
- Blanton, H., Burkley, M., & Burkley, E. 2014. Bonding, hiding, and promoting: Three reactions to shared threat. In Z. Krizan & F. X. Gibbons (Eds.), *Communal functions of social comparison*: 175–204. New York, NY: Cambridge.
- Bonebright, D. A. 2010. 40 years of storming: A historical review of Tuckman's model of small group development. *Human Resource Development International*, 13: 111–120.
- Bratianu, C. 2014. Strategies to enhance intergenerational learning in universities. In J. Rooney & V. Murth (Eds.), *Proceedings of the international conference on intellectual capital, knowledge management & organizational learning*: 83–90. Reading, UK: Academic Conferences and Publishing International.
- Bristow, D., Amyx, D., Castleberry, S. B., & Cochran, J. J. 2011. A cross-generational comparison of motivational factors in a sales career among Gen-X and Gen-Y college students. *Journal of Personal Selling & Sales Management*, 31: 77–85.
- Byrne, D. 1971. *The attraction paradigm*. New York, NY: Academic Press.
- Callanan, G. A., & Greenhaus, J. H. 2008. The Baby Boom generation and career management: A call to action. *Advances in Developing Human Resources*, 10: 70–85.
- Calo, T. J. 2008. Talent management in the era of the aging workforce: The critical role of knowledge transfer. *Public Personnel Management*, 37: 403–416.
- Chan, T. Y., Li, J., & Pierce, L. 2014. Learning from peers: Knowledge transfer and sales force productivity growth. *Marketing Science*, 33: 463–484.
- Chen, Y. 2013. Effect of reverse mentoring on traditional mentoring functions. *Leadership and Management in Engineering*, 13: 199–208.
- Cogin, J. 2012. Are generational differences in work values fact or fiction? Multi-country evidence and implications. *International Journal of Human Resource Management*, 23: 2268–2294.
- Costanza, D., Badger, J., Fraser, R., Severt, J., & Gade, P. 2012. Generational differences in work-related attitudes: A meta-analysis. *Journal of Business and Psychology*, 27: 375–394.
- Costanza, D. P., & Finkelstein, L. M. 2015. Generationally based differences in the workplace: Is there a there there? *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 8: 1–27.
- Costas, J. 2012. "We are all friends here": Reinforcing paradoxes of normative control in a culture of friendship. *Journal of Management Inquiry*, 21: 377–395.
- Couper, D. P., Sheehan, N. W., & Thomas, E. L. 1991. Attitude towards old people: The impact of an intergenerational program. *Educational Gerontology*, 17: 41–53.

- Cronin, M. A., Weingart, L. R., & Todorova, G. 2011. Dynamics in groups: Are we there yet? *The Academy of Management Annals*, 5: 571–612.
- Davenport, T. H., & Prusak, L. 1998. *Working knowledge*. Boston, MA: Harvard Business School Press.
- Deery, P. 2012. Texts, e-mails, and Google searches: Training in a multigenerational workplace. In W. J. Sauser, & R. R. Sims, (Eds.), *Managing human resources for the millennial generation*: 229–247. Charlotte, NC: IAP Information Age Publishing.
- Ellwart, T., Bündgens, S., & Rack, O. 2013. Managing knowledge exchange and identification in age diverse teams. *Journal of Managerial Psychology*, 28: 950–972.
- Enberg, C., Lindkvist, L., & Tell, F. 2006. Exploring the dynamics of knowledge integration: Acting and interacting in project teams. *Management Learning*, 37: 143–165.
- Eppler, M. J., & Platts, K. W. 2009. Visual strategizing: The systematic use of visualization in the strategic-planning process. *Long Range Planning*, 42: 42–74.
- Fair, C. D., & Delaplane, E. 2015. 'It is good to spend time with older adults. You can teach them, they can teach you': Second grade students reflect on intergenerational service learning. *Early Childhood Education Journal*, 43: 19–26.
- Fiebig, J. N. 2014. Learning through service: Developing an intergenerational project to engage students. *Educational Gerontology*, 40: 676–685.
- Findsen, B., & Formosa, M. 2011. *Lifelong learning in later life: A handbook on older adult learning*. Rotterdam, NL: Sense.
- Finkelstein, L. M., King, E. B., & Voyles, E. C. 2015. Age metastereotyping and cross-age work-place interactions: A meta view of age stereotypes at work. *Work, Aging and Retirement*, 1: 26–40.
- Finkelstein, L. M., Ryan, K. M., & King, E. B. 2013. What do the young (old) people think of me? Content and accuracy of age-based metastereotypes. *European Journal of Work and Organizational Psychology*, 22: 633–657.
- Fiske, S. T., & Lee, T. L. 2008. Stereotypes and prejudice create workplace discrimination. In A. P. Brief (Ed.), *Diversity at work*: 13–52. Cambridge, UK: Cambridge University Press.
- Franz, J. 2009. *Intergenerationelles Lernen ermöglichen*. Bielefeld: Bertelsmann, [Enabling intergenerational learning].
- Fuller, A., & Unwin, L. 2004. Young people as teachers and learners in the workplace: Challenging the novice-expert dichotomy. *International Journal of Training and Development*, 8: 32–42.
- Gersick, C. J. 1988. Time and transition in work teams: Toward a new model of group development. *Academy of Management Journal*, 31: 9–41.
- Gersick, C. J. 1989. Marking time: Predictable transitions in task groups. *Academy of Management Journal*, 32: 274–309.
- Gioia, D. A., Corley, K. G., & Hamilton, A. L. 2012. Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational Research Methods*, 16: 15–31.
- Grant, R. M. 1996. Toward a knowledge-based theory of the firm. *Strategic Management Journal*, 17: 109–122.
- Grant, R. M. 1997. The knowledge-based view of the firm: Implications for management practice. *Long Range Planning*, 30: 450–454.
- Harrison, D. A., & Klein, K. 2007. What's the difference? Diversity constructions as separation, variety, or disparity in organizations. *Academy of Management Review*, 32: 1199–1228.
- Harrison, D. A., Price, K. H., Gavin, J. H., & Florey, A. T. 2002. Time, teams, and task performance: Changing effects of surface- and deep-level diversity on group functioning. *Academy of Management Journal*, 45: 1029–1045.
- Hartman, H. J. 2001. Developing students' meta-cognitive knowledge and skills. In H. J. Hartman (Ed.), *Meta-cognition in learning and instruction: Theory, research, and practice*: 33–68. Boston: Kluwer Academic Publishers.
- Harvey, J. 2012. Managing organizational memory with intergenerational knowledge transfer. *Journal of Knowledge Management*, 16: 400–417.
- Heracleous, L., & Jacobs, C. D. 2008. Crafting strategy: The role of embodied metaphors. *Long Range Planning*, 41: 309–325.
- Hinds, P. 2015. Teams and groups. *Wiley Encyclopedia of Management*: 6: 1–5.
- Hoff, A. 2007. Intergenerational learning as an adaptation strategy in aging knowledge societies. In European Commission (Ed.), *Education, employment, Europe*: 126–129. Warsaw, Poland: National Contact Point for Research Programmes of the European Union.
- Homan, A. C., & Jehn, K. A. 2010. How leaders can make diverse groups less difficult: The role of attitudes and perceptions of diversity. In S. Schuman (Ed.), *Handbook for working with difficult groups*: 311–322. Hoboken, NJ: Jossey-Bass.
- Howe, C., McWilliam, D., & Cross, G. 2005. Chance favours only the prepared mind: Incubation and the delayed effects of peer collaboration. *British Journal of Psychology*, 96: 67–93.
- Hunt, D. M., & Michael, C. 1983. Mentorship: A career training and development tool. *Academy of Management Review*, 8: 475–485.
- Hwang, H. L., Wang, H. H., & Lin, H. S. 2013. Effectiveness of supervised intergenerational service learning in long-term care facilities on the attitudes, self-transcendence, and caring behaviors among nursing students: A quasiexperimental study. *Educational Gerontology*, 39: 655–668.
- Insch, G. S., McIntyre, N., & Dawley, D. 2008. Tacit knowledge: A refinement and empirical test of the academic tacit knowledge scale. *The Journal of Psychology*, 142: 561–580.
- Johnson, T. E., Archibald, T. N., & Tenenbaum, G. 2010. Individual and team annotation effects on students' reading comprehension, critical thinking, and meta-cognitive skills. *Computers in Human Behavior*, 26: 1496–1507.
- Johnson, P., & Harris, D. 2002. Qualitative and quantitative issues in research design. In D. Partington (Ed.), *Essential skills for management research*: 99–116. Thousand Oaks, CA: Sage.

- Joshi, A., Dencker, J. C., Franz, G., & Martocchio, J. J. 2010. Unpacking generational identities in organizations. *Academy of Management Review*, 35: 392–414.
- Karasik, R. J. 2013. Reflecting on reflection: Capitalizing on the learning in intergenerational service-learning. *Gerontology & Geriatrics Education*, 34: 78–98.
- Kauffeld, S., & Lehmann-Willenbrock, N. 2012. Meetings matter: Effects of team meetings on team and organizational success. *Small Group Research*, 43: 130–158.
- Kauffeld, S., Lehmann-Willenbrock, N., & Grote, S. 2015. Dream team or nightmare? Collaboration in project teams. In M. Wastian, L. von Rosenstiel, I. Braumandl, & M. West (Eds.), *Applied psychology for project managers: A practitioner's guide to successful project management*: 161–177. New York, NY: Springer.
- Kelly, M. J., Schaan, J. L., & Joncas, H. 2001. Managing alliance relationships: Key challenges in the early stages of collaboration. *R & D Management*, 32: 11–22.
- King, E. B., Kaplan, S., & Zaccaro, S. 2008. Metaperceptions in diverse workgroups: Intrapersonal perspectives and intra-group processes. In B. Mannix, M. Neale, & C. Anderson (Eds.), *Research on managing groups and teams*: Vol. 109–142. Oxford, Great Britain: Elsevier.
- Knight, T., Skouteris, H., Townsend, M., & Hooley, M. 2014. The act of giving: A systematic review of nonfamilial intergenerational interaction. *Journal of Intergenerational Relationships*, 12: 257–278.
- Kulik, C. T., Ryan, S., Harper, S., & George, G. 2014. Aging populations and management. *Academy of Management Journal*, 57: 929–935.
- Lamont, R. A., Swift, H. J., & Abrams, D. 2015. A review and meta-analysis of age-based stereotype threat: Negative stereotypes, not facts, do the damage. *Psychology and Aging*, 30: 180–193.
- Lave, J., & Wenger, E. 1991. *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.
- Liang, D. W., Moreland, R., & Argote, L. 1995. Group versus individual training and group performance: The mediating factor of transactive memory. *Personality and Social Psychology Bulletin*, 21: 384–393.
- Liebowitz, J., Ayyavoo, N., Hang, N., Carran, D., & Simien, J. 2007. Cross-generational knowledge flows in edge organizations. *Industrial Management & Data Systems*, 107: 1123–1153.
- Lockett, A., Currie, G., Finn, R., Martin, G., & Waring, J. 2014. The influence of social position on sensemaking about organizational change. *Academy of Management Journal*, 57: 1102–1129.
- Lyons, S. T., Ng, E. S., & Schweitzer, L. 2014. Changing demographics and the shifting nature of careers: Implications for research and human resource development. *Human Resource Development Review*, 13: 181–206.
- McCrea, J. M., & Smith, T. B. 1997. Types and models of intergenerational programs. In S. Newman, C. R. Ward, T. B. Smith, J. O. Wilson, & J. M. McCrea (Eds.), *Intergenerational programs: Past, present, and future*: 81–93. Bristol, PA: Taylor & Francis.
- McGuire, D., By, R. T., & Hutchings, K. 2007. Towards a model of human resource solutions for achieving intergenerational interaction in organisations. *Journal of European Industrial Training*, 31: 592–608.
- McKinnon, R. 2010. An ageing workforce and strategic human resource management: Staffing challenges for social security administrations. *International Social Security Review*, 63: 91–113.
- Michinov, E., & Michinov, N. 2007. Identifying a transition period at the midpoint of an online collaborative activity: A study among adult learners. *Computers in Human Behavior*, 23: 1355–1371.
- Murphy, M. W. 2012. Reverse mentoring at work: Fostering cross-generational learning and developing millennial leaders. *Human Resource Management*, 51: 549–573.
- Neuman, G., & Wright, J. 1999. Team effectiveness: Beyond skills and cognitive ability. *The Journal of Applied Psychology*, 84(3): 376–389.
- Newman, S., & Hatton-Yeo, A. 2008. Intergenerational learning and the contributions of older people. *Aging Horizons*, 8: 31–39.
- Nonaka, I. 1994. A dynamic theory of organizational knowledge creation. *Organization Science*, 5: 14–37.
- Nonaka, I., & Konno, N. 1998. The Concept of “Ba”: Building a foundation for knowledge creation. *California Management Review*, 40: 40–54.
- Nonaka, I., & Takeuchi, H. 1995. *The knowledge-creating company*. New York: Oxford University Press.
- Nonaka, I., von Krogh, G., & Voelpel, S. C. 2006. Organizational knowledge creation theory: Evolutionary paths and future advances. *Organization Studies*, 27: 1179–1208.
- Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. 2015. Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health*, 42: 533–544.
- Pappa, D., et al. 2011. Game-based learning for knowledge sharing and transfer: The e-VITA approach for intergenerational learning. In P. Felicia, (Ed.), *Handbook of research on improving learning and motivation through educational games: Multidisciplinary approaches*: 974–1003. Hershey, PA: IGI Global.
- Parker, P., Hall, D. T., & Kram, K. E. 2008. Peer coaching: A relational process for accelerating career learning. *Academy of Management Learning & Education*, 7: 487–503.
- Parry, E., & Urwin, P. 2011. Generational differences in work values: A review of theory and evidence. *International Journal of Management Reviews*, 13: 79–96.
- Patton, M. Q. 1990. *Qualitative evaluation and research methods*. Thousand Oaks, CA: Sage.
- Peeters, J., et al. 2014. Adult learners' informal learning experiences in formal education setting. *Journal of Adult Development*, 21: 181–192.
- Pelled, L. H., Eisenhardt, K. M., & Xin, K. R. 1999. Exploring the black box: An analysis of work group diversity, conflict, and performance. *Administrative Science Quarterly*, 44: 1–28.
- Penick, J. M., Fallshore, M., & Spencer, A. M. 2014. Using intergenerational service learning to promote positive perceptions about older adults and community service in

- college students. *Journal of Intergenerational Relationships*, 12: 25–39.
- Pinto, T. A. 2011. Why intergenerational learning is not an academic discipline yet? *Journal of Intergenerational Relationships*, 9: 117–119.
- Ployhart, R., & Ward, A. 2011. The 'Quick Start Guide' for conducting and publishing longitudinal research. *Journal of Business and Psychology*, 26: 413–422.
- Pratt, M. G. 2009. From the editors: For the lack of a boilerplate: Tips on writing up (and reviewing) qualitative research. *Academy of Management Journal*, 52: 856–862.
- Raes, E., Kyndt, E., Decuyper, S., Van den Bossche, P., & Dochy, F. 2015. An exploratory study of group development and team learning. *Human Resource Development Quarterly*, 26: 5–30.
- Ropes, D. 2012. Intergenerational communities of practice: Shedding new light on older workers? *Proceedings of the 6th International Conference on Learning, Knowledge, and Capabilities*, 25–27 April 2012, Valencia, Spain.
- Ropes, D. 2013. Intergenerational learning in organizations. *European Journal of Training & Development*, 37: 713–727.
- Ropes, D., & Ypsilanti, A. 2012. Factors influencing intergenerational learning: Towards a framework for organisations to ensure successful learning in older employees. In European Centre for the Development of Vocational Training (Ed.), *Working and aging. The benefits of investing in an aging workforce*: 280–307. Luxembourg: European Union.
- Rowley, J. 2012. Conducting research interviews. *Management Research Review*, 35: 260–271.
- Ryan, K. M., King, E. B., & Finkelstein, L. M. 2015. Younger workers' metastereotypes, workplace mood, attitudes, and behaviors. *Journal of Managerial Psychology*, 30: 54–70.
- Sánchez, M., & Kaplan, M. 2014. Intergenerational learning in higher education: Making the case for multigenerational classrooms. *Educational Gerontology*, 40: 473–485.
- Schotter, A., & Sopher, B. 2003. Social learning and coordination conventions in intergenerational games: An experimental study. *Journal of Political Economy*, 111: 498–529.
- Schreier, M. 2012. *Qualitative content analysis in practice*. London: Sage.
- Schullery, N. M. 2013. Workplace engagement and generational differences in values. *Business Communication Quarterly*, 76: 252–265.
- Senge, P. M. 1990. *The fifth discipline: The art & practice of the learning organisation*. New York: Doubleday.
- Shadish, W. R., Cook, T. D., & Campbell, D. T. 2001. *Experimental and quasi-experimental designs for generalized causal inference*. Belmont, CA: Wadsworth.
- Shemla, M., & Meyer, B. 2012. Bridging diversity in organizations and cross-cultural work psychology by studying perceived differences. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 5: 370–372.
- Sivasubramaniam, N., Liebowitz, S., & Lackman, C. L. 2012. Determinants of new product development team performance: A meta-analytic review. *Journal of Product Innovation Management*, 29: 803–820.
- Starks, A. 2013. The forthcoming generational workforce transition and rethinking organizational knowledge transfer. *Journal of Intergenerational Relationships*, 11: 223–237.
- Sternberg, R. J., Wagner, R. K., Williams, W. M., & Horvath, J. A. 1995. Testing common sense. *The American Psychologist*, 5: 912–927.
- Tajfel, H., & Turner, J. C. 2004. The social identity theory of intergroup behavior. In J. T. Host, & J. Sidanius (Eds.), *Key readings in social psychology. Political psychology: Key readings*: 276–293. New York: Psychology Press.
- Tam, M. 2014. Intergenerational service learning between the old and young: What, why and how. *Educational Gerontology*, 40: 401–413.
- Tempest, S. 2003. Intergenerational learning. A reciprocal knowledge development process that challenges the language of learning. *Management Learning*, 34: 181–200.
- Thomas, M. 2009. *Think community: An exploration of the links between intergenerational practice and informal adult learning*. Leicester: NIACE.
- Toossi, M. 2009. Labor force projections to 2018: Older workers staying more active. *Monthly Labor Review*, 11: 30–51.
- Tuckman, B. W. 1965. Developmental sequence in small groups. *Psychological Bulletin*, 63: 384–399.
- Tuckman, B. W., & Jensen, M. A. 1977. Stages of small-group development revisited. *Group and Organization Studies*, 2: 419–427.
- Twenge, J. M., Freeman, E. C., & Campbell, W. 2012. Generational differences in young adults' life goals, concern for others, and civic orientation, 1966–2009. *Journal of Personality and Social Psychology*, 102: 1045–1062.
- Underwood, H. L., & Dorfman, L. T. 2006. A view from the other side: Elders' reactions to intergenerational service-learning. *Journal of Intergenerational Relationships*, 4: 43–60.
- van Knippenberg, D., De Dreu, C. W., & Homan, A. C. 2004. Work group diversity and group performance: An integrative model and research agenda. *The Journal of Applied Psychology*, 89: 1008–1022.
- VERBI Software 2016. *MAXQDA 12. Reference manual*. Retrieved from http://www.maxqda.com/download/manuals/MAX12_manual_eng.pdf [accessed March 09, 2016]
- Vorauer, J. D., Main, K. J., & O'Connell, G. B. 1998. How do individuals expect to be viewed by members of lower status groups? Content and implications of metastereotypes. *Journal of Personality and Social Psychology*, 75: 917–937.
- Wagner, R. 1987. Tacit knowledge in everyday intelligent behavior. *Journal of Personality and Social Psychology*, 52: 1236–1247.
- Wagner, R. K., & Sternberg, R. J. 1985. Practical intelligence in real-world pursuits: The role of tacit knowledge. *Journal of Personality and Social Psychology*, 49: 436–458.
- Wagner, R. K., & Sternberg, R. J. 1987. Tacit knowledge in managerial success. *Journal of Business and Psychology*, 1: 301–312.
- Williams, K. Y., & O'Reilly, C. A. 1998. Demography and diversity in organizations: A review of 40 years of research. *Research in Organizational Behavior*, 20: 77–140.

- Winkelmann-Gleed, A. 2009. Demographic change and implications for workforce ageing in Europe – Raising awareness and improving practice. *Cuadernos de Relaciones Laborales*, 27: 29–50.
- 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.
- Zellmer-Bruhn, M. E., Maloney, M. M., Bhappu, A. D., & Salvador, R. 2008. When and how do differences matter? An exploration of perceived similarity in teams. *Organizational Behavior and Human Decision Processes*, 107: 41–59.
- Zuccherro, R. A. 2011. A co-mentoring project: An intergenerational service-learning experience. *Educational Gerontology*, 37: 687–702.

Fabiola H. Gerpott (PhD, Jacobs University Bremen) is assistant professor in social and organizational psychology at Vrije Universiteit Amsterdam. Her research focuses on the microdynamics of learning, knowledge transfer, and (emergent) leadership in diverse organizational teams.

Nale Lehmann-Willenbrock (PhD, Technische Universität Braunschweig) is associate professor of work and organizational psychology at the University of Amsterdam. Her research examines temporal team processes, leader–follower interactions, and the fine-grained dynamics of learning in organizational settings.

Sven C. Voelpel (PhD, University of St. Gallen) is professor of business administration at Jacobs University Bremen. He is researching on learning as well as the topic of WISE: Wisdom, Innovation, Strategy and Entrepreneurship.