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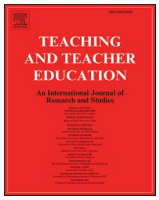

Research paper

Aging as a teacher: Effects of organizational practices on career sustainability in the later career stages in Italian schools

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ABSTRACT

Italy's aging population has raised concerns about sustaining careers, particularly in education, where teachers are among the oldest professional groups globally. Risks such as burnout, limited career progression, and increasing digitalization highlight the need to understand which organizational practices support teachers' late-career sustainability. Drawing on a sample of 800 Italian teachers aged 50 and above, we applied latent profile analysis to examine patterns of perceived organizational support. Four organizational practices —organizational climate, leadership, work design, and individual development—were considered, alongside individual career resources measured through Career Adapt-abilities. Four distinct profiles emerged, relating differently to three career sustainability indicators: work engagement (happiness), perceived health (health), and self-rated job performance (productivity). Organizational practices strongly influenced engagement and health, but not self-rated performance. Age and gender did not predict profile membership or outcomes. Findings offer insights for supporting older teachers' career sustainability and suggest practical strategies for schools and higher education institutions.

1. Introduction

In recent decades, the working population in many countries has undergone a steady aging process (OECD, 2023). This demographic shift presents an urgent challenge for organizations and national systems tasked with structuring paid work, healthcare, and retirement provisions (Gahan et al., 2016; OECD, 2025). One common policy response has been to raise the retirement age (OECD, 2023). However, the education sector has displayed a contrasting trend: many teachers choose early retirement (Keogh & Roan, 2016; OECD, 2024) or transfer to schools that better align with their age- and career-related needs. These patterns—along with the declining attractiveness of the teaching profession, driven by low salaries, high stress levels, increased administrative workloads, and limited career advancement opportunities (OECD, 2024)—have contributed to widespread teacher shortages in many countries. Such shortages significantly impact school management's ability to recruit and retain staff (Ingersoll, 2001; McPherson, Lampert, & Baptista, 2025), with further implications for teacher quality and student outcomes (Li & Yao, 2022; Sorensen & Ladd, 2020). A related issue is teacher absenteeism, which exacerbates the challenges some schools face in maintaining adequate staffing levels and delivering high-quality instruction (Bowers, 2001; Carrizosa & De Witte, 2024).

Aging within the teaching profession presents multiple challenges that require consideration when organizing teachers' work effectively (Ivanov et al., 2025). Teaching is widely recognized as a demanding occupation (Guglielmi & Tatrow, 1998; Zurlo et al., 2007), often more so than many other professions (Seibt et al., 2009). It demands continuous adaptation—to policy reforms, digital technologies, administrative procedures, and increasingly diverse student populations—and sustained professional development. As teachers age, they may experience decreased job satisfaction, heightened emotional exhaustion

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(Anastasiou & Belios, 2020), and declines in both health (McMahan & Sturz, 2006) and work ability (Ribeiro et al., 2021; Sottimano et al., 2017; Vangelova et al., 2018), but also for the quality of teaching they provide. A growing body of research suggests that teacher well-being and job satisfaction are meaningfully associated with key dimensions of instructional quality, including clarity of instruction, cognitive activation, and the ability to adopt motivating teaching styles (Harrison et al., 2023; Katz & Moè, 2024). Evidence from systematic and meta-analytic reviews indicates that higher levels of teacher well-being are linked to more positive teacher–student relationships, greater student engagement, and more favorable student school experiences, although causal pathways remain underexplored (Dreer, 2023; Hascher & Waber, 2021; Maricuț;oiu et al., 2023).

Effectively integrating an aging workforce thus represents a key challenge for educational organizations (Appannah & Biggs, 2015; Burke et al., 2013; Moen et al., 2017; Rinsky-Halivni et al., 2022). Several organizational factors contribute to early retirement and turnover, including insufficient administrative support, rigid leadership styles, limited professional growth opportunities, and poor working conditions (Jonas-Ahrend & Tenberg, 2025; OECD, 2024). These factors can lead to dissatisfaction, prompting teachers to change schools or exit the profession as a whole, which obviously is even more distressing than organizational turnover (Liu et al., 2025). We contend that understanding the drivers of teacher attrition and identifying organizational practices that can support older workers' career sustainability is critical to ensuring a stable and motivated teaching workforce (Hertel & Zacher, 2018; Madalińska-Michalak, 2025).

Previous research has already shown that supporting successful aging at work requires recognizing that individuals' resources vary significantly based on age, gender, education, ethnic background, and socio-economic status (Converso et al., 2018; Mejía et al., 2017). Therefore, we posit that to be effective, organizational interventions must be both age- and need-sensitive (Hennekam & Herrbach, 2015; Philipp & Kunter, 2013). However, despite a substantial body of research on the causes of early retirement (e.g., Cau-Bareille, 2011; Gümüş et al., 2012; Keogh & Roan, 2016; Kreuzfeld & Seibt, 2022; Van Droogenbroeck & Spruyt, 2014) and teacher turnover (e.g., Ingersoll, 2001; Li & Yao, 2022; Simon & Johnson, 2015; Sorensen & Ladd, 2020), relatively few studies have examined what schools—as workplaces—can proactively do to support older teachers. Further research is therefore needed to explore how school-level organizational practices may contribute to sustaining aging teachers' careers.

Building upon these considerations, this study draws on the process model of sustainable careers, a framework that captures the dynamic interplay over time between individual and contextual factors, such as organizational practices (De Vos et al., 2020; Van der Heijden et al., 2020). Specifically, our empirical work has two main aims. The first is to identify emerging teacher profiles based on perceived organizational practices targeting teachers aged 50 or above, and their levels of career adaptability. Career adaptability refers to an individual's perceived ability and personal resources to manage current and future career challenges effectively (Goodman, 1994; Savickas, 1997). It is a key construct for aging workers, as it supports well-being (Takao & Ishiyama, 2021), job satisfaction (Zacher & Griffin, 2015), and career success (Kim & Kim, 2022) and is positively associated with engagement in professional development (Coetzee & Stoltz, 2015).

Access to training is especially relevant for older workers, who—according to socioemotional selectivity theory (Carstensen et al., 1999) and the selection, optimization and compensation model (Baltes & Baltes, 1990)—tend to prioritize meaningful work experiences and relationships over career growth. Thus, older workers benefit greatly from targeted upskilling initiatives in terms of job satisfaction (Armstrong-Stassen & Ursel, 2009; Lowe et al., 2019) and overall professional growth. (Day & Gu, 2007; Mazzetti et al., 2020). Moreover, some studies suggest that career adaptability promotes organizational retention (Coetzee & Stoltz, 2015) and reduces turnover intentions (Guan et al., 2015; Orie & Semeijn, 2021).

Using the notion of sustainable careers, the second aim of this study is to examine how career sustainability indicators (i.e., happiness, health, and productivity; Van der Heijden, 2005) vary across these teacher profiles.

2. Theoretical framework

2.1. Sustainable career framework

This study addresses the issue of successful aging at work among older teachers (i.e., those aged 50 and above) through the theoretical lens of the Career Sustainability Framework (CSF; De Vos et al., 2020; Van der Heijden et al., 2020). Career sustainability refers to the sequential nature of professional experiences, evident in various patterns of continuity over time and within diverse social spaces. This model offers a multi-dimensional and longitudinal approach to studying careers and their development over time, highlighting the interplay between individual, contextual, and temporal elements (Van der Heijden, 2005; Van der Heijden & De Vos, 2015). Sustainable careers are defined through three key outcomes: happiness, health, and productivity, which are understood as evolving over time in response to both personal and contextual factors (Van der Heijden, 2005). *Happiness* refers to the dynamic fit between one's career and personal values, career goals, and individual needs (e.g., work-life balance, professional growth). *Health* encompasses both physical and mental well-being, reflecting the alignment between career demands and one's physical and mental capacities. Finally, *productivity* relates to job performance, self-efficacy, employability and career potential. The model views individuals as active agents, capable of adapting and engaging in proactive behaviors to achieve meaningful and lasting career goals.

Building upon the CSF, organizational practices can be viewed as contextual resources that support the maintenance of sustainable careers—but only when a dynamic fit with individual resources and needs is sustained over time. This argument is not only consistent with person-environment (P-E) fit theory, which emphasizes that positives outcomes occur when there is a dynamic alignment between individual resources, needs and the opportunities and demands of the working environment (Edwards et al., 1998; Kristof, 1996); but also with Conservation of Resources (COR) theory (Hobfoll, 1989, 2001), which posits that individuals are primarily motivated to preserve and accumulate resources. Following Kira and colleagues (2010), we also draw on COR theory to propose that crafting sustainable work environments involves developing and mobilizing a range of personal resources that underpin an individual's capacity to sustain work over the course of the career. Within this perspective, individual resources such as career adaptability shape employees' perceptions of organizational practices and influence key indicators of career sustainability. Building on the sustainable careers framework, our study examines how the interplay between organizational practices and career adaptability relates to being happy, healthy, and productive—captured through work engagement, perceived health, and self-rated performance. In our model, the P–E fit perspective clarifies that organizational practices foster sustainable careers only when aligned with individuals' needs, values, and resources, while the COR theory explains how such practices promote sustainability by activating resource gain cycles and preventing resource loss. Together, these perspectives specify how and why contextual practices and personal resources translate into career sustainability outcomes.

2.2. Senior teachers

Scholarly literature has proposed various frameworks to conceptualize teachers' professional development and career stages. Despite their evolution over time, these models can be broadly grouped into two main strands. Linear models describe career development as a progression through predefined stages, characterized by the gradual acquisition of

teaching skills, expertise, and changing professional concerns (Dreyfus, 2004; Day & Gu, 2007; Huberman, 1989; Meeus et al., 2017). In contrast, non-linear models adopt a multidimensional perspective, integrating skill development and career progression while accounting for the dynamic interplay of different components of teaching expertise (e.g., Kelchtermans, 2017; Kinchin & Cabot, 2010).

Since the cut-off values used to distinguish between young, middle-aged, and senior teachers vary across the literature, we adopted the categorization proposed by Van der Heijden (2010). Accordingly, we refer to three age groups: young teachers (<35 years old), middle-aged teachers (35–49 years old), and senior teachers (≥50 years old). However, as noted by Wong and Tetrick (2017), there is no clear consensus in the literature on how to define older workers, since aging is a continuous process rather than a fixed point in time. In addition, contextual factors—such as job type and cultural setting—can influence how aging manifests and is perceived in the workplace. Against this background, the present study focuses specifically on senior teachers, defined here as those aged 50 years and older.

2.3. Organizational practices as contextual factors associated with sustainable careers

Numerous studies have highlighted the importance of organizational practices in supporting the successful aging of the workforce by improving working conditions (Arnold & Rahimi, 2025) and adapting them to workers' specific needs (Chong et al., 2025; Deller et al., 2025). Some have shown that organizational practices targeting an older workforce can influence employees' intentions to retire (Armstrong-Stassen & Ursel, 2009; Cochran et al., 2012; Day et al., 2006). Other studies underscore the relevance of a non-deficit developmental approach for ensuring sustainable HR management in schools across teachers' professional lifespan (Brouhier et al., 2021) and emphasize the importance of tailoring these practices to the individual selection and optimization strategies used by late-career teachers (Taneva & Arnold, 2018). This topic is gaining increasing urgency over time, particularly in the public sector, which employs a significant proportion of older workers (Nurani & Lee, 2025; OECD, 2025; Piszczek et al., 2024). Kooij and colleagues (2014) identified four categories of human resource management (HRM) practices targeted at older workers: accommodative practices aimed at reducing job demands, utilization practices that replace overly demanding tasks with more suitable ones, maintenance practices that sustain functioning, and development practices focused on growth and skill development. In line with this framework, HRM strategies in the school context may include both accommodations to working conditions (e.g., reduced working hours, smaller class sizes, or more frequent breaks) and practices that leverage teachers' accumulated expertise, such as role reshaping through managerial tasks, mentoring, or project leadership (Fasbender et al., 2016), as well as participation in specialized training programs (Lowe et al., 2019). Supporting sustainable development further requires negotiated learning processes that enhance employees' autonomy in training choices (Findsen, 2015) and foster proactivity and motivation, which are key to professional development (Froehlich et al., 2023) and to reducing exhaustion (Mazzetti et al., 2020). Importantly, while the association between development practices and well-being tends to weaken with age, the link with maintenance practices strengthens (Kooij et al., 2013); nevertheless, development practices remain most strongly associated with higher job performance among older workers. Accordingly, as age increases, maintenance practices primarily support well-being, whereas development practices contribute to performance.

In this study, we focus on four organizational practices central to supporting an aging workforce: organizational climate, leadership, work design, and professional development. An organizational climate for successful aging reflects employees' perceptions that age-related challenges are understood and that equal opportunities and a positive image of aging are promoted across age groups (Wilckens et al., 2021; Zacher & Yang, 2016). Such a climate has been associated with higher self-efficacy and organizational commitment (Jaafaari et al., 2012; Kunze & Toader, 2019; Truxillo et al., 2014), job satisfaction and morale (Converso et al., 2019; Qureshi, Rasli, & Zaman, 2014), and self-perceived health (Vanajan et al., 2020).

Closely related to organizational climate, leadership plays a key role in fostering successful aging at work (Sanseverino et al., 2024; Nassir & Benoliel, 2025). Supportive and transformational leadership—characterized by appreciation, autonomy, responsiveness to individual needs, and support for development—has been shown to promote successful aging (Cheung et al., 2018; Silver et al., 2019; Taneva & Arnold, 2018). Other studies have demonstrated that, even in the school context, leadership that is attentive to teachers' needs has significant effects on school climate and on the ability to retain teachers and reduce turnover (Brown & Wynn, 2009; McCarley et al., 2016). Wang and colleagues (2022), for instance, found that transformational leadership can influence older teachers' attitudes toward knowledge-sharing practices. Additional studies have further highlighted the relationship between leadership and the reduction of teacher attrition in schools (Player et al., 2017; Sahu et al., 2018), showing that positive leadership behaviors—such as communicating a clear vision for the school to staff and actively working to realize it, providing support to teachers in instructional and other matters, recognizing outstanding teaching performance, and enforcing rules regarding student behavior and discipline—play a crucial role (Zhao et al., 2022).

Work design represents another important aspect of organizational practices, as it allows employees to adjust their working conditions to better meet individual needs (Wang, Fu, & Bai, 2024). This includes adapting working hours, modifying workspaces, working according to their capabilities, and having access to ergonomic working conditions. The possibility of moving to less demanding positions has, for instance, been associated with greater work enjoyment (Choi et al., 2018). Other studies have shown that the ability to adjust working conditions has a positive effect on work engagement (Allen et al., 2021; Pitt-Catsouphes & Matz-Costa, 2008), including among teachers (Addimando, 2019). Perceived autonomy in adjusting schedules and tasks has also been found to positively impact teachers' personal resources, such as self-efficacy (Choi & Mao, 2021), as well as their work engagement and job satisfaction (Skaalvik & Skaalvik, 2014).

Finally, individual development encompasses the opportunity for continuous career planning within the organization, ensuring that training methods and development opportunities are appropriate and tailored to the needs of older employees (Diamond & Bulfin, 2025). It also involves guaranteeing equal access to professional growth and career progression opportunities for all employees, regardless of age. Individual development is a key process for maintaining an aging workforce within organizations (Tikkanen & Billett, 2014) and for enhancing its active participation (Chen & Gardiner, 2019). Research has shown that younger and older workers differ in their approaches to training. Therefore, organizations must carefully adjust motivational strategies and consider employees' personal circumstances and private lives in order to ensure equitable access to learning opportunities (Kyndt et al., 2011). Among older teachers, some studies have found that they are less likely than their younger colleagues to learn through experimentation or collaborative activities. Instead, they tend to prefer learning through reading professional literature or engaging in intergenerational dialogue, particularly when mentoring younger colleagues (Kyndt et al., 2016; Richter et al., 2011). Nevertheless, ongoing professional development in the later stages of a teaching career is crucial for sustaining high levels of job satisfaction (Findsen, 2015), reducing ageism (Mazzetti et al., 2020), decreasing the risk of turnover and early retirement (Day & Gu, 2007), and supporting the management of job-related demands (Brouhier et al., 2023).

2.4. Career adaptability as an individual factor associated with sustainable careers

Career adaptability is a construct that reflects workers' perceptions of their personal resources and self-regulatory competencies to effectively deal with current and anticipated career-related changes and challenges (Goodman, 1994; Savickas, 1997). According to Savickas and Porfeli (2012), career adaptability consists of four dimensions—referred to as adapt-abilities: *concern*, which refers to being oriented toward and preparing for one's vocational future; *control*, the extent to which individuals feel capable of taking responsibility for shaping their careers; *curiosity*, the perceived ability to explore possible career opportunities; and *confidence*, the belief in one's ability to pursue aspirations and overcome obstacles. Research has shown that career adaptability is positively associated with indicators of subjective career success (Kim & Kim, 2022; Zacher, 2014), well-being (Konstam et al., 2015; Maggiori et al., 2013; Takao & Ishiyama, 2021), job satisfaction (Zacher & Griffin, 2015), as well as with work engagement (Chen et al., 2025; Collie et al., 2018, 2020b; Yang et al., 2019). Adaptability has also been shown to be an important dimension for teachers, particularly in the early stages of their careers, where it appears to contribute to increased self-efficacy (Collie, Granziera, et al., 2020), Collie, Guay, et al., 2020 positive classroom climate (McLean et al., 2023), and professional learning (McIlveen et al., 2018). Collie and colleagues (2018) further demonstrated that adaptability seems to prevent work disengagement among teachers. Building on this body of evidence, we consider career adaptability in our study as a key personal resource for sustaining an aging workforce.

2.5. Research questions

This study aims to identify and define distinct profiles of aging teachers based on the combination of perceived organizational practices and their levels of career adaptability. Additionally, the study seeks to investigate how these profiles relate to varying levels of work engagement, perceived health, and job performance, as well as how profile membership is associated with teachers' age and gender. This study addresses the following research questions.

1. How do school organizational practices affect the ability of aging teachers to remain happy, healthy, and productive?
2. How will aging teachers' levels of career adaptability vary across different profiles of perceived organizational practices?
3. How do combinations of perceived organizational practices and career adaptability shape career sustainability profiles among aging teachers?
4. To what extent do age and gender differences determine profile membership and levels of work engagement, perceived health, and self-rated performance?

3. Methods

3.1. Context of the study

The Italian teaching workforce is predominantly female (81.5%) and among the oldest in Europe, with an average age of 51 years (OECD, 2024). Italian teachers also tend to hold lower educational qualifications than professionals in other fields with comparable responsibilities (OECD, 2024). These patterns reflect long-standing politically driven recruitment policies (Argentin, 2018), which have also sustained the extensive use of fixed-term contracts. As a consequence, many teachers experience prolonged periods of precarious employment before obtaining a permanent position, often involving geographic mobility and frequent transitions between schools—factors that heighten stress and the risk of burnout (Benevene et al., 2019).

Institutional support for teachers in Italy remains limited and fragmented: initial training and induction have been repeatedly restructured and remain insufficient (De Simone, 2009), while opportunities for continuing professional development fall short of demand (Foschi, 2021). Career progression is weakly formalized, with few roles beyond classroom teaching and minimal financial incentives. Consequently, teachers often seek better working conditions by transferring to schools with lighter workloads (Barbieri et al., 2011). Despite these challenges, Italian teachers report relatively high job satisfaction (Argentin, 2021) and self-efficacy (OECD, 2019; TALIS, 2018).

3.2. Participants and procedures

This study gathered responses to a two-part online self-report questionnaire completed by 800 in-service Italian teachers. The first part collected socio-demographic information, while the second part included self-report measures assessing teachers' perceptions of organisational practices targeting an ageing workforce, career adaptability, work engagement, self-rated perceived health status, and self-rated job performance.

Data collection began after receiving approval from the Ethics Committee for Research at the University of Trento (reference number: 2023-12ESA). The anonymous web-based questionnaire was distributed via email to all Italian schools. School principals were asked to circulate the research invitation among teachers within their institutions. Schools of all types and levels were contacted, including preschools, primary schools, lower and upper secondary schools, and both public and private institutions. To be eligible for participation, individuals had to meet the following criteria: (1) be at least 50 years old, (2) be native Italian speakers, (3) have worked at the same school for at least one year, (4) be employed in a school with a minimum of 30 staff members, and (5) work at least 20 h per week. Data were collected in Italy between October and December 2023. All participants were informed about the aims of the study, the consent process, and the data protection procedures.

Data quality was assessed through multiple procedures. First, we embedded instructed response items within the questionnaire to detect and remove inattentive respondents. Second, we applied the LongString Index to identify participants who showed low response variability, which may indicate careless responding. Finally, we used Mahalanobis distance to screen for multivariate outliers (Curran, 2016; Meade & Craig, 2012). Demographic information for the participants is given in Table 1.

3.3. Measures

Measures were administered in Italian, using the back-translation method (Brislin, 1970) for scales that did not already have an Italian version. Responses were recorded on a 7-point scale, ranging from 1 = strongly agree to 7 = strongly disagree (with the additional option to select "I don't know"), unless otherwise noted.

Table 1
Demographic information for the participants (N = 800).

	Mean (SD)	Range
Age	56.9 (3.91)	50–67
	Frequency (%)	
Gender		
Female	669 (83.6)	
Male	131 (16.4)	
Education		
High school diploma	193 (24.1)	
Bachelor's degree	42 (5.3)	
Master's degree or higher	565 (70.6)	
Tenure in current school		
> 15 years	582 (72.8)	
7–15 years	136 (17)	
< 7 years	82 (10.2)	

3.3.1. Organizational practices

To measure organizational practices, we used the Later Life Workplace Index (LLWI; Wilckens et al., 2021), which comprises a series of organizational practices related to an aging workforce. For this study, the LLWI subscales related to organizational climate, leadership, work design, and individual development were used. The selection of these subdimensions was guided primarily by practical considerations related to the institutional context of Italian schools. Specifically, the retained dimensions refer to organizational practices that fall within the sphere of autonomy of individual schools or are directly linked to school leadership, rather than being determined by ministerial or system-level regulations. As the aim of the study was to explore organizational practices that schools can actively implement as workplaces, this criterion represented the primary basis for the selection of the subdimensions.

The Later Life Workplace Index (LLWI; Wilckens et al., 2021) was developed within a comprehensive framework of age-inclusive organizational practices and has demonstrated sound psychometric properties across multiple studies. Evidence supporting the reliability and validity of the LLWI has been provided both in the original validation study and in subsequent research conducted in different occupational and national contexts. Across studies, the LLWI dimensions have shown acceptable to good internal consistency and a stable factorial structure (Axelrad et al., 2023; Finsel, Wöhrmann, et al., 2023; Loomer et al., 2025; Oliveira et al., 2025; Silberg et al., 2025; Stoyanova et al., 2024).

Further support for construct validity comes from consistent associations between LLWI dimensions and theoretically related outcomes, including employee well-being, sustainable employability, perceived health, and self-rated work performance (Finsel, Venz, et al., 2023; Oliveira et al., 2025; Stoyanova et al., 2024; Wilckens et al., 2023). In addition, the LLWI has been successfully applied and validated in culturally diverse settings, supporting its robustness and cross-national applicability (Deller et al., 2025; Finsel, Wöhrmann, et al., 2023). Overall, prior research indicates that the LLWI is a valid and reliable instrument for assessing organizational practices relevant to an aging workforce, without evidence of unintended negative consequences associated with its use (Finsel, Venz, et al., 2023; Wilckens et al., 2021).

To enhance the face validity of the questionnaire, we included an introductory text inviting teachers to adapt certain terms in the items to their work context (for example, interpreting "organization" as "school" and "manager" as "school principal").

The organizational climate scale assesses equality of opportunity (3 items, e.g., "In my organization, regardless of age, all employees have the same opportunities"), positive image of age (3 items, e.g., "In our organization, there is a positive attitude towards older employees"), open and target-group specific communication (4 items, e.g., "In our organization, the possibilities of working for older employees are openly communicated"). CFA results indicated acceptable model fit: $\chi^2(32) = 229$, $p < .001$, CFI = 0.93, TLI = 0.91, RMSEA = 0.08, SRMR = 0.05.

The leadership scale includes appreciation (2 items, e.g., "Managers of our organization show appreciation both for current work results as well as for the overall performance of their employees"), and responsiveness to individuality (4 items, e.g., "Managers of our organization invest time in their employees"). CFA results indicated acceptable model fit: $\chi^2(8) = 27.5$, $p < .001$, CFI = 0.99, TLI = 0.98, RMSEA = 0.05, SRMR = 0.01.

The work design dimension assesses flexible work time arrangements (4 items, e.g., "Employees of our organization can adjust the beginning and the end of their daily working hours to their individual needs"), flexible workplaces (3 items, e.g., "Employees of our organization have the opportunity to work from home"), work according to capabilities (3 items, e.g., "In our organization, managers change the tasks of their employees in the foreseeable future (e.g., within half a year) if the tasks no longer correspond to the employee's ability to perform and to withstand stress"), ergonomic working conditions (4 items, e.g., "In our organization, workplaces are designed according to ergonomic recommendations"). CFA results indicated acceptable model fit: $\chi^2(71) = 210$, $p < .001$, CFI = 0.97, TLI = 0.96, RMSEA = 0.04, SRMR = 0.03.

The Individual Development dimension includes continuous development planning (3 items, e.g., "In our organization, development prospects and qualification requirements are identified for employees, regardless of age"), appropriate solutions for training and development (2 items, e.g., "In our organization, older employees are offered training to learn new competencies and develop their expertise"), enabling development steps and job changes (3 items, e.g., "In our organization, employees, regardless of age, are involved in projects according to their competencies and developmental interests"). CFA results indicated acceptable model fit: $\chi^2(13) = 55.1$, $p < .001$, CFI = 0.97, TLI = 0.95, RMSEA = 0.06, SRMR = 0.02.

To assess career adaptability, we used the Italian version of the Career Adapt-Abilities Scale–Short Form (CAAS-SF; Maggiori et al., 2015). The CAAS-SF consists of four 3-item subscales measuring: concern (e.g., "Thinking about what my future will be like"), control (e.g., "Making decisions by myself"), curiosity (e.g., "Looking for opportunities to grow as a person"), and confidence (e.g., "Taking care to do things well"). Responses were measured on a 5-point Likert scale ranging from 1 = not strong to 5 = strongest. CFA results indicated acceptable model fit after adding two intra-factor correlations: $\chi^2(46) = 273$, $p < .001$, CFI = 0.96, TLI = 0.95, RMSEA = 0.07, SRMR = 0.03.

3.3.2. Career sustainability indicators

Work Engagement was assessed using the Italian version (Balducci et al., 2010) of the three-item Utrecht Work Engagement Scale (Schaufeli et al., 2019; sample item: "I am enthusiastic about my job"). Responses were given on a 7−point scale, ranging from 1 = never to 7 = always.

Self-rated Perceived Health Status was assessed using four items from Adams and Beehr (1998; sample item: "My health is better than most people my age").

Self-rated job Performance was measured using four items from Eisenberger et al. (2001; sample item: "I meet the formal performance requirements of my job").

3.3.3. Control variables

Age and gender were included as control variables considering their influence on teachers' career sustainability indicators—namely, work engagement, perceived health, and self-rated job performance.

Regarding age, evidence suggests that it plays a significant role in shaping levels of work engagement (Douglas & Roberts, 2020; Goštautaitė & Bučiūnienė, 2015) and that it may act as a moderator in the relationship between perceived organizational practices and both work engagement (Rudolph & Baltes, 2017) and organizational commitment (Mackay, 2018). Naturally, increasing age is often associated with declines in work ability (Ribeiro et al., 2021; Sottimano et al., 2017; Vangelova et al., 2018) and perceived health (McMahan & Sturz, 2006). However, research also suggests that gender differences exist in levels of perceived occupational stress (Antoniou et al., 2006; Peris-Ramos et al., 2024; Serrano et al., 2008). Finally, some studies point to age-, tenure-, and gender-related differences in teacher effectiveness (Klassen & Chiu, 2010; Šabić et al., 2022).

4. Analytical procedure and data analysis

4.1. Descriptive statistics and measurement models

Reliability was assessed using Cronbach's Alpha. A preliminary confirmatory factor analysis (CFA) was conducted to evaluate the psychometric properties of the measures. Analyses were performed in Jamovi (version 2.6; The jamovi project, 2025). We used maximum likelihood (ML) estimation, and model fit was evaluated using chi-square (χ^2), the Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), the Standardized Root Mean Square Residual (SRMR), and the Root Mean Square Error of Approximation (RMSEA). Cut-off values

greater than 0.90 for CFI and TLI and less than 0.08 for SRMR and RMSEA were considered indicative of acceptable model fit (Hu & Bentler, 1999).

4.2. Latent profile analysis

Latent Profile Analysis (LPA) was conducted to identify subgroups based on organizational practices and career adaptability. LPA uses continuous variables to determine the optimal number of profiles, assign individuals to profiles based on estimated probabilities, and examine the psychological mechanisms associated with profile membership (Collins & Lanza, 2013; Ferguson et al., 2019; Spurk et al., 2020). The analysis was performed using Mplus version 8.4 (Muthén & Muthén, 1998–2017), which provides advanced estimation techniques specifically suited for this approach. We tested several models, ranging from one to seven profiles. Parameters were estimated using Maximum Likelihood with robust standard errors (MLR) and Full Information Maximum Likelihood (FIML) to handle missing data. To avoid local maxima, we used 10,000 random sets of start values with 1000 iterations for each set, retaining the 250 best solutions for final stage optimization. Model fit was evaluated using several indicators: log-likelihood value, Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), sample-adjusted BIC (SABIC), Lo-Mendell-Rubin Likelihood Ratio Test (LMR), Bootstrap Likelihood Ratio Test (BLRT), and entropy values. Additional criteria for determining the final solution included profile size (models with profiles smaller than 5% of the sample were excluded) and the interpretability of the profiles (Spurk et al., 2020). Lower values of log-likelihood, AIC, and BIC indicate better model fit, while significant LMR and BLRT p-values support the selection of a model with k profiles over one with k+1 profiles. Entropy values between 0.60 and 0.80 indicate good classification accuracy (Howard & Hoffman, 2018; Muthén, 2004; Nylund et al., 2007; Spurk et al., 2020). After identifying the best-fitting model, we examined profile characteristics and assigned descriptive labels to each profile. To assist in this process, we conducted ANOVA and post-hoc Tukey tests to verify whether significant differences existed among the items that defined each profile. Subsequently, we used the BCH procedure in Mplus (Asparouhov & Muthén, 2014; Asparouhov & Muthén, 2021; Nylund-Gibson, Grimm, & Masyn, 2019) for two main purposes: first, to explore the distribution of the outcome variables (work engagement, perceived health, self-rated performance) and predictors (age, gender, our control variables) across profiles; second, to assess whether age and gender significantly predicted profile membership and the distribution of outcome variables across profiles. Following the three-step BCH procedure (Asparouhov & Muthén, 2021), we first saved the BCH weights to account for uncertainty in class assignments. We then estimated an auxiliary model to test the class-specific regression of work engagement, perceived health, and self-rated performance on age and gender, and to evaluate whether significant differences in profile membership were associated with these predictors.

5. Results

5.1. Descriptive statistics

Descriptive statistics, reliability index, and correlations are presented in Table 2.

The dimensions related to organizational practices (organisational climate, leadership, work design, and individual development) show positive and significant correlations with one another, as well as with work engagement and perceived health; only organizational climate shows a weak but significant correlation ($r = 0.075$, $p < .05$) with self-rated performance. None of the organizational practices, on the other hand, does significantly correlate with career adaptability, but the latter does show significant and positive correlations with all three outcome variables (work engagement, perceived health, and self-rated performance). All three outcome variables (work engagement, job performance, and perceived health) are positively and significantly correlated with one another.

5.2. Latent profile analysis

Table 3 presents the fit indices for the models ranging from one to seven profiles. The best-fitting model was the one with four profiles for several reasons: the log-likelihood, AIC, and BIC values showed only minimal improvement beyond four profiles, as seen in the elbow plots; entropy values reached their highest level with the addition of the fourth profile; the p-values for both the LMR and BLRT tests were significant. Furthermore, in the models with more than four profiles, the smallest class fell below the 5% sample threshold, making profile interpretability more difficult.

Fig. 1 displays the graphical representation of the four profiles and the indicator values relative to the sample mean level (M = 0).

Table 4 presents the standardized scores within each profile.

The first profile comprises teachers who report the lowest levels of organisational practices in all categories, yet simultaneously exhibit comparatively higher levels of career adaptability. For this reason, the profile was labelled *Aging-Unsupported*, to highlight the limited organizational attention experienced by these teachers in their schools. The second profile exhibits organisational practice levels that are moderately above the average, particularly in dimensions such as organisational climate, leadership, and individual development, while career adaptability levels remain very close to the mean. Due to this moderately positive but unremarkable position, we chose to label this profile *Unfulfilled*. The third profile was labelled *Drifting*, as it shows below-average levels of all organizational practices and, at the same time, the lowest levels of career adaptability. In other words, this group shows the most unfavourable overall profile, exhibiting low levels on both organisational dimensions and career adaptability. Finally, the fourth group was labelled *Aging*-Supported: these are teachers who work in schools with high levels of organizational practices and who report the highest levels of career adaptability.

Table 2
Descriptive statistics, correlations, and reliability coefficients of the variables.

Variable	M	SD	α	1	2	3	4	5	6	7	8	9	10
1. Organizational Climate	4.56	1.21	0.86	—									
2. Leadership	4.24	1.56	0.92	0.642***	—								
3. Work Design	2.40	0.96	0.86	0.426***	0.488***	—							
4. Individual Development	3.55	1.28	0.84	0.599***	0.644***	0.580***	—						
5. CAAS	3.87	0.64	0.92	0.022	0.014	−0.017	−0.018	—					
6. Work Engagement	6.10	0.95	0.70	0.351***	0.379***	0.277***	0.356***	0.167***	—				
7. Perceived Health	4.85	1.44	0.87	0.216***	0.171***	0.143***	0.172***	0.140***	0.226***	—			
8. Job Performance	6.43	0.64	0.84	0.075*	0.006	−0.031	0.046	0.240***	0.236***	0.130***	—		
9. Age	56.9	3.91	—	0.003	0.001	0.014	0.004	−0.065	−0.056	−0.144***	−0.057	—	
10. Gender	1.16	0.37	—	−0.045	−0.014	0.039	0.019	−0.011	0.041	−0.032	−0.048	0.088*	—

Note: CAAS = Career Adapt-abilities; α = Cronbach's Alpha; *M* = Mean; *SD* = Standard deviation. ***$p < .001$; **$p < .01$; *$p < .05$.

Table 3
Fit indices for profile solutions 1 to 7.

Model	Log-likelihood	AIC	BIC	SABIC	Entropy	Smallest class %	LMR *p*-value	LMR meaning	BLRT *p*-value	BLRT meaning
1	−5593.792	11207.584	11254.430	11222.675			—	—	—	—
2	−5092.439	10216.878	10291.831	10241.023	0.808	0.49	0.000	2 > 1	0.0000	2 > 1
3	−4951.015	9946.029	10049.091	9979.228	0.789	0.18	0.0138	3 > 2	0.0000	3 > 2
4	**−4896.171**	**9848.342**	**9979.511**	**9890.596**	**0.744**	**0.12**	**0.0304**	**4 > 3**	**0.0000**	**4 > 3**
5	−4861.309	9790.619	9949.896	9841.927	0.775	0.01	0.7348	5<4	0.0000	5>4
6	−4839.249	9758.498	9945.882	9818.860	0.800	0.005	0.0088	6 > 5	0.0000	6 > 5
7	−4820.693	9733.387	9948.879	9802.803	0.780	0.008	0.3306	7<6	0.0000	7>6

Note. $n = 800$; The LMR test and the BLRT compare the current model to a model with k-1 profiles. AIC = Akaike's Information Criterion; BIC = Bayesian Information Criterion; SABIC = Sample-Adjusted BIC; LMR = Lo-Mendell Ruben; BLRT = bootstrap likelihood ratio test.

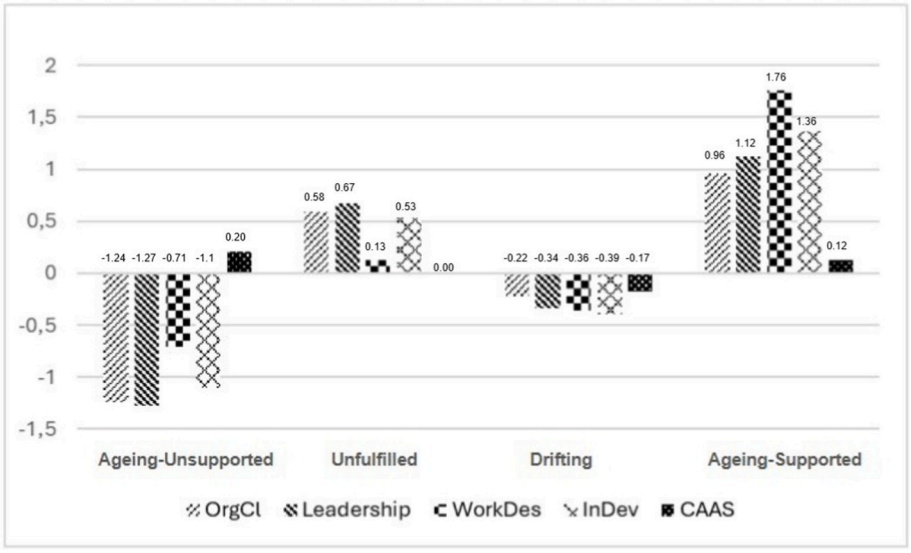

Fig. 1. Results from the 4-profile solution. OrgCl = Organizational Climate; WorkDes = Work design; InDev = Individual development; CAAS = Career Adapt-abilities.

Table 4
Descriptive statistics in the 4-profile solution.

Variables	Aging-Unsupported (n = 157; 19%)	Unfulfilled (n = 266; 33%)	Drifting (n = 273; 34%)	Aging-Supported (n = 102; 12%)
Organizational Climate	−1.241	0.587	−0.224	0.963
Leadership	−1.274	0.675	−0.340	1.122
Work Design	−0.713	0.130	−0.364	1.760
Individual Development	−1.107	0.532	−0.397	1.369
CAAS	0.202	0.009	−0.174	0.129

Note: CAAS = Career Adapt-abilities.

5.2.1. *Predictors and outcomes of profile membership*

Table 5 presents the standardized values of the predictors (age and gender) and outcome variables (work engagement, perceived health, and self-rated performance) across profiles. Table 6 shows the results from pair-wise comparisons of standardized score differences across profiles using the BCH method. The results indicate that levels of work engagement and perceived health vary across the different profiles, portraying the level of organizational practices. Profiles with below-average values of organizational practices, such as Aging-Unsupported and Drifting, show lower levels of engagement and perceived health. In contrast, profiles with above-average values, such as Unfulfilled and Aging-Supported, show higher levels of engagement and perceived health. These differences across profiles were consistently significant, as shown in Table 6. By contrast, there were no significant differences between profiles in terms of self-rated performance: the variations across profiles were minimal and not significant in any case. Similarly, there were no substantial differences between profiles with respect to age and gender either.

Finally, using the BCH procedure, we tested age and gender as class-specific predictors for the outcome variables (work engagement, perceived health, and self-rated performance), and we examined

Table 5
Descriptive statistics of predictors and outcome variables across profiles.

Variables	Aging-Unsupported (n = 157; 19%)	Unfulfilled (n = 266; 33%)	Drifting (n = 273; 34%)	Aging-Supported (n = 102; 12%)
Age	57.1544	56.7528	56.6749	57.3299
Gender	1.2215	1.1513	1.1413	1.1753
Work Engagement	−0.6123	0.3469	−0.2017	0.5572
Perceived Health	−0.2989	0.1364	−0.0879	0.3298
Job Performance	0.0106	0.0186	−0.0488	0.0762

Note. Gender: 1 = Female, 2 = Male.

Table 6
Predictors and outcome variables pair-wise comparisons.

Variables	Aging-Unsupported vs. Unfulfilled		Aging-Unsupported vs. Drifting		Aging-Unsupported vs. Aging-Supported		Unfulfilled vs. Drifting		Unfulfilled vs. Aging-Supported		Drifting vs. Aging-Supported	
	χ^2	p-value	χ^2	p-value	χ^2	p-value	χ^2	p-value	χ^2	p-value	χ^2	p-value
Age	1.189	0.276	1.395	0.238	0.086	0.770	0.067	0.796	1.364	0.243	2.214	0.137
Gender	3.106	0.078	3.880	0.049	0.902	0.342	0.279	0.598	0.231	0.631	0.910	0.340
Work Engagement	67.583	0.000	7.931	0.005	87.086	0.000	36.801	0.000	5.546	0.019	71.782	0.000
Perceived Health	16.917	0.000	3.123	0.077	21.879	0.000	4.155	0.042	2.166	0.141	10.929	0.001
Job Performance	0.000	0.985	0.375	0.540	0.139	0.709	0.611	0.434	0.140	0.708	0.949	0.330

Note. Gender: 1 = Female, 2 = Male.

whether there were significant differences in profile membership based on age and gender. The results are shown in Tables 7 and 8. Age and gender did not emerge as significant predictors for the outcome variables within profiles. Similarly, they did not appear to be significant predictors for profile membership. In other words, age and gender do not account for the differences in outcome variables across the identified profiles.

6. Discussion

6.1. Theoretical implications

This study contributes to the literature by identifying distinct profiles of older teachers based on perceived aging-related organizational practices relevant to career sustainability. Addressing our first research question, four profiles emerged among Italian teachers aged 50 and above: Aging-Unsupported, Unfulfilled, Drifting, and Aging-Supported. Notably, the two profiles characterized by below-average levels of perceived organizational practices (Aging-Unsupported and Drifting) account for 53% of the sample and display lower levels of work engagement and perceived health compared to the remaining profiles.

These findings are consistent with P–E fit theory (Edwards et al., 1998; Kristof, 1996), which argues that positive outcomes are more likely when individuals experience alignment between their needs, abilities, and the resources offered by the work environment. The profiles marked by poor organizational practices reflect a misfit condition, in which the school context fails to offer adequate resources to sustain older teachers' work, potentially resulting in reduced engagement and health over time. By contrast, the Unfulfilled and Aging-Supported profiles report above-average levels of perceived organizational practices, suggesting more supportive organizational environments.

The four-class model identified in our empirical work holds practical significance as it enables the identification of different patterns that may guide more targeted and effective interventions. Indeed, the literature has extensively explored the effects that organizational practices can have on well-being (Desrumaux et al., 2015; Veliz & Mainsbridge, 2024), stress levels (Mannix-McNamara et al., 2021; Ren et al., 2025), job satisfaction (Aldridge & Fraser, 2016; Armstrong-Stassen & Ursel, 2009; Bogler, 2001; Johnson et al., 2012; Xiaofu & Qiwen, 2007), and turnover intention (Carr et al., 2016; Messe, 2012; Van Solinge & Henkens, 2014; Walker, 2005). The finding that 53% of the sample works in schools where organizational practices are perceived as poor underscores the need for action by educational institutions to prevent an even more serious shortcoming of teachers in the years to come.

Table 8
Predictors of profile membership.

Predictor	Profile 1	Profile 2	Profile 3
Age	−0.013	−0.044	−0.051
Gender	0.350	−0.169	−0.346

Note: Profile 4 served as the reference group. Scores indicate the slope coefficients. ***$p < .001$; **$p < .01$; *$p < .05$.

The second research question examined how career adaptability is related to organizational practices in shaping the identified profiles. Previous research has linked career adaptability to career satisfaction and job satisfaction (Maggiori et al., 2013; McLennan et al., 2017; Zacher, 2014; Zacher & Griffin, 2015), self-efficacy and self-rated performance (Hirschi & Valero, 2015; McLennan et al., 2017; Meng & Briscioli, 2024; Öncel, 2014), and work engagement (Chen et al., 2025; Collie et al., 2018, 2020b). An interesting finding from our study is that, although the overall mean of career adaptability in the sample is quite high (M = 3.87, SD = 0.64 on a 5-point Likert scale), significant differences exist between profiles with above-average (Aging-Unsupported, Unfulfilled, Aging-Supported) and below-average values (Drifting). In other words, the group labelled as Drifting, although not reporting the lowest levels of perceived organisational practices, shows the lowest levels of career adaptability. It is, therefore, the most concerning profile, together with the Aging-Unsupported profile, which displays the lowest levels of organisational practices but the highest levels of career adaptability. Interpreting these findings through the lens of COR theory (Hobfoll, 1989, 2001), career adaptability represents a personal resource that helps individuals cope with changing career demands. However, COR theory posits that resource gain cycles require both personal and contextual resources. Thus, in the Drifting group—-where personal resources are low—teachers may lack the resource reservoir needed to capitalize on available organizational opportunities. Conversely, in the Aging-Unsupported group, high career adaptability alone may not compensate for an environment that does not provide adequate resources, illustrating that personal resources cannot offset chronic contextual resource loss. These findings further underscore the practical value of the four-profile model. School leaders and educational advisors may use it to promote reflection on career adaptability throughout the teaching profession. Targeted interventions may be particularly beneficial for teachers in the Drifting profile, who may be at elevated risk of turnover, as strengthening career adaptability has been shown to reduce such risk (Coetzee & Stoltz, 2015; Omar & Noordin, 2013). Teachers in the other profiles may also benefit from tailored

Table 7
Predictors of work engagement, perceived health, and self-rated performance across profiles.

Covariate	Aging-Unsupported			Unfulfilled			Drifting			Aging-Supported		
	WE	PH	JP	WE	PH	JP	WE	PH	JP	WE	PH	JP
Age	−0.041	−0.035	−0.028	−0.001	0.012	−0.002	−0.048	0.032	−0.047	0.003	−0.020	0.026
Gender	−0.072	−0.067	−0.067	−0.299	0.016	−0.045	−0.047	−0.149	0.052	−0.051	0.239	0.020

Note: Scores indicate the slope coefficients. WE = Work Engagement, PH = Perceived health, JP = Job Performance. ***$p < .001$; **$p < .01$; *$p < .05$.

initiatives, including career planning, leadership and empowerment programs, exploration of innovative teaching practices, and participation in mentoring or professional learning communities aimed at fostering future orientation, agency, curiosity, and professional confidence.

The third research question examined how perceived school organizational practices relate to older teachers' ability to remain engaged, healthy, and productive across the identified profiles. The results showed that profiles characterized by low perceived organizational practices (Aging-Unsupported and Drifting) reported significantly lower work engagement and perceived health than profiles with higher levels (Unfulfilled and Aging-Supported). These findings are consistent with previous literature linking work engagement with organizational climate (Addimando, 2019; Bakker et al., 2007; Ren et al., 2025; Sousa et al., 2019), leadership (Sahu et al., 2018), work design (Rudolph & Baltes, 2017), and professional development (Guglielmi et al., 2016). Similarly, organizational practices and work characteristics have been shown to impact teacher health (Ford et al., 2019; Lipponen et al., 2022) and work ability (Kinnunen et al., 2019; Vangelova et al., 2018; Virtanen et al., 2020; Ünlü & Filiz, 2019). Thus, it is vital that schools strive to maintain high levels of engagement and health among their teachers, both to promote well-being and to reduce turnover intention (Damman et al., 2011; Rasanen et al., 2020). Some studies have found that older teachers benefit most from recovery time and breaks (Kinnunen et al., 2019; Virtanen et al., 2020). Teachers may also benefit from training in stress management, promotion of healthy lifestyles, or managing aging at work (Hlaďo et al., 2020).

In contrast, self-rated performance did not differ significantly across profiles, indicating that perceptions of organizational practices were not associated with how Italian teachers evaluated their own performance. This contrasts with prior research showing that organizational practices can positively affect self-rated performance and self-efficacy. Numerous studies have demonstrated this connection with organizational climate (Collie et al., 2012; Domitrovich et al., 2019; Malloy et al., 2015; Reaves & Cozzens, 2018; Ren et al., 2025), school leadership (Aldridge & Fraser, 2016; Bogler, 2001; Choi, 2023; Leithwood & Jantzi, 2006; Li & Liu, 2020), work design and autonomy (Addimando, 2019; Betoret, 2009; Choi & Mao, 2021; Skaalvik & Skaalvik, 2014), and professional development (Guskey, 2002; Ingvarson et al., 2005; Mazzetti et al., 2020; Ross & Bruce, 2007; Yoo, 2016).

However, this result is not entirely surprising. Findings from the Teaching and Learning International Survey (TALIS) have reported similar levels among Italian teachers (Argentin, 2018; De Sanctis, 2010; Fackler & Malmberg, 2016; OECD, 2014; OECD, 2019). As Foschi notes, a misalignment exists between the training received by Italian teachers (and their expressed training needs) and their perceived preparedness for teaching (Foschi, 2021). This misalignment also emerges in representations of what knowledge, skills, and dispositions are necessary for assessment literacy. Pastore and Mincu (2024) attribute this gap to the lack of professional standards in the Italian school system and a low propensity for feedback: 27% of teachers report never having received feedback in their schools (OECD average 10%; OECD, 2019). Furthermore, the study sample consisted of teachers over 50, 72.8% of whom had worked in the same school for more than 15 years—mostly veteran teachers with high levels of expertise. This likely explains the generally high self-rated performance (Argentin, 2018; Carrillo & Flores, 2017; Klassen & Chiu, 2010). This observation may also apply to the Italian teaching population in general, given that one in two teachers (48%) in Italy is aged 50 or older. From a P–E fit perspective, the absence of differences in self-rated performance may indicate that, for experienced teachers, performance relies less on contextual fit and more on accumulated competencies and stable professional identities. COR theory may also explain this pattern: veteran teachers possess strong resource reservoirs (e.g., pedagogical expertise, classroom management skills) that buffer performance against contextual resource deficits, even if these deficits still impair engagement and health.

Another noteworthy finding concerns the relationship between career adaptability and study outcomes. The Aging-Unsupported profile, despite reporting the lowest levels of perceived organizational practices, exhibits the highest career adaptability, yet also the lowest levels of work engagement and perceived health. This pattern suggests that career adaptability as a personal resource is insufficient to compensate for the detrimental effects of poor organizational practices on these outcomes, adding a nuanced perspective to prior research linking career adaptability to work engagement (Chen et al., 2025; Collie et al., 2018; Collie, Guay, et al., 2020) and well-being (Konstam et al., 2015; Maggiori et al., 2013; Yang et al., 2019). However, this relationship warrants further investigation using different analytical approaches.

The final research question examined whether age and gender predicted profile membership and outcome levels. Our findings indicate that neither age nor gender significantly predicts the distribution of outcome variables across profiles. In other words, contrary to the claims of Mejía and colleagues (2017), the perception of organizational practices does not appear to be influenced by teachers' age or gender. These results also diverge somewhat from the existing literature, which has identified associations between age and gender and work engagement (Antonoiu et al., 2006; Douglas & Roberts, 2020; Goštautaitė & Bučiūnienė, 2015; Perera et al., 2018; Rudolph & Baltes, 2017), perceived health (Anson et al., 1993; Peris-Ramos et al., 2024; Serrano et al., 2008), and self-rated performance and self-efficacy (Klassen & Chiu, 2010; Mullola et al., 2011; Šabić et al., 2022). One possible explanation is that the perception of organizational practices within a school is relatively uniform and affects all teachers working in the same environment, resulting in a homogeneous experience largely immune to differences in age or gender. In other words, in schools where the organizational climate is poor, where job characteristics cannot be adapted, and where professional development is inadequate, these conditions affect all teachers similarly—regardless of whether they are 50, 55, or 65 years old, male or female. A second explanation is likely to be found in the specificity of the Italian school context, where institutional support is very limited, career progression is virtually non-existent, and organizational practices for an aging workforce tend to rely more on internal school conventions than on a widespread culture of support for aging workers. Similarly, although age and gender do not predict profile membership, this does not imply that initiatives for late-career teachers are unnecessary; rather, it may indicate that age-specific organizational practices are effective only when embedded within a supportive organizational context. Finally, this study does not consider the possibility that additional moderators or mediators might influence the relationship between age/gender and the perception of organizational practices (e.g., perceived position within a network—Brouhier et al., 2021; Liu et al., 2025; or personality traits—Aşkun & Muslu, 2025).

However, a limitation of this study—and a recommendation for future research—is to investigate whether perceptions of organizational practices are influenced by the gender of the school principal and whether gender congruence between principal and teacher leads to significant differences.

Future research should also examine differences between rural and urban schools. Previous studies in other national contexts have identified meaningful variations across these settings (Wang et al., 2023, 2024a). Extending this comparison to the Italian context would help determine whether the identified profiles and their associations with engagement, health, and career adaptability differ accordingly.

6.2. *Practical implications*

This study offers important insights for the education sector, finding that around half of the participants fall into at-risk profiles (Aging-Unsupported and Drifting), marked by low perceived organisational support, low engagement, and poor health. These findings highlight the urgent need for targeted interventions to prevent further

disengagement, burnout, and potential turnover.

Here, we suggest several interventions that schools could adopt to support teachers over 50. First, implementing tools such as the Later Life Workplace Index (Wilckens et al., 2021) could help schools diagnose areas for improvement in HR practices. Second, schools could improve attention toward older teachers by creating spaces to discuss aging openly and recognizing the unique needs of an aging workforce (Guglielmi et al., 2016; Veliz & Mainsbridge, 2024). Similarly, fostering transformational leadership may enhance organizational commitment and the intention to delay retirement among teachers, as can distributed leadership that promotes autonomy (Choi, 2023; McCarley et al., 2016; Velarde et al., 2022; Wang et al., 2022; Zhao et al., 2022). Other studies have shown the positive impact of adapting one's tasks to one's career stage, provided there is sufficient administrative support. Specifically in the school context, this means that late-career teachers could benefit from being allowed to focus more on instructional duties (reducing bureaucratic tasks; Brouhier et al., 2021), managerial responsibilities (Ertürk, 2022), or mentoring early-career teachers (Geeraerts et al., 2018; Guglielmi et al., 2016; Meister & Ahrens, 2011).

It is also crucial that principals and educational advisors facilitate continuous professional development for teachers over 50, including individual or group discussions to identify training needs, and supporting teachers in developing self-diagnostic skills to analyze their learning gaps. Continued professional development in the later stages of one's career plays a vital role in maintaining high job satisfaction (Findsen, 2015), facilitating retention, preventing turnover and early retirement (Day & Gu, 2007; Firestone & Pennell, 1993), and mitigating job demands (Brouhier et al., 2023; Mazzetti et al., 2020).

To address the challenges of an aging workforce, schools may implement initiatives aimed at enhancing career adaptability and reducing stress among teaching staff. Potential interventions include peer coaching programs, workshops focused on reflective career planning, stress management courses, and the promotion of collaborative work environments. Age- and career-stage–tailored training can further support sustained engagement and performance (Van der Heijden, Van Vuuren, Kooij, & De Lange, 2015; Lee et al., 2021). In addition, mentoring pathways and knowledge-sharing between younger and older teachers can acknowledge older teachers' generativity and strengthen motivation and engagement (Santoro et al., 2012; Wiktorowicz et al., 2022).

Prior research indicates that the satisfaction of teachers' psychological needs and their capacity for emotion regulation are associated with more motivating teaching styles, even under challenging conditions (Katz & Moè, 2024). Moreover, evidence from systematic reviews and meta-analyses shows that teacher well-being—particularly its eudaimonic components—is positively associated with teacher–student interaction quality and student engagement (Dreer, 2023; Maricuțoiu et al., 2023; Turner & Theilking, 2019). From this perspective, organizational practices that recognize older teachers' generativity and foster supportive professional relationships may indirectly sustain instructional quality by maintaining motivation, engagement, and relational competence in later career stages (Hascher & Waber, 2021; Hoque et al., 2023; Zhou et al., 2024).

At the policy level, the adoption of internal monitoring tools to assess organizational well-being among teachers aged 50 and above may support multi-level interventions targeting organizational climate, leadership, work flexibility, and continuous training. It is essential that these responsibilities do not fall solely on school leaders, yet are rather supported by systemic policies that promote regular well-being assessments and shared accountability mechanisms.

Additionally, the study identified a group of teachers—the Unfulfilled—who, despite displaying moderately positive levels of organizational practices, engagement, and perceived health, also show areas where institutional support could be strengthened (e.g., work design and career adaptability). Although this group does not exhibit overt signs of distress, they may be at risk of stagnation or dissatisfaction if not adequately supported. These teachers could benefit from structured opportunities for reflection, initiatives aimed at enhancing career adaptability, and organizational spaces that allow them to articulate their needs for greater work flexibility.

6.3. Limitations, and future research directions

Despite its contributions, this study has several limitations that should be acknowledged. First, although the scales employed were carefully selected and adapted from validated instruments in related fields, their face validity in the context of teacher education may still be limited. Second, the cross-sectional design precludes causal interpretations of the observed relationships; longitudinal studies are therefore needed to examine how these dynamics evolve over time and to assess the long-term effects of organizational interventions. Third, the focus on Italian teachers limits the generalizability of the findings to other educational systems and cultural contexts, highlighting the need for cross-national replications. Finally, future research would benefit from mixed-methods designs incorporating qualitative approaches, such as interviews or focus groups, to deepen understanding of teachers' lived experiences of professional well-being and career development.

7. Conclusion

This study advances understanding of aging teachers' career sustainability by identifying four distinct profiles shaped by organizational practices and career adaptability. The findings highlight that over half of Italian teachers perceive limited institutional support, which is associated with reduced engagement and poorer health outcomes. Practical implications include promoting age-friendly organizational climates, strengthening leadership and professional development, and designing tailored initiatives to sustain late-career teachers' well-being and motivation. However, the cross-sectional and context-specific nature of this study calls for longitudinal and cross-cultural replications, as well as mixed-methods approaches to capture teachers' lived experiences. Overall, fostering supportive organizational environments and enhancing career adaptability remain essential strategies to ensure that teachers over 50 can remain engaged, healthy, and productive contributors to the education system.

CRediT authorship contribution statement

Paolo Guandalini: Conceptualization, Writing – original draft, Project administration, Investigation, Formal analysis, Data curation. **Michela Vignoli:** Conceptualization, Writing – review & editing, Project administration, Validation, Supervision. **Sofija Pajic:** Conceptualization, Writing – review & editing, Supervision, Formal analysis. **Beatrice I.J.M. van der Heijden:** Conceptualization, Writing – review & editing, Validation, Supervision.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the authors used ChatGPT in order to improve the readability and language of the manuscript. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the published article.

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Declaration of competing interest

The authors declare that they have no known competing financial

interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The dataset supporting the findings of this study has been shared and is available at the following link: https://data.mendeley.com/preview/fshs739gvr?a=42416e22-15de-48c2-9f4c-d5fdc0d9864b

References

Adams, G. A., & Beehr, T. A. (1998). Turnover and retirement: A comparison of their similarities and differences. *Personnel Psychology, 51*, 643–665. https://doi.org/10.1111/j.1744-6570.1998.tb00255.x

Addimando, L. (2019). The effect of positive working conditions on work engagement and teaching classroom practices: A large cross-sectional study in Switzerland. *Frontiers in Psychology, 10*. https://doi.org/10.3389/fpsyg.2019.02129. Article 2129.

Aldridge, J. M., & Fraser, B. J. (2016). Teachers' views of their school climate and its relationship with teacher self-efficacy and job satisfaction. *Learning Environments Research, 19*(2), 291–307. https://doi.org/10.1007/s10984-015-9198-x

Allen, J., Alpass, F. M., Szabó, Á., & Stephens, C. V. (2021). Impact of flexible work arrangements on key challenges to work engagement among older workers. *Work, Aging and Retirement, 7*(4), 404–417. https://doi.org/10.1093/workar/waab010

Anastasiou, S., & Belios, E. (2020). Effect of age on job satisfaction and emotional exhaustion of primary school teachers in Greece. *European Journal of Investigation in Health Psychology and Education, 10*(2), 644–655. https://doi.org/10.3390/ejihpe10020047

Anson, O., Paran, E., Neumann, L., & Chernichovsky, D. (1993). Gender differences in health perceptions and their predictors. *Social Science & Medicine, 36*(4), 419–427. https://doi.org/10.1016/0277-9536(93)90404-r

Antoniou, A.-S., Polychroni, F., & Vlachakis, A.-N. (2006). Gender and age differences in occupational stress and professional burnout between primary and high-school teachers in Greece. *Journal of Managerial Psychology, 21*(7), 682–690. https://doi.org/10.1108/02683940610690213

Appannah, A., & Biggs, S. (2015). Age-friendly organisations: The role of organisational culture and the participation of older workers. *Journal of Social Work Practice, 29*(1), 37–51. https://doi.org/10.1080/02650533.2014.993943

Argentin, G. (2018). *Gli insegnanti nella scuola italiana. Ricerche e prospettive di intervento [Teachers in the Italian School: Research and Intervention Perspectives]*. Il Mulino.

Argentin, G. (2021). Under pressure? L'elevata e crescente soddisfazione lavorativa degli insegnanti italiani [Under Pressure? The High and Growing Job Satisfaction of Italian Teachers], 2014-2019. *Sociologia del Lavoro, 160*, 43–66. https://doi.org/10.3280/SL2021-160003

Armstrong-Stassen, M., & Ursel, N. D. (2009). Perceived organizational support, career satisfaction, and the retention of older workers. *Journal of Occupational and Organizational Psychology, 82*(1), 201–220. https://doi.org/10.1348/096317908X288838

Arnold, B., & Rahimi, M. (2025). Teachers' working conditions, wellbeing and retention: An exploratory analysis to identify the key factors associated with teachers' intention to leave. *Australian Educational Researcher, 52*, 1947–1973. https://doi.org/10.1007/s13384-024-00794-1

Aşkun, V., & Muslu, E. (2025). Complex relationship of personality traits on teachers' perceptions of sustainable careers: A qualitative comparative analysis with the big five. *Psychology in the Schools*. https://doi.org/10.1002/pits.70013. Advance online publication.

Asparouhov, T., & Muthén, B. (2014). Auxiliary variables in mixture modeling: Three-step approaches using M*plus*. *Structural Equation Modeling, 21*(3), 329–341. https://doi.org/10.1080/10705511.2014.915181

Asparouhov, T., & Muthén, B. (2021). Auxiliary variables in mixture modeling: Using the BCH method in Mplus to estimate a distal outcome model and an arbitrary second model. *Mplus Web Notes*, (21). version 11.

Axelrad, H., Kalev, A., & Lewin-Epstein, N. (2023). Ambivalent bias at work: Managers' perceptions of older workers across organizational contexts. *Work, Employment & Society, 38*(4), 1148–1171. https://doi.org/10.1177/09500170231175790

Bakker, A. B., Hakanen, J. J., Demerouti, E., & Xanthopoulou, D. (2007). Job resources boost work engagement, particularly when job demands are high. *Journal of Educational Psychology*. https://doi.org/10.1037/0022-0663.99.2.274

Balducci, C., Fraccaroli, F., & Schaufeli, W. B. (2010). Psychometric properties of the Italian version of the Utrecht Work Engagement Scale (UWES-9). *European Journal of Psychological Assessment, 26*, 143–149. https://psycnet.apa.org/doi/10.1027/1015-5759/a000020.

Baltes, P. B., & Baltes, M. M. (1990). Psychological perspectives on successful aging: The model of selective optimization with compensation. In P. B. Baltes, & M. M. Baltes (Eds.), *Successful aging: Perspectives from the behavioral sciences* (pp. 1–34). Cambridge University Press.

Barbieri, G., Rossetti, C., & Sestito, P. (2011). The determinants of teacher mobility: Evidence using Italian teachers' transfer applications. *Economics of Education Review, 30*(6), 1430–1444. https://doi.org/10.1016/j.econedurev.2011.07.010

Benevene, P., De Stasio, S., Fiorilli, C., Buonomo, I., Ragni, B., Briegas, J. J. M., & Barni, D. (2019). Effect of Teachers' Happiness on Teachers' health. The mediating role of happiness at work. *Frontiers in Psychology, 10*, 2449. https://doi.org/10.3389/fpsyg.2019.02449

Betoret, F. D. (2009). Self-efficacy, school resources, job stressors and burnout among Spanish primary and secondary school teachers: A structural equation approach. *Educational Psychology, 29*(1), 45–68. https://doi.org/10.1080/01443410802459234

Bogler, R. (2001). The influence of leadership style on teacher job satisfaction. *Educational Administration Quarterly, 37*, 662–683.

Bowers, T. (2001). Teacher absenteeism and ill health retirement: A review. *Cambridge Journal of Education, 31*(2), 135–157. https://doi.org/10.1080/0305764012006119

Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology, 1*(3), 185–216. https://doi.org/10.1177/135910457000100301

Brouhier, Q., Coppe, T., März, V., & Raemdonck, I. (2023). Professional learning of late-career teachers in early childhood education: A matter of (im)balance between personal resources, job resources, and job demands. *Teaching and Teacher Education, 133*. https://doi.org/10.1016/j.tate.2023.104273

Brouhier, Q., März, V., Van Waes, S., & Raemdonck, I. (2021). From isolation to interaction: A social network perspective on older teachers' position in school organizations and age-related HR practices. *Work, Aging and Retirement, 7*(4), 322–338. https://doi.org/10.1093/workar/waaa031

Brown, K. M., & Wynn, S. R. (2009). Finding, supporting, and keeping: The role of the principal in teacher retention issues. *Leadership and Policy in Schools, 8*(1), 37–63. https://doi.org/10.1080/15700760701817371

Burke, R. J., Cooper, C. L., & Field, J. (2013). The aging workforce: Individual, organizational and societal opportunities and challenges. In J. Field, R. J. Burke, & C. L. Cooper (Eds.), *The aging workforce: Individual, organizational and societal opportunities and challenges* (pp. 1–20). SAGE Publications Ltd. https://doi.org/10.4135/9781446269916.n1.

Carr, E., Hagger-Johnson, G., Head, J., Shelton, N., Stafford, M., Stansfeld, S., & Zaninotto, P. (2016). Working conditions as predictors of retirement intentions and exit from paid employment: A 10-year follow-up of the English longitudinal study of aging. *European Journal of Aging, 13*(1), 39–48.

Carrillo, C., & Flores, M. A. (2017). Veteran teachers' identity: What does the research literature tell us? *Cambridge Journal of Education, 48*(5), 639–656. https://doi.org/10.1080/0305764X.2017.1394982

Carrizosa, L. M. G., & De Witte, K. (2024). Teacher absenteeism: A conceptual model developed from a systematic literature review. *Cambridge Journal of Education, 54*(5), 561–588. https://doi.org/10.1080/0305764X.2024.2397366

Carstensen, L. L., Isaacowitz, D. M., & Charles, S. T. (1999). Taking time seriously: A theory of socioemotional selectivity. *American Psychologist, 54*(3), 165–181. https://doi.org/10.1037/0003-066X.54.3.165

Cau-Bareille, D. (2011). Factors influencing early retirement in a female-dominated profession: Kindergarten teacher in France. *Work, 40*(S1), 15–30. https://doi.org/10.3233/WOR-2011-1265

Chen, M. K.-L., & Gardiner, E. (2019). Supporting older workers to work: A systematic review. *Personnel Review, 48*(5), 1318–1335. https://doi.org/10.1108/PR-11-2018-0455

Chen, H., Song, W., Xie, J., Wang, H., Zheng, F., & Wen, Y. (2025). The impact of Chinese teachers' career calling on job burnout: A dual path model of career adaptability and work engagement. *International Journal of Mental Health Promotion, 27*(3), 379–400. https://doi.org/10.32604/ijmhp.2025.060370

Cheung, F., Yeung, D. Y., & Wu, A. M. S. (2018). Employees' perception of leadership styles and successful aging in the workplace. *Journal of Career Development, 45*(6), 610–624. https://doi.org/10.1177/0894845317727617

Choi, S. (2023). Distributed leadership promotes teacher self-efficacy in multicultural classrooms through school capacity building: A multilevel SEM approach using U.S. Teaching and Learning International Survey. *Educational Administration Quarterly, 59*(4), 811–844. https://doi.org/10.1177/0013161X231189196

Choi, S., & Mao, X. (2021). Teacher autonomy for improving teacher self-efficacy in multicultural classrooms: A cross-national study of professional development in multicultural education. *International Journal of Educational Research, 105*. https://doi.org/10.1016/j.ijer.2020.101711

Choi, E., Ospina, J., Steger, M. F., & Orsi, R. (2018). Understanding work enjoyment among older workers: The significance of flexible work options and age discrimination in the workplace. *Journal of Gerontological Social Work, 61*(8), 867–886. https://doi.org/10.1080/01634372.2018.1515140

Chong, J. X. Y., Andrei, D. M., Tian, A., & Parker, S. K. (2025). Include, individualize, and integrate hrm practices for successful aging at work: Scale development and test of a model. *Human Resource Management*. https://doi.org/10.1002/hrm.22301. Advance online publication.

Cochran, J., Crowne, K. A., & Carpenter, C. E. (2012). Impact of older-worker-friendly organizational policies on retirement attitudes and planning. *Organization Management Journal, 9*(3), 170–178. https://doi.org/10.1080/15416518.2012.708851

Coetzee, M., & Stoltz, E. (2015). Employees' satisfaction with retention factors: Exploring the role of career adaptability. *Journal of Vocational Behavior, 89*, 83–91. https://doi.org/10.1016/j.jvb.2015.04.012

Collie, R. J., Granziera, H., & Martin, A. J. (2018). Teachers' perceived autonomy support and adaptability: An investigation employing the job demands-resources model as relevant to workplace exhaustion, disengagement, and commitment. *Teaching and Teacher Education, 74*, 125–136. https://doi.org/10.1016/j.tate.2018.04.015

Collie, R. J., Granziera, H., Martin, A. J., Burns, E. C., & Holliman, A. J. (2020). Adaptability among science teachers in schools: A multi-nation examination of its role in school outcomes. *Teaching and Teacher Education, 95*. https://doi.org/10.1016/j.tate.2020.103148. Article 103148.

Collie, R., Guay, F., Martin, A. J., Caldecott-Davis, K., & Granziera, H. (2020). Examining the unique roles of adaptability and buoyancy in teachers' work-related outcomes. *Teachers and Teaching, 26*(3–4), 350–364. https://doi.org/10.1080/13540602.2020.1832063

Collie, R. J., Shapka, J. D., & Perry, N. E. (2012). School climate and social–emotional learning: Predicting teacher stress, job satisfaction, and teaching efficacy. *Journal of Educational Psychology, 104*(4), 1189–1204. https://doi.org/10.1037/a0029356

Collins, L. M., & Lanza, S. T. (2013). *Latent class and latent transition analysis: With applications in the social, behavioral, and health sciences*. Hoboken, NJ: John Wiley & Sons.

Converso, D., Cortini, M., Guidetti, G., Molinengo, G., Sottimano, I., Viotti, S., & Loera, B. (2019). Organizational climate and teachers' morale: Developing a specific tool for the school context - A research Project in Italy. *Frontiers in Psychology, 10*, 2132. https://doi.org/10.3389/fpsyg.2019.02132

Converso, D., Sottimano, I., Guidetti, G., Loera, B., Cortini, M., & Viotti, S. (2018). Aging and work ability: The moderating role of job and personal resources. *Frontiers in Psychology, 8*, 2262. https://doi.org/10.3389/fpsyg.2017.02262

Curran, P. G. (2016). Methods for the detection of carelessly invalid responses in survey data. *Journal of Experimental Social Psychology, 66*, 4–19. https://doi.org/10.1016/j.jesp.2015.07.006

Damman, M., Henkens, K., & Kalmijn, M. (2011). The impact of midlife educational, work, health, and family experiences on men's early retirement. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 66B*, 617–627.

Day, C., & Gu, Q. (2007). Variations in the conditions for teachers' professional learning and development: Sustaining commitment and effectiveness over a career. *Oxford Review of Education, 33*(4), 423–443. https://doi.org/10.1080/03054980701450746

Day, C., Stobart, G., Sammons, P., & Kington, A. (2006). Variations in the work and lives of teachers: Relative and relational effectiveness. *Teachers and Teaching, 12*(2), 169–192. https://doi.org/10.1080/13450600500467381

De Sanctis, G. (2010). TALIS. I docenti italiani tra bisogni di crescita professionale e resistenze [Italian Teachers Between Professional Development Needs and Resistance]. *FGA Working Paper, 24*, 2.

De Simone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher, 38*(3). https://doi.org/10.3102/0013189X08331140

De Vos, A., van der Heijden, B. I. J. M., & Akkermans, J. (2020). Sustainable careers: Towards a conceptual model. *Journal of Vocational Behavior, 117*, Article 103196. https://doi.org/10.1016/j.jvb.2018.06.011

Deller, J., Gu, X., Choi, S. J., & Wöhrmann, A. M. (2025). Working conditions and organizational practices to support well-being of multiage workforce in Germany, USA, Japan, and South Korea. *Public Administration and Policy, 28*(1), 88–100. https://doi.org/10.1108/PAP-08-2024-0143

Desrumaux, P., Lapointe, D., Ntsame Sima, M., Boudrias, J. S., Savoie, A., & Brunet, L. (2015). The impact of job demands, climate, and optimism on well-being and distress at work: What are the mediating effects of basic psychological need satisfaction? *Revue Europeenne de Psychologie Appliquee, 65*(4), 179–188. https://doi.org/10.1016/j.erap.2015.06.003

Diamond, F., & Bulfin, S. (2025). Care of the profession: Teacher professionalism and learning beyond performance and compliance. *Pedagogy, Culture & Society, 33*(2), 503–521. https://doi-org.ezp.biblio.unitn.it/10.1080/14681366.2023.2239820.

Domitrovich, C. E., Li, Y., Mathis, E. T., & Greenberg, M. T. (2019). Individual and organizational factors associated with teacher self-reported implementation of the PATHS curriculum. *Journal of School Psychology, 76*, 168–185. https://doi.org/10.1016/j.jsp.2019.07.015

Douglas, S., & Roberts, R. (2020). Employee age and the impact on work engagement. *Strategic HR Review, 19*(5), 209–213. https://doi.org/10.1108/SHR-05-2020-0049

Dreer, B. (2023). On the outcomes of teacher wellbeing: A systematic review of research. *Frontiers in Psychology, 14*, Article 1205179. https://doi.org/10.3389/fpsyg.2023.1205179

Dreyfus, S. E. (2004). The five-stage model of adult skill acquisition. *Bulletin of Science, Technology & Society, 24*(3), 177–181. https://doi.org/10.1177/0270467604264992

Edwards, J. R., Caplan, R. D., & Harrison, R. V. (1998). Person-Environment fit theory: Conceptual foundations, empirical evidence, and directions for future research. In C. L. Cooper (Ed.), *Theories of organizational stress*. Oxford: Oxford University Press.

Eisenberger, R., Armeli, S., Rexwinkel, B., Lynch, P. D., & Rhoades, L. (2001). Reciprocation of perceived organizational support. *Journal of Applied Psychology, 86*(1), 42–51. https://doi.org/10.1037/0021-9010.86.1.42

Ertürk, R. (2022). The relationship between school Administrators' Supportive Behaviors and Teachers' job satisfaction and subjective well-being. *International Journal of Contemporary Educational Research, 8*(4), 184–195. https://doi.org/10.33200/ijcer.956667

Fackler, S., & Malmberg, L.-E. (2016). Teachers' self-efficacy in 14 OECD countries: Teacher, student group, school and leadership effects. *Teaching and Teacher Education, 56*, 185–195. https://doi.org/10.1016/j.tate.2016.03.002

Fasbender, U., Wang, M., Voltmer, J. B., & Deller, J. (2016). The meaning of work for post-retirement employment decisions. *Work, Aging and Retirement, 2*(1), 12–23. https://doi.org/10.1093/workar/wav015

Ferguson, S. L., Moore, E. W. G., & Hull, D. M. (2019). Finding latent groups in observed data: A primer on latent profile analysis in Mplus for applied researchers. *International Journal of Behavioral Development, 44*(5), 458–468. https://doi.org/10.1177/0165025419881721

Findsen, B. (2015). Older workers' learning within organizations: Issues and challenges. *Educational Gerontology, 41*(8), 582–589. https://doi.org/10.1080/03601277.2015.1011582

Finsel, J., Venz, L., Wöhrmann, A. M., Wilckens, M. R., & Deller, J. (2023). Worlds apart: Does perceptual congruence between leaders and older employees regarding age-friendly organizational climate, management, and work design matter? *Work, Aging and Retirement*. https://doi.org/10.1093/workar/waad009

Finsel, J. S., Wöhrmann, A. M., Wang, M., Wilckens, M. R., & Deller, J. (2023). Later Life Workplace Index: Validation of an English version. *Work, Aging and Retirement, 9*(1), 71–94. https://doi.org/10.1093/workar/waab029

Firestone, W. A., & Pennell, J. R. (1993). Teacher commitment, working conditions, and differential incentive policies. *Review of Educational Research, 63*(4), 489–525. https://doi.org/10.3102/00346543063004489

Ford, T. G., Olsen, J., Khojasteh, J., Ware, J., & Urick, A. (2019). The effects of leader support for teacher psychological needs on teacher burnout, commitment, and intent to leave. *Journal of Educational Administration, 57*(6), 615–634. https://doi.org/10.1108/JEA-09-2018-0185

Foschi, L. C. (2021). Teachers' Continuous Professional Development in Italy: An analysis of the results of the Teaching and Learning International Survey (TALIS). *Italian Journal of Educational Research, 27*, 52–64.

Froehlich, D. E., Raemdonck, I., & Beausaert, S. (2023). Resources to increase older workers' motivation and intention to learn. *Vocations and Learning, 16*, 47–71. https://doi.org/10.1007/s12186-022-09304-9

Gahan, P., Harbridge, R., Healy, J., & Williams, R. (2016). The aging workforce: Policy dilemmas and choices. *Australian Journal of Public Administration, 76*(4), 511–523. https://doi.org/10.1111/1467-8500.12232

Geeraerts, K., Tynjälä, P., & Heikkinen, H. L. T. (2018). Inter-generational learning of teachers: What and how do teachers learn from older and younger colleagues? *European Journal of Teacher Education, 41*(4), 479–495. https://doi.org/10.1080/02619768.2018.1448781

Goodman, J. M. (1994). Career adaptability in adults: A construct whose time has come. *The Career Development Quarterly, 43*, 74–84. https://doi.org/10.1002/j.2161-0045.1994.tb00848.x

Gošautaitė, B., & Bučiūnienė, I. (2015). Work engagement during life-span: The role of interaction outside the organization and task significance. *Journal of Vocational Behavior, 89*, 109–119. https://doi.org/10.1016/j.jvb.2015.05.001

Guan, Y., Zhou, W., Ye, L., Jiang, P., & Zhou, Y. (2015). Perceived organizational career management and career adaptability as predictors of success and turnover intention among Chinese employees. *Journal of Vocational Behavior, 88*, 230–237. https://doi.org/10.1016/j.jvb.2015.04.002

Guglielmi, D., Bruni, I., Simbula, S., Fraccaroli, F., & Depolo, M. (2016). What drives teacher engagement: A study of different age cohorts. *European Journal of Psychology of Education, 31*(3), 323–340. https://doi.org/10.1007/s10212-015-0263-8

Guglielmi, R. S., & Tatrow, K. (1998). Occupational stress, burnout, and health in teachers: A methodological and theoretical analysis. *Review of Educational Research, 68*(1), 61–99. https://doi.org/10.2307/1170690

Gümüş, M., Hamarat, B., Çolak, E., & Duran, E. (2012). Organizational and occupational identification: Relations to teacher satisfaction and intention to early retirement. *Career Development International, 17*(4), 300–313. https://doi.org/10.1108/13620431211255806

Guskey, T. R. (2002). Professional development and teacher change. *Teachers and Teaching, 8*(3), 381–391. https://doi.org/10.1080/135406002100000512

Harrison, M. G., King, R. B., & Wang, H. (2023). Satisfied teachers are good teachers: The association between teacher job satisfaction and instructional quality. *British Educational Research Journal, 49*(3), 476–498. https://doi.org/10.1002/berj.3851

Hascher, T., & Waber, J. (2021). Teacher well-being: A systematic review of the research literature from the year 2000–2019. *Educational Research Review, 34*, Article 100411. https://doi.org/10.1016/j.edurev.2021.100411

Hennekam, S., & Herrbach, O. (2015). The influence of age-awareness versus general HRM practices on the retirement decision of older workers. *Personnel Review, 44*(1), 3–21. https://doi.org/10.1108/PR-01-2014-0031

Hertel, G., & Zacher, H. (2018). Managing the aging workforce. In D. S. Ones, N. Anderson, C. Viswesvaran, & H. K. Sinangil (Eds.), *The SAGE handbook of industrial, work and organizational psychology: Managerial psychology and organizational approaches* (2nd ed., pp. 396–428). Sage Reference. https://doi.org/10.4135/9781473914964.n19.

Hirschi, A., & Valero, D. (2015). Career adaptability profiles and their relationship to adaptivity and adapting. *Journal of Vocational Behavior, 88*, 220–229. https://doi.org/10.1016/j.jvb.2015.03.010

Hlaďo, P., Dosedlová, J., Harvánková, K., Novotný, P., Gottfried, J., Rečka, K., Petrovová, M., Pokorný, B., & Štorová, I. (2020). Work ability among upper-secondary school teachers: Examining the role of burnout, sense of coherence, and work-related and lifestyle factors. *International Journal of Environmental Research and Public Health, 17*(24), 9185. https://doi.org/10.3390/ijerph17249185

Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist, 44*(3), 513–524. https://doi.org/10.1037/0003-066X.44.3.513

Hobfoll, S. E. (2001). The influence of culture, community, and the nested-self in the stress process: Advancing conservation of resources theory. *Applied Psychology: International Review, 50*(3), 337–421.

Hoque, K. E., Wang, X., Qi, Y., & Norzan, N. (2023). The factors associated with teachers' job satisfaction and their impacts on students' achievement: A review (2010–2021). *Humanities and Social Sciences Communications, 10*(1), 1–7. https://doi.org/10.1057/s41599-023-01645-7

Howard, M. C., & Hoffman, M. E. (2018). Variable-centered, person-centered, and person-specific approaches: Where theory meets the method. *Organizational Research Methods, 21*, 846–876.

Hu, L.-t., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Huberman, M. (1989). The professional life cycle of teachers. *Teachers College Record, 91* (1), 31–57. https://doi.org/10.1177/016146818909100107
Ingersoll, R. M. (2001). Teacher turnover and teacher shortages: An organizational analysis. *American Educational Research Journal, 38*(3), 499–534. https://doi.org/10.3102/00028312038003499 (Original work published 2001).
Ingvarson, L., Meiers, M., & Beavis, A. (2005). Factors affecting the impact of professional development programs on teachers' knowledge, practice, student outcomes & efficacy. *Education Policy Analysis Archives, 13*, 10. https://doi.org/10.14507/epaa.v13n10.2005
Ivanov, I., Zair-Bek, S., & Anchikov, K. (2025). The fragile centrality of teachers: Demographic and institutional strains in the Russian education workforce. *Вопросы образования/Educational Studies Moscow*, (3)https://doi.org/10.17323/vo-2025-28486
Jaafari, P., Karami, S., & Soleimani, N. (2012). The relationship among organizational climate, organizational learning and teachers' self-efficacy. *Procedia - Social and Behavioral Sciences, 47*, 2212–2218. https://doi.org/10.1016/j.sbspro.2012.06.974
Johnson, S. M., Kraft, M. A., & Papay, J. P. (2012). How context matters in high-need schools: The effects of Teachers' Working Conditions on Their Professional Satisfaction and Their Students' achievement. *Teachers College Record, 114*(10), 1–39. https://doi.org/10.1177/016146811211401004 (Original work published 2012).
Jonas-Ahrend, G., & Tenberg, R. (2025). Teacher shortage in Germany – Overview and insights. *Journal of Education for Teaching*, 1–14. https://doi-org.ezp.biblio.unitn.it/10.1080/02607476.2025.2572577.
Katz, I., & Moè, A. (2024). Exploring teachers' psychological needs, motivating styles, emotion regulation and self-compassion: A comparative study before and during the COVID-19 lockdown. *Teaching and Teacher Education, 148*, Article 104706. https://doi-org./10.1016/j.tate.2024.104706.
Kelchtermans, G., Smith, K., & Vanderlinde, R. (2017). Towards an 'international forum for teacher educator development': An agenda for research and action. *European Journal of Teacher Education, 41*(1), 120–134. https://doi.org/10.1080/02619768.2017.1372743
Keogh, M., & Roan, A. (2016). Exploring teachers' early-retirement decisions: A qualitative Study. *Work, Aging and Retirement, 2*(4), 436–446. https://doi.org/10.1093/workar/waw016
Kim, H. K., & Kim, Y. H. (2022). Older workers' career adaptability and career success. *Baltic Journal of Management, 17*(2), 192–205. https://doi.org/10.1108/BJM-06-2021-0225
Kinchin, I., & Cabot, B. (2010). Reconsidering the dimensions of expertise: From linear stages towards dual processing. *London Review of Education, 8*(2), 153–166. https://doi.org/10.1080/14748460.2010.487334
Kinnunen, U., de Bloom, J., & Virtanen, A. (2019). Do older teachers benefit more from Workday break recovery than younger ones? *Scandinavian Journal of Work and Organizational Psychology, 4*(1), 1–15. https://doi.org/10.16993/sjwop.87
Kira, M., van Eijnatten, F. M., & Balkin, D. B. (2010). Crafting sustainable work: Development of personal resources. *Journal of Organizational Change Management, 23* (5), 616–632. https://doi.org/10.1108/09534811011071 31
Klassen, R. M., & Chiu, M. M. (2010). Effects on teachers' self-efficacy and job satisfaction: Teacher gender, years of experience, and job stress. *Journal of Educational Psychology, 102*(3), 741–756. https://doi.org/10.1037/a0019237
Konstam, V., Celen-Demirtas, S., Tomek, S., & Sweeney, K. (2015). Career adaptability and subjective well-being in unemployed emerging adults: A promising and cautionary tale. *Journal of Career Development, 42*, 463–477. https://doi.org/10.1177/0894845315575151
Kooij, D. T. A. M., Guest, D. E., Clinton, M., Knight, T., Jansen, P. G. W., & Dikkers, J. S. E. (2013). How the impact of HR practices on employee well-being and performance changes with age. *Human Resource Management Journal, 23*(1), 18–35. https://doi.org/10.1111/1748-8583.12000
Kooij, D. T. A. M., Jansen, P. G. W., Dikkers, J. S. E., & De Lange, A. H. (2014). Managing aging workers: A mixed methods study on bundles of HR practices for aging workers. *International Journal of Human Resource Management, 25*(15), 2192–2212. https://doi.org/10.1080/09585192.2013.872169
Kreuzfeld, S., & Seibt, R. (2022). Gender-Specific aspects of teachers regarding working behavior and early retirement. *Frontiers in Psychology, 13*, Article 829333. https://doi.org/10.3389/fpsyg.2022.829333
Kristof, A. L. (1996). Person-organization fit: An integrative review of its conceptualizations, measurement, and implications. *Personnel Psychology, 49*(1), 1–49. https://doi.org/10.1111/j.1744-6570.1996.tb01790.x
Kunze, F., & Toader, A. (2019). Lifespan perspectives on organizational climate. In B. Baltes, C. Rudolph, & H. Zacher (Eds.), *Work across the lifespan* (pp. 561–576). Elsevier BV.
Kyndt, E., Gijbels, D., Grosemans, I., & Donche, V. (2016). Teachers' everyday professional development: Mapping informal learning activities, antecedents, and learning outcomes. *Review of Educational Research, 86*(4), 1111–1150. https://doi.org/10.3102/0034654315627864 (Original work published 2016).
Kyndt, E., Michielsen, M., Van Nooten, L., Nijs, S., & Baert, H. (2011). Learning in the second half of the career: Stimulating and prohibiting reasons for participation in formal learning activities. *International Journal of Lifelong Education, 30*(5), 681–699. https://doi.org/10.1080/02601370.2011.611905
Lee, J. W., Kwak, D. W., & Eunbi, S. (2021). Can older workers stay productive? The role of ICT skills and training. *CAMA Working Paper, 4*. https://ssrn.com/abstract=3761501. doi.org/10.2139/ssrn.3761501.
Leithwood, K., & Jantzi, D. (2006). Transformational school leadership for large-scale reform: Effects on students, teachers, and their classroom practices. *School Effectiveness and School Improvement, 17*(2), 201–227.
Li, L., & Liu, Y. (2020). An integrated model of principal transformational leadership and teacher leadership that is related to teacher self-efficacy and student academic performance. *Asia Pacific Journal of Education*, 1–18.
Li, R., & Yao, M. (2022). What promotes teachers' turnover intention? Evidence from a meta-analysis. *Educational Research Review, 37*. https://doi.org/10.1016/j.edurev.2022.100477
Lipponen, H., Hirvensalo, M., & Salin, K. (2022). Older physical education teachers' wellbeing at work and its challenges. *International Journal of Environmental Research and Public Health, 19*(21), Article 14250. https://doi.org/10.3390/ijerph192114250
Liu, Y., Hu, Y., Lin, T., Chen, H., Yang, Y., & Wang, W. (2025). A network approach to understanding the antecedents of teachers' turnover intention: Linking job and personal resources, work engagement and burnout. *Teaching and Teacher Education, 2025*, Article 105130. https://doi.org/10.1016/j.tate.2025.105130
Loomer, L., Haynes, M., Nevills, S., Dauner, K. N., & Xiu, L. (2025). Assessment of later-life workplace index domains in organizations in the Midwest. *Journal of Applied Gerontology: The Official Journal of the Southern Gerontological Society*. , Article 7334648251358538. https://doi.org/10.1177/07334648251358538. Advance online publication.
Lowe, G., Gray, C., Prout, P., Jefferson, S., & Shaw, T. (2019). Positive veteran teachers: Who are they, and where are they to be found? *Issues in Educational Research, 29*(3), 823–840.
Mackay, M. M. (2018). Does employee Age moderate the Association between HR practices and organizational commitment? An application of SOC theory to organizational behavior. *Organization Management Journal, 15*(4), 186–200. https://doi.org/10.1080/15416518.2018.1528856
Madalińska-Michalak, J. (2025). Addressing teacher shortages in Poland: Analysis, educational planning, and policy recommendations. In A. Gehrmann, & P. Germer (Eds.), *Teacher shortage in international perspectives: Insights and responses*. Springer VS. https://doi.org/10.1007/978-3-658-45398-5_12.
Maggiori, C., Johnston, C. S., Krings, F., Massoudi, K., & Rossier, J. (2013). The role of career adaptability and work conditions on general and professional well-being. *Journal of Vocational Behavior, 83*, 437–449. https://doi.org/10.1016/j.jvb.2013.07.001
Maggiori, C., Rossier, J., & Savickas, M. L. (2015). Career adapt-abilities scale–short form (CAAS-SF): Construction and validation. *Journal of Career Assessment, 25*(2), 312–325. https://doi.org/10.1177/1069072714565856 (Original work published 2017).
Malloy, M., Acock, A., DuBois, D. L., Vuchinich, S., Silverthorn, N., Ji, P., & Flay, B. R. (2015). Teachers' perceptions of school organizational climate as predictors of dosage and quality of implementation of a social-emotional and character development program. *Prevention Science, 16*(8), 1086–1095. https://doi.org/10.1007/s11121-014-0534-7
Mannix-McNamara, P., Hickey, N., MacCurtain, S., & Blom, N. (2021). The dark side of school culture. *Societies, 11*(3), 87. https://doi.org/10.3390/soc11030087
Maricuțoiu, L. P., Pap, Z., Ștefancu, E., Mladenovici, V., Valache, D. G., Popescu, B. D., Ilie, M., & Vîrgă, D. (2023). Is teachers' well-being associated with students' school experience? A meta-analysis of cross-sectional evidence. *Educational Psychology Review, 35*(1), 1–36. https://doi.org/10.1007/s10648-023-09721-9
Mazzetti, G., Vignoli, M., Guglielmi, D., Van der Heijden, B. I. J. M., & Evers, A. T. (2020). You're not old as long as you're learning: Ageism, burnout, and development among Italian teachers. *Journal of Career Development, 49*(2), 427–442. https://doi.org/10.1177/0894845320942838
McCarley, T. A., Peters, M. L., & Decman, J. M. (2016). Transformational leadership related to school climate: A multi-level analysis. *Educational Management Administration & Leadership, 44*(2), 322–342.
McIlveen, P., Perera, H. N., Baguley, M., van Rensburg, H., Ganguly, R., Jasman, A., & Veskova, J. (2018). Impact of teachers' career adaptability and family on professional learning. *Asia-Pacific Journal of Teacher Education, 47*(2), 103–117. https://doi-org.ezp.biblio.unitn.it/10.1080/1359866X.2018.1444141.
McLean, L., Taylor, M., & Sandilos, L. (2023). The roles of adaptability and school climate in first-year teachers' developing perceptions of themselves, their classroom relationships, and the career. *Journal of School Psychology, 99*, Article 101213. https://doi.org/10.1016/j.jsp.2023.04.003
McLennan, B., McIlveen, P., & Perera, H. N. (2017). Pre-service teachers' self-efficacy mediates the relationship between career adaptability and career optimism. *Teaching and Teacher Education, 63*, 176–185. https://doi.org/10.1016/j.tate.2016.12.022
McMahan, S., & Sturz, D. (2006). Implications for an aging workforce. *The Journal of Education for Business, 82*, 50–55. https://doi.org/10.3200/JOEB.82.1.50-55
McPherson, A., Lampert, J., & Baptista, A. C. (2025). Teachers who stay in hard-to-staff schools: School responses to the teacher shortage crisis. *Australian Educational Researcher, 52*, 2163–2182. https://doi.org/10.1007/s13384-025-00806-8
Meade, A. W., & Craig, S. B. (2012). Identifying careless responses in survey data. *Psychological Methods, 17*(3), 437–455. https://doi.org/10.1037/a0028085
Meeus, W., Cools, W., & Placklé, I. (2017). Teacher educators developing professional roles: Frictions between current and optimal practices. *European Journal of Teacher Education, 41*(1), 15–31. https://doi.org/10.1080/02619768.2017.1393515
Meister, D. G., & Ahrens, P. (2011). Resisting plateauing: Four veteran teachers' stories. *Teaching and Teacher Education, 27*(4). https://doi.org/10.1016/j.tate.2011.01.002
Mejía, S. T., Ryan, L. H., González, R., & Smith, S. (2017). Successful aging as the intersection of individual resources, Age, environment, and experiences of well-being in daily activities. *The Journals of Gerontology: Series B, 72*(2), 279–289. https://doi.org/10.1093/geronb/gbw148
Meng, L., & Briscioli, B. (2024). Teachers' professional journey: Charting achievement recognition, career adaptability, and task performance. *Acta Psychologica, 250*, Article 104572. https://doi.org/10.1016/j.actpsy.2024.104572

Messe, P. J. (2012). Do discriminatory attitudes to older workers at work affect their retirement intentions? *International Journal of Manpower, 33*(4), 405–423.
Moen, P., Kojola, E., & Schaefers, K. (2017). Organizational change around an older workforce. *The Gerontologist, 57*(5), 847–856. https://doi.org/10.1093/geront/gnw048
Mullola, S., Jokela, M., Ravaja, N., Lipsanen, J., Hintsanen, M., Alatupa, S., & Keltikangas-Järvinen, L. (2011). Associations of student temperament and educational competence with academic achievement: The role of teacher age and teacher and student gender. *Teaching and Teacher Education, 27*(5), 942–951. https://doi.org/10.1016/j.tate.2011.03.005
Muthén, B. (2004). Latent variable analysis: Growth mixture modeling and related techniques for longitudinal data. In D. Kaplan (Ed.), *Handbook of quantitative methodology for the social sciences* (pp. 345–368). Newbury Park, CA: Sage Publications.
Muthén, L. K., & Muthén, B. O. (1998). *Mplus user's guide* (6th ed.). Los Angeles, CA: Muthén & Muthén.
Nassir, M., & Benoliel, P. (2025). Transformational leadership and organizational commitment: Unlocking the potential of collective teacher efficacy. *Social Psychology of Education, 28*, 202. https://doi.org/10.1007/s11218-025-10162-1
Nurani, G. A., & Lee, Y. H. (2025). Age management for older worker research evolution and trends: A bibliometric analysis. *Educational Gerontology*, 1–23. https://doi.org/10.1080/03601277.2025.2486370
Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling, 14*(4), 535–569. https://doi.org/10.1080/10705510701575396
Nylund-Gibson, K., Grimm, R. P., & Masyn, K. E. (2019). Prediction from latent classes: A demonstration of different approaches to include distal outcomes in mixture models. *Structural Equation Modeling: A Multidisciplinary Journal, 26*(6), 967–985. https://doi.org/10.1080/10705511.2019.1590146
OECD. (2014). *TALIS 2013 results: An international perspective on teaching and learning*. Paris, FR: OECD Publishing. https://doi.org/10.1787/9789264196261-en
OECD. (2019). *TALIS 2018 results (Vol. 1): Teachers and school leaders as lifelong learners*. Paris, FR: OECD Publishing. https://doi.org/10.1787/1d0bc92a-en
OECD. (2023). *Pensions at a glance 2023: OECD and G20 indicators*. OECD Publishing. https://doi.org/10.1787/678055dd-en
OECD. (2024). *Education at a Glance 2024: OECD Indicators*. OECD Publishing. https://doi.org/10.1787/c00cad36-en
OECD. (2025). Managing an aging public service through tailored policies for older workers. *OECD Public Governance Policy Papers, 78*. https://doi.org/10.1787/c65d0aba-en
Oliveira, E., Van der Heijden, B. I. J. M., Finsel, J. S., Axelrad, H., Derous, E., Gu, X., Marzec, I., Mykletun, R. J., Vignoli, M., Pajic, S., Wöhrmann, A. M., & Deller, J. (2025). *Necessary hrm practices for extended working lives in tight and loose societies: A comparative perspective. Human Resource Management*. Advance online publication. https://doi.org/10.1002/hrm.70040
Omar, S., & Noordin, F. (2013). Career adaptability and intention to leave among ICT professionals: An exploratory study. *TOJET, 12*, 11–18.
Öncel, L. (2014). Career adapt-abilities scale: Convergent validity of subscale scores. *Journal of Vocational Behavior, 85*(1), 13–17. https://doi.org/10.1016/j.jvb.2014.03.006
Orie, S., & Semeijn, J. H. (2021). Stay or leave? The role of career adaptability and organizational embeddedness for turnover intentions. *Journal of Career Development, 49*(5), 1196–1211. https://doi.org/10.1177/08948453211028300 (Original work published 2022).
Pastore, S., & Mincu, M. (2024). A feasible balance? The Italian teachers' standpoint on assessment literacy, assessment practice, and teacher professional development. *European Journal of Teacher Education, 47*(2), 226–245. https://doi.org/10.1080/02619768.2024.2338853
Perera, H. N., Vosicka, L., Granziera, H., & McIlveen, P. (2018). Towards an integrative perspective on the structure of teacher work engagement. *Journal of Vocational Behavior, 108*, 28–41. https://doi.org/10.1016/j.jvb.2018.05.006
Peris-Ramos, H. C., Míguez, M. C., Rodríguez-Besteiro, S., David-Fernandez, S., & Clemente-Suárez, V. J. (2024). Gender-Based differences in psychological, nutritional, physical activity, and oral health factors associated with stress in teachers. *International Journal of Environmental Research and Public Health, 21*(4), 385. https://doi.org/10.3390/ijerph21040385
Philipp, A., & Kunter, M. (2013). How do teachers spend their time? A study on teachers' strategies of selection, optimisation, and compensation over their career cycle. *Teaching and Teacher Education, 35*, 1–12. https://doi.org/10.1016/j.tate.2013.04.014
Piszczek, M. M., Yestrepsky, J. M., & Thrasher, G. R. (2024). Age-aware organizations and the relationship between shift work and psychological well-being across the lifespan. *Work, Aging and Retirement, 10*(3), 199–212. https://doi.org/10.1093/workar/waad014
Pitt-Catsouphes, M., & Matz-Costa, C. (2008). The multi-generational workforce: Workplace flexibility and engagement. *Community, Work & Family, 11*(2), 215–229. https://doi.org/10.1080/13668800802021906
Player, D., Youngs, P., Perrone, F., & Grogan, E. (2017). How principal leadership and person-job fit are associated with teacher mobility and attrition. *Teaching and Teacher Education, 67*, 330–339. https://doi.org/10.1016/j.tate.2017.06.017
Qureshi, M. I., Rasli, A. M., & Zaman, K. (2014). A new trilogy to understand the relationship among organizational climate, workplace bullying and employee health. *Arab Economic and Business Journal, 9*, 133–146. https://doi.org/10.1016/j.aebj.2014.05.009
Rasanen, K., Pietarinen, J., Pyhalto, K., Soini, T., & Vaisanen, P. (2020). Why leave the teaching profession? A longitudinal approach to the prevalence and persistence of teacher turnover intentions. *Social Psychology of Education, 23*, 837–859. https://doi.org/10.1007/s11218-020-09567-x
Reaves, S. J., & Cozzens, J. A. (2018). Teacher perceptions of climate, motivation, and Self-Efficacy: Is there really a connection. *Journal of Education and Training Studies, 6*(12), 48–67.
Ren, Z., Li, W., Wang, M., Zhou, C., Liu, H., & Zhang, H. (2025). School climate, psychological distress, resilience and presenteeism among Chinese school teachers: An analysis based on a moderated mediation model. *Teaching and Teacher Education, 157*. https://doi.org/10.1016/j.tate.2025.104946
Ribeiro, C. A., Cotrim, T. P., Reis, V., Guerreiro, M. J., Candeias, S., Janicas, A. S., & Costa, M. (2021). Analyzing the influence of work demands and work Organization on workability based on Age. In N. L. Black, W. P. Neumann, & I. Noy (Eds.), *Proceedings of the 21st Congress of the International Ergonomics Association (IEA 2021) - Volume II: Inclusive Design, 220* pp. 33–40). Springer Science and Business Media Deutschland GmbH. https://doi.org/10.1007/978-3-030-74605-6_5 (Lecture Notes in Networks and Systems.
Richter, D., Kunter, M., Klusmann, U., Lüdtke, O., & Baumert, J. (2011). Professional development across the teaching career: Teachers' uptake of formal and informal learning opportunities. *Teaching and Teacher Education, 27*(1), 116–126. https://doi.org/10.1016/j.tate.2010.07.008
Rinsky-Halivni, L., Hovav, B., Christiani, D. C., & Brammli-Greenberg, S. (2022). Aging workforce with reduced work capacity: From organizational challenges to successful accommodations sustaining productivity and well-being. *Social Science & Medicine, 312*, Article 115369. https://doi.org/10.1016/j.socscimed.2022.115369
Ross, J., & Bruce, C. (2007). Professional development effects on teacher efficacy: Results of randomized field trial. *The Journal of Educational Research, 101*(1), 50–60. https://doi.org/10.3200/JOER.101.1.50-60
Rudolph, C. W., & Baltes, B. B. (2017). Age and health jointly moderate the influence of flexible work arrangements on work engagement: Evidence from two empirical studies. *Journal of Occupational Health Psychology, 22*(1), 40–58. https://doi.org/10.1037/a0040147
Šabić, J., Baranović, B., & Rogošić, S. (2022). Teachers' self-efficacy for using information and communication technology: The interaction effect of gender and Age. *Informatics in Education, 21*(2), 353–373. https://doi.org/10.15388/infedu.2022.11
Sahu, S., Pathardikar, A., & Kumar, A. (2018). Transformational leadership and turnover: Mediating effects of employee engagement, employer branding, and psychological attachment. *The Leadership & Organization Development Journal, 39*(1), 82–99. https://doi.org/10.1108/LODJ-12-2014-0243
Sanseverino, D., Sacchi, A., Cortese, C. G., Molino, M., & Ghislieri, C. (2024). What a difference a leader makes? Measuring inclusive leadership in a sample of Italian workers. *Psicologia Sociale, 19*(2), 307–335.
Santoro, N., Pietsch, M., & Borg, T. (2012). The passion of teaching: Learning from an older generation of teachers. *Journal of Education for Teaching, 38*(5), 585–595. https://doi.org/10.1080/02607476.2013.739796
Savickas, M. L. (1997). Career adaptability: An integrative construct for life-span, life-space theory. *The Career Development Quarterly, 45*, 247–259. https://doi.org/10.1002/j.2161-0045.1997.tb00469.x
Savickas, M. L., & Porfeli, E. J. (2012). Career Adapt-Abilities Scale: Construction, reliability, and measurement equivalence across 13 countries. *Journal of Vocational Behavior, 80*, 661–673. https://doi.org/10.1016/j.jvb.2012.01.011
Schaufeli, W. B., Shimazu, A., Hakanen, J., Salanova, M., & De Witte, H. (2019). An ultra-short measure for work engagement. *European Journal of Psychological Assessment, 35*, 577–591. https://doi.org/10.1027/1015–5759/a000430
Seibt, R., Spitzer, S., Blank, M., & Scheuch, K. (2009). Predictors of work ability in occupations with psychological stress. *Journal of Public Health, 17*(1), 9–18. https://doi.org/10.1007/s10389-008-0194-9
Serrano, M. A., Moya-Albiol, L., & Salvador, A. (2008). The role of gender in teachers' perceived stress and heart rate. *Journal of Psychophysiology, 22*(1), 58–64. https://doi.org/10.1027/0269-8803.22.1.58
Silberg, S., Metzker, Z., Silberg, M., & Stehlík, L. (2025). Bridging the perception gap: Analysing discrepancies in organisational climate and intergenerational collaboration between managers and older workers. *Business Ethics and Leadership, 9*(4), 14–31. https://doi.org/10.61093/bel.9(4).14-31.2025
Simon, N., & Johnson, S. M. (2015). Teacher turnover in high-poverty schools: What we know and can Do. *Teachers College Record, 117*(3), 1–36. https://doi.org/10.1177/016146811511700305
Skaalvik, E. M., & Skaalvik, S. (2014). Teacher self-efficacy and perceived autonomy: Relations with teacher engagement, job satisfaction, and emotional exhaustion. *Psychological Reports, 114*(1), 68–77. https://doi.org/10.2466/14.02.PR0.114k14w0
Sorensen, L. C., & Ladd, H. F. (2020). The hidden costs of teacher turnover. *AERA Open, 6*(1). https://doi.org/10.1177/2332858420905812
Sottimano, I., Viotti, S., Guidetti, G., & Converso, D. (2017). Protective factors for work ability in preschool teachers. *Occupational Medicine, 67*(4), 301–304. https://doi.org/10.1093/occmed/kqx031
Sousa, I. C., Ramos, S., & Carvalho, H. (2019). Age-diversity practices and retirement preferences among older workers: A moderated mediation model of work engagement and work ability. *Frontiers in Psychology, 10*. https://doi.org/10.3389/fpsyg.2019.01937. Article 1937.
Spurk, D., Hirschi, A., Wang, M., Valero, D., & Kauffeld, S. (2020). Latent profile analysis: A review and "how to" guide of its application within vocational behavior research. *Journal of Vocational Behavior, 120*. https://doi.org/10.1016/j.jvb.2020.103445. Article 103445.
Stoyanova, S., Giannouli, V., Miteva, S., & Ivantchev, N. (2024). How different forms of knowledge transfer at workplace are related to self-rated work performance? *African*

Journal of Biomedical Research, 27(4S), 2434–2453. https://doi.org/10.53555/AJBR.v27i4S.3312

Takao, M., & Ishiyama, N. (2021). Effect of career adaptability on subjective well-being of middle-aged and older employees. *Sustainability, 13*(5), 2570. https://doi.org/10.3390/su13052570

Taneva, S. T., & Arnold, J. (2018). Thriving, surviving and performing in late career: A mixed-method Study of pathways to successful aging in organizations. *Work, Aging and Retirement, 4*(2), 189–212. https://doi.org/10.1093/workar/wax027

The jamovi project (2025). Jamovi (Version 2.6) [Computer Software]. https://www.jamovi.org.

Tikkanen, T. I., & Billett, S. (2014). Older professionals, learning and practice. In S. Billett, C. Harteis, & H. Gruber (Eds.), *International handbook of research in professional and practice-based learning. Springer international handbooks of education*. Dordrecht: Springer. https://doi.org/10.1007/978-94-017-8902-8_41.

Truxillo, D., Cadiz, D., & Rineer, J. (2014). *The aging workforce: Implications for human resource management*. Oxford University Press.

Turner, K., & Theilking, M. (2019). Teacher wellbeing: Its effects on teaching practice and student learning. *Issues in Educational Research, 29*(3), 938–960.

Ünlü, H., & Filiz, B. (2019). Work ability of the Turkish physical education teachers. *Research Quarterly for Exercise & Sport, 90*(4), 666–677. https://doi.org/10.1080/02701367.2019.1642995

Van der Heijden, B. I. J. M. (2005). *No one has ever promised you a rose garden". On shared responsibility and employability enhancing strategies throughout careers*. Van Gorcum.

Van der Heijden, B. I. J. M. (2010). The development and psychometric evaluation of a multi-dimensional measurement instrument of professional expertise. *High Ability Studies, 11*(1), 9–39. https://doi.org/10.1080/713669175

Van der Heijden, B. I. J. M., & De Vos, A. (2015). Sustainable career: Introductory chapter. In A. De Vos, & B. I. J. M. Van der Heijden (Eds.), *Handbook of research on sustainable careers* (pp. 1–19). Edward Elgar Publishing.

Van der Heijden, B. I. J. M., De Vos, A., Akkermans, J., Spurk, D., Semeijn, J., Van der Velde, M., & Fugate, M. (2020). Sustainable careers across the lifespan: Moving the field forward. *Journal of Vocational Behavior, 117*, Article 103344. https://doi.org/10.1016/j.jvb.2019.103344

Van der Heijden, B. I. J. M., Van Vuuren, T. C. V., Kooij, D. T. A. M., & De Lange, A. H. (2015). Tailoring professional development for teachers in primary education: The role of age and proactive personality. *Journal of Managerial Psychology, 30*(1), 22–37. https://doi.org/10.1108/JMP-07-2014-0211

Van Droogenbroeck, F., & Spruyt, B. (2014). To stop or not to stop an empirical assessment of the determinants of early retirement among active and retired senior teachers. *Research on Aging, 36*(6), 753–777. https://doi.org/10.1177/0164027513519449

Van Solinge, H., & Henkens, K. (2014). Work-related factors as predictors in the retirement decision-making process of older workers in the Netherlands. *Aging and Society, 34*(9), 1551–1574.

Vanajan, A., Bültmann, U., & Henkens, K. (2020). Health-related work limitations among older workers-the role of flexible work arrangements and organizational climate. *The Gerontologist, 60*(3), 450–459. https://doi.org/10.1093/geront/gnz073

Vangelova, K., Dimitrova, I., & Tzenova, B. (2018). Work ability of aging teachers in Bulgaria. *International Journal of Occupational Medicine & Environmental Health, 31*(5), 593–602. https://doi.org/10.13075/ijomeh.1896.01132

Velarde, J. M., Ghani, M. F., Adams, D., & Cheah, J. H. (2022). Towards a healthy school climate: The mediating effect of transformational leadership on cultural intelligence and organisational health. *Educational Management Administration & Leadership, 50*(1), 163–184.

Veliz, L., & Mainsbridge, C. (2024). Insights into longevity and the professional lifespan of early and mid-to-late career teachers: Perspectives of teacher wellbeing. *Educational Review*, 1–19. https://doi.org/10.1080/00131911.2024.2409321

Virtanen, A., De Bloom, J., & Kinnunen, U. (2020). Relationships between recovery experiences and well-being among younger and older teachers. *International Archives of Occupational and Environmental Health, 93*(2), 213–227. https://doi.org/10.1007/s00420-019-01475-8

Walker, A. (2005). The emergence of age management in Europe. *International Journal of Organisational Behaviour, 10*, 685–697.

Wang, H., Burić, I., Chang, M. L., & Gross, J. J. (2023). Teachers' emotion regulation and related environmental, personal, instructional, and well-being factors: A meta-analysis. *Social Psychology of Education, 26*(6), 1651–1696. https://doi.org/10.1007/s11218-023-09810-1

Wang, Z., Fu, J., & Bai, W. (2024). Public management approaches to an aging workforce: Organizational strategies for strategies for adaptability and efficiency. *Frontiers in Psychology, 15*, Article 1439271. https://doi.org/10.3389/fpsyg.2024.1439271

Wang, J., Xing, Q., & Moè, A. (2024a). Teacher emotion regulation in Chinese rural and urban schools: Impact on burnout and teaching styles. *Asia-Pacific Education Research*. https://doi.org/10.1007/s40299-024-00963-x

Wang, Z., Zhao, L., Song, H., Du, J., & Wang, Y. (2022). Linking empowering leadership with older teachers' knowledge-sharing behaviour: The roles of organization-based self-esteem and organizational status. *Asia Pacific Journal of Education, 44*(4), 807–824. https://doi.org/10.1080/02188791.2022.2151412

Wiktorowicz, J., Warwas, I., Turek, D., & Kuchiak, I. (2022). Does generativity matter? A meta-analysis on individual work outcomes. *European Journal of Aging, 19*, 977–995. https://doi.org/10.1007/s10433-022-00727-w

Wilckens, M. R., Wöhrmann, A. M., Deller, J., & Finsel, J. (2023). Health and the intention to retire: Exploring the moderating effects of human resources practices. *International Journal of Human Resource Management, 34*(18), 3520–3554. https://doi.org/10.1080/09585192.2022.2133967

Wilckens, M. R., Wöhrmann, A. M., Deller, J., & Wang, M. (2021). Organizational practices for the aging workforce: Development and validation of the later life workplace index. *Work, Aging and Retirement, 7*(4), 352–386. https://doi.org/10.1093/workar/waaa012

Wong, C. M., & Tetrick, L. E. (2017). Job crafting: Older workers' mechanism for maintaining person-job fit. *Frontiers in Psychology, 8*. https://doi.org/10.3389/fpsyg.2017.01548. Article 1548.

Xiaofu, P., & Qiwen, Q. (2007). An analysis of the relation between secondary school organizational climate and teacher job satisfaction. *Chinese Education and Society, 40*(5), 65–77. https://doi.org/10.2753/CED1061-1932400507

Yang, X., Feng, Y., Meng, Y., & Qiu, Y. (2019). Career adaptability, work engagement, and employee well-being among Chinese employees: The role of guanxi. *Frontiers in Psychology, 10*, 1029. https://doi.org/10.3389/fpsyg.2019.01029

Yoo, J. H. (2016). The effect of professional development on teacher efficacy and teachers' self-analysis of their efficacy change. *Journal of Teacher Education for Sustainability, 18*(1), 84–94. https://doi.org/10.1515/JTES-2016-0007

Zacher, H. (2014). Career adaptability predicts subjective career success above and beyond personality traits and core self-evaluations. *Journal of Vocational Behavior, 84*, 21–30. https://doi.org/10.1016/j.jvb.2013.10.002

Zacher, H., & Griffin, B. (2015). Older workers' Age as a moderator of the relationship between career adaptability and job satisfaction. *Work, Aging and Retirement, 1*(2), 227–236. https://doi.org/10.1093/workar/wau009

Zacher, H., & Yang, J. (2016). Organizational climate for successful aging. *Frontiers in Psychology, 7*, 1007. https://doi.org/10.3389/fpsyg.2016.01007

Zhao, L., Wang, Z., Song, H., & Tse, H. H. M. (2022). Transformational leadership and older teachers' intention to delay retirement in China: The roles of organization-based self-esteem and life expectancy. *Current Psychology: A Journal for Diverse Perspectives on Diverse Psychological Issues*. https://doi.org/10.1007/s12144-022-03947-6

Zhou, S., Slemp, G. R., & Vella-Brodrick, D. A. (2024). Factors associated with teacher wellbeing: A meta-analysis. *Educational Psychology Review, 36*(2), 63. https://doi.org/10.1007/s10648-024-09886-x

Zurlo, M. C., Pes, D., & Cooper, C. L. (2007). Stress in teaching: A Study of occupational stress and its determinants among Italian schoolteachers. *Stress and Health, 23*, 231–241. https://doi.org/10.1002/smi.1141