



Research paper

Teachers' job demands, resources and their job satisfaction: Satisfaction with school, career choice and teaching profession of teachers in different career stages



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HIGHLIGHTS

- TALIS 2018 data was analysed to examine teachers' job demands, resources and job satisfaction.
- Three types of job satisfaction were distinguished: satisfaction with school, career choice and teaching profession.
- Safe school climate and collaborative and participative school culture were the main job resources.
- Feelings of distress and perceived barriers for professional development were the main job demands.
- Additional tasks were main job demands negatively related to satisfaction with the teaching profession.

ARTICLE INFO

Article history:

Received 4 May 2022
 Received in revised form
 27 January 2023
 Accepted 1 February 2023
 Available online 8 February 2023

Keywords:

Teachers
 Job satisfaction
 Working conditions
 Job demands
 Job resources
 Secondary education

ABSTRACT

Teachers' job demands and resources can have a crucial impact on a school's ability to retain teachers. Analyses of Talis 2018 data from 24 European countries using the Job Demands and Resources model showed that a safe school climate, and a collaborative and participative school culture were the main job resources, whereas feelings of distress and perceived barriers for professional development were the main job demands. Findings were similar for teachers at different stages in their careers, but differed for satisfaction with their school, career choice and the teaching profession in general.

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1. Introduction

Across Europe teacher shortages occur in secondary education, affecting the quality of students' learning environment with class cancellations, combined classes, and overloaded teachers (European Commission/EACEA/Eurydice, 2021; OECD, 2019). Increasing the recruitment of teacher education candidates, pre-service teachers' study success and in-service teachers' retention in the teaching profession are meant to solve this shortage. Yet many teachers who are already working in school leave the teaching profession

(European Commission/EACEA/Eurydice, 2021). For this group of in-service teachers, dissatisfaction with the teaching profession appears to be an important reason why they leave the teaching profession (see e.g. Dupriez et al., 2016; Skaalvik & Skaalvik, 2017; Wyatt & O'Neill, 2021). Of the teachers who leave the profession, about half of them are dissatisfied with the school they work at (Federičová, 2021). In many countries, almost half of the teachers leave the profession within their first years (Räsänen et al., 2020). Veldman et al. (2013) indicated that many veteran teachers are disengaged with their job as well and try to find another profession or quit teaching and get other tasks in school. It is therefore important to gain insight into working conditions related to teachers' job satisfaction at different career stages. More insights into teachers' working conditions can support school practices to increase teacher satisfaction aimed at retaining more teachers in the profession in

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various career stages. The current study analyses TALIS 2018 teacher data to contribute to insights into the relationship between teachers' self-reported working conditions and their job satisfaction.

2. Teachers' job satisfaction and their job demands and resources

Teachers' job satisfaction has been subject of research for some time, either as a cause of dropout or retention of teachers in the profession (e.g. [Struyven & Vanthournout, 2014](#)) or as a result of various factors related to the school environment, the teaching profession and characteristics of teachers (e.g. [Skaalvik & Skaalvik, 2017](#)). One of the most common cited definitions of job satisfaction is from [Locke \(1969\)](#), who defined job satisfaction as the pleasurable emotional state arising from the appraisal of one's job or job experiences. The TALIS 2018 project adopted Locke's concept in which teacher job satisfaction refers to the sense of fulfilment and gratification that teachers experience through their work as a teacher ([OECD, 2019](#)), distinguishing two aspects of teachers' job satisfaction: satisfaction with the school environment, such as enjoying working in school and recommending the school as a good place to work, and professional satisfaction, which refers to satisfaction with the choice to become a teacher. These two aspects were confirmed in several secondary analyses of data from TALIS 2013 (e.g., [Lopes & Oliveira, 2020](#)) and TALIS 2018 (e.g., [Liu et al., 2020](#)), although some TALIS 2018 studies only distinguished teachers' job satisfaction in general ([Blömeke et al., 2021](#); [Reeves et al., 2022](#)). The two aspects of teachers' job satisfaction in TALIS 2018 teacher data have been confirmed by a methodological study of [Zakariya \(2020\)](#).

Studies on job satisfaction and turnover intentions in various professions show that working conditions are important predictors having a significant influence on job satisfaction, either positively or negatively ([Hoonakker et al., 2013](#); [Van Droogenbroeck & Spruyt, 2016](#)). In the current study, the Job Demands-Resources model (JD-R; [Bakker & Demerouti, 2007](#); [Demerouti et al., 2001](#)) is used to examine teachers' working conditions that influence their job satisfaction. This general JD-R model consists of two main elements: the demands from the profession (Demands) and the resources available to cope with these demands (Resources). Job demands refer to those aspects of the profession that require physical or mental effort and job resources refer to those personal, social and organizational aspects of the profession that enable teachers to cope with those demands and reduce any negative effects. Despite several critical comments on the model (see [Schaufeli & Taris, 2013](#)), the JD-R model is a widely used framework to explain job satisfaction in various professions. The JD-R model has also been used in teacher research to explain important outcome measures such as teachers' job satisfaction ([Hoonakker et al., 2013](#)), well-being ([Skaalvik & Skaalvik, 2018](#)) and retention ([Van Droogenbroeck & Spruyt, 2016](#)).

In previous research on teachers' job satisfaction, working conditions that show a negative relationship with job satisfaction are, among others, workload and work pressure ([Amitai & Van Houtte, 2022](#); [Betoret, 2009](#); [Collie et al., 2012](#); [Fernet et al., 2012, 2013](#); [Klassen & Chiu, 2010](#); [Kokkinos, 2007](#); [Skaalvik & Skaalvik, 2018](#); [Toropova et al., 2021](#)), student misbehavior and classroom management ([Betoret, 2009](#); [Collie et al., 2012](#); [Fernet et al., 2012](#); [Jackson & Stevens, 2022](#), [Klassen & Chiu, 2010](#), [Kokkinos, 2007](#); [Skaalvik & Skaalvik, 2018](#); [Spilt et al., 2011](#); [Toropova et al., 2021](#)), low student motivation ([Collie et al., 2012](#); [Skaalvik & Skaalvik, 2018](#)), diversity in student population ([Betoret, 2009](#)), lack of resources and support from leadership and colleagues ([Betoret, 2006](#); [Hakanen et al., 2006](#)), and different opinions of what a teacher

should do ([Betoret, 2009](#); [Fernet et al., 2013](#)). Workload and student misbehavior are the job demands mostly examined and have been found to be related to well-being ([Skaalvik & Skaalvik, 2018](#)), feelings of burnout ([Fernet et al., 2013](#)), emotional exhaustion ([Betoret, 2009](#)), health issues ([Jackson & Stevens, 2022](#)), less commitment to teacher duties ([Hakanen et al., 2006](#)), less self-efficacy ([Collie et al., 2012](#)), lower job satisfaction ([Toropova et al., 2021](#)), a greater intention to leave the teaching profession ([Skaalvik & Skaalvik, 2017](#)) and actually leaving the profession ([Amitai & Van Houtte, 2022](#)).

Teachers' job resources including working conditions that show a positive relationship with their job satisfaction relate to, among others, autonomy or professional space of teachers ([Collie & Martin, 2017](#); [Xia et al., 2022](#)), job control ([Fernet et al., 2013](#); [Hakanen et al., 2006](#)), healthy collaborative relationships with colleagues, good relationships with and support from leadership, colleagues and parents ([Fernet et al., 2013](#); [Hakanen et al., 2006](#); [Olsen & Huang, 2019](#); [Simbula et al., 2011](#); [Skaalvik & Skaalvik, 2018](#); [Xia et al., 2022](#)), opportunities for professional development and perceived future prospects ([Hakanen et al., 2006](#); [Simbula et al., 2011](#); [Struyven & Vanthournout, 2014](#)), a school culture in which knowledge and experiences are shared and teachers collaborate ([Banerjee et al., 2017](#); [Meredith et al., 2022](#); [Olsen & Huang, 2019](#); [Skaalvik & Skaalvik, 2011, 2018](#)), and agreement about norms and values in school ([Admiraal et al., 2016](#); [Skaalvik & Skaalvik, 2018](#)). These studies have shown that positive relationships with colleagues and school management are positively related to teachers' commitment and job satisfaction, but also to their well-being. A supportive school culture relates, among other things, to a shared school vision and mission as well as exchange of teaching approaches ([Admiraal et al., 2016](#); [Skaalvik & Skaalvik, 2018](#)). Such a supportive culture in school as well as shared views on teaching and learning appear to have positive relationships with teachers' school commitment ([Meredith et al., 2022](#)), their commitment to teaching ([Skaalvik & Skaalvik, 2018](#)), self-confidence ([Collie et al., 2012](#)), their sense of belonging ([Skaalvik & Skaalvik, 2013](#)), and their job satisfaction ([Richter et al., 2022](#)).

3. This study

Insights in teachers' job demands and resources that relate to their job satisfaction can be valuable to inform researchers, school leaders and policy advisors. Previous work on job demands and resources examined relationship with feelings of exhaustion, health, well-being, turnover and job satisfaction in various professions (e.g. [Hoonakker et al., 2013](#); [Van Droogenbroeck & Spruyt, 2016](#)), but most work on teachers using the JD-R model as target group focused on teachers' health and well-being (e.g. [Bottiani et al., 2019](#); [Collie et al., 2012](#); [Stang-Rabrig et al., 2022](#)). Previous analyses of TALIS 2018 teacher data did focus on teachers' job satisfaction but mainly on teacher characteristics such as teachers' motivation for teaching ([Jung & Woo, 2022](#); [Liu et al., 2020](#)), their self-efficacy ([Burić & Kim, 2021](#); [Zakariya, 2020](#)), one specific working condition such as professional development ([Choi & Mao, 2021](#)) or workload ([Jerrim & Sims, 2019](#)), or only the target groups of early-career teachers ([Reeves et al., 2022](#); [Van den Borre et al., 2021](#)). The current study goes beyond previous studies analyzing TALIS 2018 teacher data with a focus on multiple measures of teachers' working conditions and their job satisfaction using the JD-R model. This makes it possible to directly compare the correlation between different aspects of teachers working condition. Further, we expand on previous models and add career stages to the model. This is important as teachers who differ in teaching experience might not only differ in their level of job satisfaction, but also in the

way working conditions are related to their job satisfaction. Based on previous work on high drop-out of early-career teachers (Räsänen et al., 2020) and the so-called practice shock or reality shock of beginning teachers (cf., Veenman, 1984; Voss & Kunter, 2020) we expect stronger relationships between working conditions and job satisfaction for beginning teachers than for teachers with more teaching experience. The following research questions guided our research.

1. How are teachers' job demands and resources related to their job satisfaction?
2. Do teachers in different career stages vary in job satisfaction?
3. Do the relationships between teachers' job demands and resources, and their job satisfaction vary across different career stages?

4. Methods

4.1. Procedure

The procedure of the development and administration of the TALIS 2018 questionnaire is reported in a technical report (OECD, 2019). This report also describes how the data collection has been monitored and which quality checks have been carried out. For secondary education (SE) data have been collected in 25 EU countries including Belgium-Dutch (Bd) and French (Bf) language area, England and Norway (see Table 1). In most countries a sample was drawn with 200 schools, except for Malta (61 schools), Cyprus (99), Belgium-French (120), Finland, Latvia, Netherlands, Slovenia (all 150), Czech Republic (220), Austria (279) and Spain (399). Within the schools, the questionnaire was distributed to 20 teachers or to all teachers if fewer than 20 teachers were employed in a school. The number of students, denomination and degree of urbanization was considered in the selection of schools. Selected schools were examined for a proportional distribution according to subject area, age and gender. Data from a school are included in the final data file

Table 1
Number of teachers (percentages between brackets) and schools, per country.

	N _{schools} Sampled	N _{schools} Valid	Response rate	N _{teachers}
Austria (A)	277 ^a	246	89	4255 (5.5)
Belgium-Dutch (Bd)	200	182	91	3122 (4.0)
Belgium-French (Bf)	20	120	100	2135 (2.8)
Bulgaria (BG)	200	200	100	2862 (3.7)
Croatia (HR)	196 ^a	188	96	3358 (4.3)
Cyprus (CY)	99	88	89	1611 (2.1)
Czech Republic (CZ)	219 ^a	219	100	3447 (4.5)
Denmark (DK)	196 ^a	141	72	2001 (2.6)
England (ENG)	192 ^a	149	78	2327 (3.1)
Estonia (EST)	195 ^a	195	100	3004 (3.9)
Finland (FIN)	148 ^a	148	100	2851 (3.7)
France (F)	199 ^a	176	88	3006 (3.9)
Hungary (H)	193 ^a	189	98	3245 (4.2)
Italy (I)	193 ^a	191	99	3612 (4.7)
Latvia (LV)	148 ^a	135	91	2315 (3.0)
Lithuania (LT)	195 ^a	195	100	3759 (4.9)
Malta (M)	58 ^a	55	95	1656 (2.1)
Netherlands (NL)	146 ^a	116	79	1884 (2.4)
Norway (N)	200	185	93	4154 (5.4)
Portugal (P)	200	200	100	3676 (4.8)
Rumania (RO)	199 ^a	199	100	3658 (4.7)
Slovakia (SK)	199 ^a	176	88	3015 (3.9)
Slovenia (SLO)	150	132	88	2094 (2.7)
Spain (E)	399	399	100	7407(9.6)
Sweden (S)	192 ^a	180	94	2782 (3.6)

^a Some sampled schools were not eligible.

if at least 50% of the teachers contacted has completed a questionnaire. Various quality checks have been carried out that indicate that the final included data are representative. All documents relevant for information about TALIS 2018 (the questionnaires itself, the technical report on the data collection, the analysis plan containing the variables and possible analyses, and the conceptual framework underlying the questionnaire) can be accessed via the OECD website (<https://www.oecd.org/education/talis/talis-2018-data.htm>). In Tables 2 and 3, references are included to the specific items from the TALIS teacher questionnaire used. The items that are used in the current study are included in the Appendix.

4.2. Participants

For SE 77 285 teachers from 4404 schools have completed the questionnaire. In Table 1, the number of school and teachers are presented for each country. Response rates at school level vary from 72% in Denmark to 100% in many other countries.

In Table 2, participants' background characteristics are summarized. Most teachers are female teachers, have a master degree and have a full-time tenured position in school. In general, the teachers who completed the questionnaire had 17 years of teaching experience on average.

4.3. Teachers' job demands

In the TALIS-2018 questionnaire, working conditions that might be understood as job demands include barriers of professional development and feelings of stress. After exploratory factor analyses with varimax rotation, the professional development (PD) barriers items form two scales explaining 54% of the variance in scores. After reliability analyses, these two scales have been merged into one scale measuring the perceived barriers to attend professional development activities (Barriers PD). Items were measured on a 4-point Likert type scale with 1 = strongly disagree and 4 = strongly agree.

Exploratory factor analyses with varimax rotation on feelings of

Table 2
Background information participants TALIS 2018 primary education (frequencies (f), percentages (%), mean scores (M) and standard deviations (SD)).

Gender (item 1)	f	%	M	SD
Female	55 709	72.1		
Male	21 575	27.9		
Highest level formal education completed (item 3)				
Lower SE or lower	154	0.2		
SE	1003	1.4		
Post SE	206	0.3		
Associate degree	2647	3.8		
Bachelor	25 090	36.0		
Master	39 452	56.6		
Doctorate	1135	1.6		
Employment (item 9)				
Tenured	63 401	82.7		
Fixed more than 1 year	3602	4.7		
Fixed 1 year or less	9670	12.6		
Employment status (item 10 b)				
Full-time (90% or more)	59 120	80.4		
Part-time (71–80%)	6763	9.2		
Part-time (50–70%)	4567	6.2		
Part-time (less than 50%)	3082	4.2		
Teaching experience (item 11 b)				
In years			17.6	11.1
Working hours per week				
In school (item 16)			36.8	14.9
In teaching (item 17)			18.9	7.7

Table 3
Teachers' working conditions and job satisfaction with means (M) and standard deviations (SD; number of items and Cronbach's α between brackets).

	M	SD
Job demands		
Barriers PD ^a (items 28a-g; $\alpha = 0.71$)	2.16	0.55
Distress ^b (items 51a,c,d; $\alpha = 0.84$)	2.11	0.77
High workload ^b (items 52a-c; $\alpha = 0.79$)	2.21	0.79
Additional tasks ^b (items 52 d,e,i; $\alpha = 0.75$)	2.30	0.62
Job resources		
Innovative culture ^a (items 32a-d; $\alpha = 0.90$)	2.90	0.61
Team teaching ^c (items j33a-c; $\alpha = 0.56$)	2.52	1.14
Sharing experiences ^c (items 33 d-h; $\alpha = 0.75$)	3.94	1.05
Participative culture ^a (items 48a-c; $\alpha = 0.82$)	2.88	0.56
Togetherness ^a (items 48e-h; $\alpha = 0.80$)	2.90	0.54
Safe school climate ^a (items 49a-e; $\alpha = 0.81$)	3.22	0.43
Job satisfaction		
School ^a (items 53c,e,g; $\alpha = 0.79$)	3.18	0.62
Career choice ^a (items 53a,b,d,f,j; $\alpha = 0.82$)	3.07	0.59
Teaching profession ^a (items 53 h,54c-e; $\alpha = 0.79$)	1.82	0.58

1 = not important at all; 4 = of high importance.
^a 1 = strongly disagree; 4 = strongly agree.
^b 1 = not at all; 4 = a lot.
^c 1 = never, 2 = once a year or less, 3 = 2–4 times a year, 4 = 5–10 times a year, 5 = 1–3 times a month and 6 = once a week or more.

stress includes feelings of distress and various sources of stress, explaining 59% of the variance in scores. Distress refers to negative influence of work on mental and physical health and includes three of the four original items. Items related to stress sources were classified into two types: high workload referring to too many things to do (High workload) and additional tasks to teaching (Additional tasks). Items were measured on a 4-point Likert type scale with 1 = not at all and 4 = a lot. The descriptive statistics and reliabilities for the job demands variables are summarized in Table 3.

4.4. Teachers' job resources

Teachers' job resources refer to aspects of school culture and school climate, distinguishing six scales. Firstly, teachers were asked about the innovative culture in their school (Innovative culture). This scale was extracted from exploratory factor analysis with varimax rotation explaining 76% of the variance in scores. Secondly, teachers were asked about collaboration between teachers in school (33a to h) and exploratory factor analysis with varimax rotation explaining 52% of the variance in scores suggested two scales: one about joint activities in a team (Team teaching) and one about sharing materials, activities and experiences (Sharing experiences). Thirdly, exploratory factor analyses with varimax rotation on items related to school climate (48 and 49) resulted in three scales (65% explained variance): one scale about participation of staff, parents and students (Participative culture), one scale about trust and good relationships (Safe school climate) and one scale about mutual support, common beliefs and rules (Togetherness). One item (48 d) has been deleted because of cross-loading. Items for innovative culture, participative culture, togetherness, and safe school climate were measured on a 4-point Likert type scale with 1 = strongly disagree and 4 = strongly agree; items for team teaching and sharing experiences were measured on a 6-point scale with 1 = never, 2 = once a year or less, 3 = 2–4 times a year, 4 = 5–10 times a year, 5 = 1–3 times a month and 6 = once a week or more. The descriptive statistics and reliabilities for the job resources variables are summarized in Table 3.

4.5. Job satisfaction

Zachariya (2020) confirmed the two aspects of teachers' job satisfaction distinguished in the TALIS 2018 teacher data set: satisfaction with the work environment and satisfaction with the profession. However, item 54 with 5 statements about the societal recognition of the teacher profession in general has been left out of the analyses of Zachariva. In the current study, job satisfaction was measured based on 15 statements (both 53 and 54) and sorted into three clusters after exploratory factor analysis with varimax rotation explaining 64% of the variance in scores. The first cluster of items concerns satisfaction with the school where one currently works (School). The second cluster of items concerns satisfaction with the choice of a career as a teacher (Career choice). The third cluster of items relate to societal recognition of the teaching profession (Teaching profession). Items were measured on a 4-point Likert type scale with 1 = strongly disagree and 4 = strongly agree. The descriptive statistics and reliabilities for the three aspects of job satisfaction are summarized in Table 3. The correlations between the three indicators of job satisfaction were $r = 0.26$ (career choice and teaching profession), $r = 0.46$ (school and career choice), and $r = 0.15$ (school and teaching profession).

4.6. Teachers' career stage

Informed by literature about teachers' career stages, retention and job satisfaction (Booth et al., 2021; Day, 2012; Dreyfus, 2004; Huberman, 1989; Louws et al., 2017) teachers have been grouped into three career stages based on their self-reported teaching experiences in years: 1) early-career teachers (0–5 years), 2) mid-career teachers (6–23 years), and 3) late-career teachers (24–45 years). Teachers who indicated that they had more than 45 years of teaching experience were excluded from the analyses as in this career group many teachers might have dropped out because of pension age and life expectancy.

4.7. Analyses

All variables show a satisfying reliability with a Cronbach $\alpha > 0.70$ (cf. Nunnally, 1978), except for team teaching, which includes only three items. To answer the first research question about the relationship between job demands and resources and teachers' job satisfaction, three-level (country, school and teacher) regression analyses have been performed with demands and resources at teacher level as predictors, and each of the three indicators of teachers' job satisfaction as dependent variable. We have decided for multilevel analyses as the teacher data are nested within schools and schools within countries. For each indicator of job satisfaction, we first carried out a variance-components model with random components at country, school, and teacher level to examine variance at each level. These analyses show variance in scores on job satisfaction at each level differed significantly from 0 (see Table 4). Therefore, random intercepts models were run to acknowledge the variety in context (countries and schools) teacher perceptions have been collected. Then all demands and resources were included as fixed effects, which were centered around the grand mean to facilitate interpretation of the coefficients. Three models were run, one for each of the three indicators of job satisfaction.

To answer the second research question about differences in job satisfaction between teachers from different career stages, multivariate analysis of variance and post-hoc analysis have been

Table 4
Variance components models and random intercept models with satisfaction with school, career choice and teaching profession.

	School satisfaction N = 69 983	Career choice N = 69 983	Teaching profession N = 69 983
Intercept	3.18 (0.02)	3.06 (0.03)	1.84 (0.04)
Fixed part			
Barriers PD, γ_{1jk}	-0.07 (0.00)	-0.09 (0.00)	-0.07 (0.00)
Distress, γ_{2jk}	-0.20 (0.00)	-0.30 (0.00)	-0.10 (0.00)
High workload, γ_{3jk}	0.01 (0.00)	-0.04 (0.00)	-0.00 (0.00)
Additional tasks, γ_{4jk}	-0.02 (0.00)	-0.03 (0.00)	-0.16 (0.00)
Innovative culture, γ_{5jk}	0.03 (0.00)	-0.03 (0.00)	0.03 (0.00)
Team teaching, γ_{6jk}	0.00 (0.00)	0.01 (0.00)	0.03 (0.00)
Sharing experiences, γ_{7jk}	0.03 (0.00)	0.04 (0.00)	-0.01 (0.00)
Participative culture, γ_{8jk}	0.12 (0.00)	0.02 (0.00)	0.06 (0.00)
Togetherness, γ_{9jk}	0.25 (0.01)	0.05 (0.01)	0.11 (0.00)
Safe school climate, γ_{10jk}	0.25 (0.01)	0.17 (0.01)	-0.04 (0.00)
Random part			
Country level, σ^2_{v0}	0.012 (0.003)	0.016 (0.005)	0.038 (0.011)
School level, σ^2_{u0}	0.021 (0.001)	0.005 (0.000)	0.009 (0.001)
Teacher level, σ^2_{e0}	0.218 (0.001)	0.224 (0.001)	0.245 (0.001)
Variance components model			
Country level, σ^2_{v0}	0.012 (0.004)	0.025 (0.007)	0.045 (0.013)
School level, σ^2_{u0}	0.048 (0.001)	0.012 (0.001)	0.011 (0.001)
Teacher level, σ^2_{e0}	0.321 (0.002)	0.306 (0.002)	0.282 (0.002)

performed with the three career stages as independent variable and the three indicators of job satisfaction as dependent variables.

To answer the third research question about the relationship between job demands and resources and teachers' job satisfaction per career stage, similar three-level (country, school and teacher) regression analyses have been performed as with answering the first research question. Three random intercept models were run with predictors and interaction effects of predictors by career stage, one for each of the three indicators of job satisfaction.

Only cases with valid scores on all relevant variables were included in the analyses. The multivariate analysis of variance was carried out with SPSS 27 and the multilevel regression analyses with MLWIN 2.27 software.

5. Results

The results are structured on the basis of the research questions. First, the results will be presented of the regression analyses with job demands and resources and the three indicators of job satisfaction for the entire sample of secondary teachers from 24 EU countries. Second, potential differences between career stages of teachers with respect to the three indicators of job satisfaction will be presented. Third, the results of the regression analyses with interaction terms of predictors by career stages will be shown, separate for each of the three indicators of job satisfaction: satisfaction with school, with career choice and with the teaching profession in general.

5.1. Teachers' job demands, resources and job satisfaction

The results of the variance components models and random intercept models for the entire sample of secondary teachers are summarized in Table 4. The job demands and resources as reported by the teachers in the current study explain 32, 27 and 13% of the variance in scores on their satisfaction with school, career choice and teaching profession, respectively.

With respect to the job demands, distress shows the strongest negative relationship with teachers' satisfaction with school and career choice ($\gamma_{2jk} = -0.20$ and -0.30 , respectively). The more

teachers reported a negative influence of their work on their mental and physical health, the less satisfied they were with the school they work at and the career choice they made. For satisfaction with the teaching profession the strongest negative relationship with job demands is the one with Additional task ($\gamma_{4jk} = -0.16$): The more teachers reported they have many additional tasks to do, the less satisfied they were with the teaching profession in general. All job demands, except for high workload with satisfaction with the teaching profession, show significant negative relationships with teachers' job satisfaction.

With respect to the job resources, the results vary for the three indicators of job satisfaction. For satisfaction with school, both togetherness and safe school climate show a strong positive relationship ($\gamma_{9jk} = 0.25$ and $\gamma_{10jk} = 0.25$, respectively): The more teachers reported mutual support and common beliefs and rules as well as trust and good relationships in school, the more satisfied they were with the school they work at. For the other two indicators of job satisfaction, only one of these two job resources shows a strong relationship: for satisfaction with career choice, this is safe school climate ($\gamma_{10jk} = 0.17$) and for satisfaction with the teaching profession, this is togetherness ($\gamma_{9jk} = 0.11$). All other job resources, except for team teaching with school satisfaction, show significant relationships, but in general these are very weak. Participative culture is an exception showing that the more teachers reported a participative culture in their school, the more satisfied they were with their school ($\gamma_{8jk} = 0.12$) and the more satisfied they were with the teaching profession in general ($\gamma_{8jk} = 0.06$). A contra-intuitive finding relates to innovative culture, which shows a small, but significant negative relationship with satisfaction with career choice ($\gamma_{5jk} = -0.03$). It might be that teachers experienced an innovative culture in their school, which is open to change, as a job demand instead of a resource resulting in uncertainty about whether they made the right decision to become a teacher. In a similar vein, the small negative relationship of safe school climate with satisfaction with the teaching profession ($\gamma_{10jk} = -0.04$) means trust and good relationships in their school are negatively related to how much teachers think the teaching profession is recognized in society.

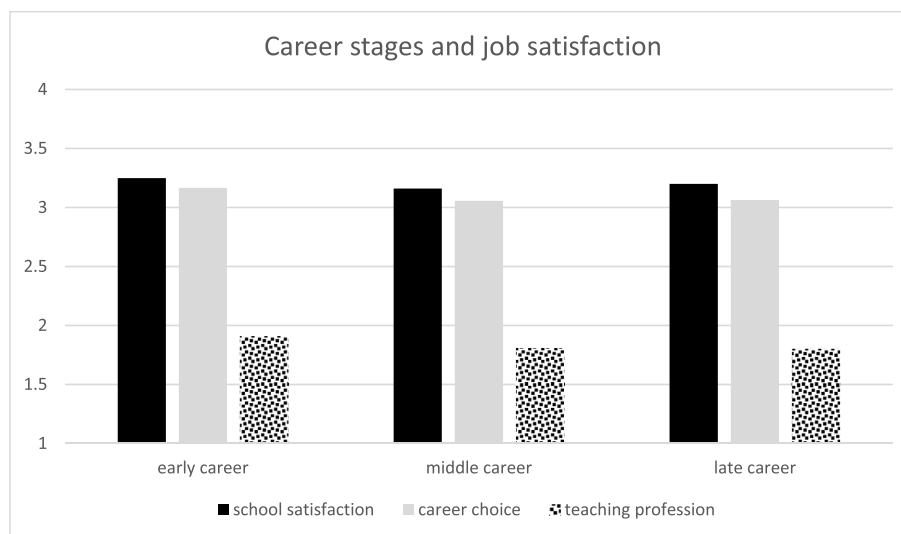


Fig. 1. Career stages and three indicators of job satisfaction (mean scores).

5.2. Career stages and job satisfaction

The average job satisfaction for each career stage is graphically summarized in Fig. 1. Teachers were generally more satisfied with the school they work at, compared to satisfaction with their career choice as a teacher and with the teaching profession in general. Teachers from different career stages significantly differ in their self-reported satisfaction, although the differences are very small (Wilk $\lambda(6, 69\ 683) = 0.99$; $p < 0.001$; $\eta^2 = 0.004$). With respect to satisfaction with school, early-career teachers generally had higher scores compared to the teachers from the other career stages ($F(2,69\ 683) = 96.577$; $p < 0.001$; $\eta^2 = 0.003$). With respect to satisfaction with their career choice, again early-career teachers reported relatively high scores, compared to the other teachers ($F(2,69\ 683) = 164.51$; $p < 0.001$; $\eta^2 = 0.005$). Finally, with respect to satisfaction with the teaching profession, early-career teachers again reported relatively high scores, compared to the other teachers ($F(2,69\ 683) = 160.60$; $p < 0.001$; $\eta^2 = 0.005$). In sum, the early-career teachers seem to be more satisfied with their job than the mid- and late-career teachers.

5.3. Teachers' job demands, resources, career stages and job satisfaction

The results with respect to the relationships between job demands and resources and job satisfaction, moderated by each career stage, are summarized in Table 5.

5.3.1. Satisfaction with school

The results of the regression analyses on satisfaction with school are summarized in Table 5, second column. The job demands and resources explain 32% of the variance in satisfaction. The findings with respect to which demands and resources showing a significant relationship with school satisfaction are similar to the overall findings as pictured in Table 4. For teachers from all career stages, distress can be understood as the most important job demand showing a negative relationship and togetherness and safe school climate – and to a lesser extent participative culture – can be seen as the most important job resources showing a positive relationship with school satisfaction.

Early-career teachers reported a higher school satisfaction, compared to middle-career ($\gamma_{1jk} = -0.03$) and late-career teachers

($\gamma_{2jk} = -0.02$), but differences between career stages are small as most interaction effects are not significant or very small. Two interaction effects show differences for early-career teachers compared to mid- and late-career teachers. Togetherness – the extent to which teachers feel mutual support and common beliefs and rules – shows a stronger positive effect for mid- and late-career teacher than for early-career teachers ($\gamma_{29jk} = 0.05$ and $\gamma_{30jk} = 0.04$, respectively). Safe school climate – the extent to which teachers report trust and good relationships in school – shows a stronger positive effect for early-career teachers than for both other career groups ($\gamma_{31jk} = -0.04$ and $\gamma_{32jk} = -0.05$, respectively).

5.3.2. Satisfaction with career choice

The results of the regression analyses on satisfaction with career choice are summarized in Table 5, third column. The job demands and resources explain between 27% of the variance in satisfaction with career choice. Again, the findings with respect to which demands and resource showing a significant relationship with career choice satisfaction are similar to the overall findings as pictured in Table 4. For teachers from all career stages, distress – and to a lesser extent barriers to PD – can be understood as important job demands showing a negative relationship with career choice satisfaction, and safe school climate can be seen as the most important job resource showing a positive relationship.

Early-career teachers reported a higher satisfaction with their career choice, compared to middle-career ($\gamma_{1jk} = -0.05$) and late-career teachers ($\gamma_{2jk} = -0.05$), but differences between career stages are again small with many non-significant or small interaction effects. For innovative culture, the negative relationship with satisfaction with career choice is more negative for mid- and late-career teachers compared to early-career teachers ($\gamma_{21jk} = 0.03$ and $\gamma_{22jk} = 0.05$, respectively). For safe school climate, the positive relationship with satisfaction with career choice is stronger for early-career teachers compared to mid-career teachers ($\gamma_{31jk} = 0.04$). Finally, distress – the extent to which negative influences of work on mental and physical health are reported – shows a stronger negative relationship with satisfaction with career choice for early-career teachers than for mid-career teachers ($\gamma_{15jk} = -0.03$).

5.3.3. Satisfaction with teaching profession

The results of the regression analyses on satisfaction with the

Table 5
Random intercept models with main effects, interaction effects with career stage and the three indicators of teachers' job satisfaction.

	School satisfaction N = 69 684	Career Choice N = 69 684	Teaching profession N = 69 684
Intercept	3.20 (0.02)	3.10 (0.03)	1.90 (0.04)
Fixed part, Main effects			
Middle-career teachers (ref = Early), γ_{1jk}	-0.03 (0.01)	-0.05 (0.01)	-0.07 (0.01)
Late-career teachers (ref = Early), γ_{2jk}	-0.02 (0.02)	-0.05 (0.01)	-0.08 (0.01)
Barriers PD, γ_{3jk}	-0.09 (0.01)	-0.09(0.01)	-0.06 (0.01)
Distress, γ_{4jk}	-0.20 (0.01)	-0.29 (0.01)	-0.12 (0.01)
High workload, γ_{5jk}	0.02 (0.01)	-0.03 (0.01)	0.01 (0.01)
Additional tasks, γ_{6jk}	-0.03 (0.01)	-0.03 (0.01)	-0.16 (0.01)
Innovative culture, γ_{7jk}	0.04 (0.01)	-0.06 (0.01)	0.05 (0.01)
Team teaching, γ_{8jk}	0.00 (0.00)	0.01 (0.00)	0.04 (0.01)
Sharing experiences, γ_{9jk}	0.04 (0.01)	0.05 (0.01)	-0.01 (0.01)
Participative culture, γ_{10jk}	0.11 (0.01)	0.02 (0.01)	0.09 (0.01)
Togetherness, γ_{11jk}	0.21 (0.01)	0.06 (0.01)	0.09 (0.01)
Safe school climate, γ_{12jk}	0.29 (0.01)	0.19 (0.01)	-0.03 (0.01)
Interaction effects career stage (ref = Early)			
Barriers PD x Middle career, γ_{13jk}	0.02 (0.01)	-0.01 (0.01)	-0.03 (0.01)
Barriers PD x Late career, γ_{14jk}	0.02 (0.01)	-0.00 (0.01)	-0.01 (0.01)
Distress x Middle career, γ_{15jk}	-0.00 (0.01)	-0.03 (0.01)	0.02 (0.01)
Distress x Late career, γ_{16jk}	0.02 (0.01)	-0.00 (0.01)	0.02 (0.01)
High workload x Middle career, γ_{17jk}	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
High workload x Late career, γ_{18jk}	-0.02 (0.01)	-0.01 (0.01)	-0.00 (0.01)
Additional tasks, x Middle career γ_{19jk}	0.02 (0.01)	0.00 (0.01)	0.00 (0.01)
Additional tasks, x Late career γ_{20jk}	0.02 (0.01)	0.00 (0.01)	0.01 (0.01)
Innovative culture x Middle career, γ_{21jk}	-0.01 (0.01)	0.03 (0.01)	-0.01 (0.01)
Innovative culture x Late career, γ_{22jk}	-0.01 (0.01)	0.05 (0.01)	-0.03 (0.01)
Team teaching x Middle career, γ_{23jk}	0.00 (0.01)	0.00 (0.01)	-0.01 (0.01)
Team teaching x Late career, γ_{24jk}	-0.00 (0.01)	0.00 (0.01)	-0.00 (0.01)
Sharing experiences x Middle career, γ_{25jk}	-0.01 (0.01)	-0.01 (0.01)	-0.00 (0.01)
Sharing experiences x Late career, γ_{26jk}	-0.02 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Participative culture x Middle career, γ_{27jk}	0.01 (0.01)	0.00 (0.01)	-0.03 (0.01)
Participative culture x Late career, γ_{28jk}	0.02 (0.01)	0.00 (0.01)	-0.04 (0.01)
Togetherness x Middle career, γ_{29jk}	0.05 (0.01)	-0.01 (0.01)	0.02 (0.01)
Togetherness x Late career, γ_{30jk}	0.04 (0.02)	-0.01 (0.02)	0.04 (0.02)
Safe school climate x Middle career, γ_{31jk}	-0.04 (0.01)	-0.04 (0.02)	-0.02 (0.02)
Safe school climate x Late career, γ_{32jk}	-0.05 (0.02)	0.02 (0.02)	0.00 (0.02)
Random part			
Country level, σ^2_{v0}	0.012 (0.003)	0.016 (0.005)	0.038 (0.011)
School level, σ^2_{u0}	0.021 (0.001)	0.005 (0.000)	0.008 (0.001)
Teacher level, σ^2_{e0}	0.218 (0.001)	0.224 (0.001)	0.243 (0.001)

Fixed effects printed bold are significant with $p < 0.05$.

teaching profession in general are summarized in Table 5, most right column. The job demands and resources explain between 14% of the variance in satisfaction with the teaching profession. The findings with respect to which demands and resources show a significant relationship with satisfaction with the teaching profession are again similar to the overall findings as shown in Table 4. For teachers from all career stages, additional tasks and distress can be understood as the most important job demands showing a negative relationship with satisfaction with the teaching profession and participative culture and togetherness can be seen as the most important job resources showing a positive relationship.

Early-career teachers reported a higher satisfaction with the teaching profession, compared to middle-career ($\gamma_{1jk} = -0.07$) and late-career teachers ($\gamma_{2jk} = -0.08$). Differences between career stages are again small with many non-significant or small interaction effects. For late-career teachers, feelings of togetherness show a stronger positive effect on satisfaction with the teaching profession compared to early-career teachers ($\gamma_{30jk} = 0.04$), and both innovative culture and participative culture show a less strong positive relationship with satisfaction with the teaching profession, compared to early-career teachers ($\gamma_{22jk} = -0.03$ and $\gamma_{28jk} = -0.04$, respectively). Finally, for early-career teachers perceived PD barriers show a stronger negative effect on their satisfaction with the teaching profession than for middle-career teachers ($\gamma_{28jk} = -0.03$).

6. Discussion and conclusions

6.1. Job satisfaction, demands and resources of teachers from different career stages

Analyses of the TALIS 2018 data set showed that various job demands and resources were significantly related to teachers' satisfaction with school, their career choice and the teaching profession. The findings were similar for teachers from different career stages but did differ between the three aspects of teachers' job satisfaction. With respect to teachers' job demands, negative influence of work-related issues on mental and physical health (distress) were strongly related to satisfaction with school and with the choice to decide for a teaching career, but less strong with satisfaction with the societal recognition of the teaching profession, whereas having many additional tasks was strongly related to the latter aspect of job satisfaction and less strongly related with satisfaction with school and the career choice. These findings add to the findings from previous work on teachers' job demands and job satisfaction that measured only one aspect of teachers' job satisfaction, such as satisfaction with the teaching profession in general (Toropova et al., 2021), intentions to leave the job (Amitai & Van Houtte, 2022), or positive feelings related to being a teacher (Jackson & Stevens, 2022). Distinguishing more aspects of job

satisfaction in one study helps to specify the relative importance of teachers' job demands and resources for different aspects of their job satisfaction.

With respect to the job resources, relationships with the three aspects of job satisfaction were different as well. A collaborative and participative culture were both strongly related to satisfaction with the school teachers work at, but less strong with the other two aspects of job satisfaction. A safe school climate was strongly related with satisfaction with school and career choice, but not with the societal recognition of the teaching profession. A supportive culture in school has been found in many studies to act as a job resource (cf., Meredith et al., 2022; Van den Borre et al., 2021), and the current study adds that this is particularly the case for teachers' satisfaction with the school environment, and less for other aspects of job satisfaction. Until now, studies using TALIS 2018 teacher data and distinguishing at least two aspects of job satisfaction focus on teacher characteristics such as teachers' motivation for teaching (Liu et al., 2020), their self-efficacy (Zachariya, 2020), or both (Jung & Woo, 2022). The added value of the current study is the analysis of TALIS 2018 data with a focus on the relationship between teachers' working conditions in terms of job demands and resources and three aspects of their job satisfaction.

6.2. Teachers' job resources

A safe school climate, a participative school culture and feelings of togetherness were the three job resources that mainly explained variance in teachers' job satisfaction. This finding aligns with other studies on teachers' job satisfaction, which emphasize good working relationships with students, parents, colleagues and principals (e.g., Hakanen et al., 2006). This kind of open and relaxing atmosphere in school not only positively influences teachers' job satisfaction, but their turnover intentions (Van den Borre et al., 2021) and general well-being (Skaalvik & Skaalvik, 2011) as well. Moreover, studies on an open and supportive school culture and teachers' and feelings of self-efficacy (Skaalvik & Skaalvik, 2018) confirm that a supportive school culture does not only lead to affective teacher outcomes such as job satisfaction and well-being, but also to outcomes that are related to teaching quality. These outcomes for teaching quality are important to not only keep many teachers as possible in the profession, but also keep their level of teaching at a high-quality level.

In previous work, collaborative culture in school is also found to be related to teachers' job satisfaction (Olsen & Huang, 2019; Xia et al., 2022), teachers' turnover intentions (Van den Borre et al., 2021) and their teaching quality (Banerjee et al., 2017). Yet in the current study, some aspects of a collaborative school culture, such as team teaching and sharing teaching experiences were only weakly or not at all related to the three indicators of teachers' job satisfaction. The most obvious explanation of the zero-effects of team teaching and sharing experiences is that the other resources, such as a safe school climate and togetherness were strongly related to all aspects of job satisfaction sharing variance with team teaching and sharing experiences in teachers' scores on job satisfaction. This phenomenon makes clear that comprehensive models of factors should be examined in studies of teachers' job satisfaction. Yet more research is needed on teacher collaboration as job resources distinguishing, for example, between different levels of intensity of collaboration (cf. Little, 2003), various goals of collaboration (Jong, Meirink, & Admiraal, 2022) and collaboration within and across teacher groups (Meredith et al., 2022).

6.3. Teachers' job demands

Two job demands came up from all the analyses. First, feelings of

distress indicated by issues in mental and physical health showed a strong relationship with teachers' job satisfaction, no matter which indicator was addressed and in all career stages. This finding confirms findings from previous work (e.g., Collie et al., 2012; Dreer, 2021).

Second, perceived barriers for PD appeared to be a major job demand. This finding is also related to previous work on teacher job satisfaction, although authors mostly examine PD as a job resource, such as possibilities for PD and opportunities for learning (Admiraal et al., 2016; Yoon & Kim, 2022). A job demand that is commonly found to be negative related to teachers' job satisfaction is a high workload. Yet in the current study, we mainly found weak negative relationships between workload and teachers' satisfaction with career choice, zero-effects for satisfaction with the profession and even weak positive effects for teachers' satisfaction with school. The latter is in contrast with previous work done in this area that found *negative* relationships between teachers' workload and their job satisfaction (see e.g., Amitai & Van Houtte, 2022; Toropova et al., 2021). An explanation of this difference is difficult to provide as studies differ in the way job satisfaction has been measured, but it might be that workload as such is not a job demand that is perceived negatively per se. Teachers who put a lot of effort in their work might do this because they are satisfied with the school they work at.

6.4. Teachers from different career stages

As mentioned above, differences between teachers from different career stages were small, both in their job satisfaction and the working conditions that were related to their job satisfaction. Based on previous work on high drop-out of early-career teachers (Räsänen et al., 2020) and the so-called practice shock or reality shock of beginning teachers (cf., Voss & Kunter, 2020) we expected to find stronger relationships between working conditions, and resources in particular, and job satisfaction for beginning teachers than for teachers with more teaching experience. However, this was only for a few resources the case: a safe working climate –the extent trust and good relationships are reported– seems to be more important for school satisfaction for early-career teachers than mid- and late-career teachers, and a participative school culture seems to be more important for satisfaction with the teaching profession for early-career teachers than for mid- and late-career teachers. But no stronger relationships for early-career teachers were found for the other resources, such as sharing experience, team teaching and togetherness. A reason might be that early-career teachers do need support from resources, but not in terms of supportive working conditions but personal resources such as feelings of self-efficacy in teaching and classroom management skills.

6.5. Limitations and directions for future research

The current study reports on analyses of TALIS 2018 data, without any additional data collection to validate data interpretations. Additional qualitative data, such as individual interviews, 360-degree feedback sessions or focus-group meetings in schools, might add additional insights as well as provide explanations of some of contrasting findings found. In particular, more detailed information about job resources such as safe school climate and feelings of togetherness and the job demand workload might give more nuanced explanations of the relationships found in this study. A second limitation is the correlational design of the current study, which means relationships between perceived job demands and resources and teachers' job satisfaction can be reciprocal. For example, teachers who reported high levels of

distress, reported low job satisfaction, but teachers who are dissatisfied with their teaching job, might also experience issues with their mental and physical health because of their work. A longitudinal or cross-lagged panel design can provide insights into the causal character of the relationships found. Hamaker et al. (2015) indicated that at least three measurements spread over time are needed to be able to infer causal relationships, which is difficult to realize with TALIS data as teachers completed the questionnaire anonymously, teachers might have moved to other schools (that are not included in the sampling) and TALIS questionnaire items (and so the job demands and resources) have changed over time.

6.6. Implications for school practice

Implications for Human Resources Management (HRM) practice can be derived from the insights into the importance of job demands and resources in terms of working conditions in school. An inclusive school culture with input from all stakeholders on the teaching and learning process in school can be supported with HRM with, for example, job redesigns with less additional task and training and coaching sessions to support teachers in coping with job demands. Facilitating teachers' continuous professional development instead of raising barriers for PD is another HRM practice that can easily be implemented and retained, although teacher shortages will counteract these HRM policies. Instigating an open and safe working climate and collaborative culture in school are two main aspects school leaders and teachers can work on. Admiraal, Schenke, Jong, Emmelot, & Sligte, 2021 examined various interventions in school to develop schools as professional learning communities, such as collaborating on a shared school vision on teaching and learning, facilitating professional learning activities for all staff including coaching, peer review, workshops and master classes, teacher collaboration in teaching, educational action research, professional learning, changing the school organization with more opportunity to meet each other, and leadership that is not only focused on work organization, but also staff learning and development. This kind of interventions can help to make a school more a place for learning and development of teachers and can increase teachers' satisfaction with their school and their profession.

6.7. Concluding remarks

In this secondary analysis of TALIS 2018 teacher data of 24 EU countries, teachers' job satisfaction has been measured as their satisfaction with their school, with their choice for a career as a teacher and with the teaching profession in general. Working conditions in school can either support (job resources) or lower (job demands) these feelings of job satisfaction, with a safe school climate (for school satisfaction and satisfaction with career choice), togetherness and a participative school culture (both for school satisfaction) as the main job resources and feelings of distress, perceived barriers for PD (both for all three types of job satisfaction) and additional tasks (for satisfaction with the teaching profession) as the main job demands. Similar findings have been found for teachers from different career stages. Only a very low proportion of the differences between teachers' job satisfaction could be attributed to differences between countries, which makes the conclusions about job demands and resources quite stable across EU countries.

Data availability

Data is publicly available

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.tate.2023.104063>.

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