Varia

Factors associated with teacher job satisfaction: An investigation using TALIS 2018 Data

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We used data from the OECD's 2018 Teaching and Learning International Survey (TALIS) to investigate the factors associated with teacher job satisfaction. The database covers more than 250,000 teachers in 15,000 schools across 48 countries. Correlation and regression analyses adjusted for the TALIS sampling design were applied. We found that the most important predictor of teacher job satisfaction is distributed leadership, followed by positive relations between teachers and students. Teacher salary and teacher collaboration are also positively and significantly associated with job satisfaction. By contrast, workload stress is the most important factor associated with teacher dissatisfaction, followed by professional development barriers and disciplinary climate.

1. Introduction

In recent decades, a large amount of literature has been devoted to job satisfaction particularly in organizational behavior research. Currently, job satisfaction continues to be a topic of great interest to both employees and company managers. The reasons for this are not necessarily altruistic; research has provided substantial evidence that more satisfied workers are more productive and less likely to be absent or abandon the profession (Rafferty & Griffin, 2009). In the context of education, teacher job satisfaction is also receiving growing attention, especially in OECD countries (Organization for Economic Co-operation and Development [OECD], 2019). One reason for this is the potential role of job satisfaction in retaining effective teachers (Admiraal & Kittelsen Røberg, 2023; McJames et al., 2023; Madigan & Kim, 2021; Toropova et al., 2021; European Commission, 2021). Several studies have emphasized the shortage of high-quality teachers in many countries due to high attrition rates i.e., the departure of teachers from their teaching jobs. For example, Skaalvik and Skaalvik (2011) found that 25% of new teachers in the US leave the profession before their third year, and almost 40% within the first five years. These alarming statistics are confirmed by Ingersoll et al. (2018) who revealed that, within the first five years of teaching, more than 44% of new US teachers leave the profession. A similar level of attrition exists in many countries and education systems. At the same time, teacher turnover (i.e., teachers moving between schools) is another phenomenon that several countries are currently facing. Teacher turnover and attrition are associated with reduced pupil attainment (McJames et al., 2023; OECD, 2014) and can lead to an uneven distribution of teacher quality (Qin & Bowen, 2019). Indeed, it is well known that disadvantaged schools tend to suffer from teacher shortages and experience greater difficulty in attracting and retaining qualified teachers (Glassow et al., 2023; Franck & Hansen, 2023). Additionally, there is evidence that low job satisfaction is a major contributing factor to teacher burnout (Madigan & Kim, 2021; Reeves et al., 2017). Finally, from an economic perspective, teacher attrition and turnover represent two examples of resource wastage because it is expensive for policymakers and other education stakeholders to train new teachers only to lose them (Sorensen & Ladd, 2020). In the US, the annual financial costs of recruiting, hiring, and training new teachers is huge, with a total national replacement cost estimated at $2.2 billion per year (Hughes, 2012). When combined, these factors point to a natural focus on the determinants of teacher job satisfaction. Consequently, we use data from the Teaching and Learning International Survey (TALIS) 2018 (OECD, 2019) to investigate the relationship between a selected number of factors and teacher job satisfaction in lower secondary education across 48 countries and economies. Identifying factors which support teacher job satisfaction could help improve retention rates of qualified teachers and attract new entrants to the teaching profession. The rest of the paper is organized as follows: section 2 presents the theoretical framework and gives an overview of the literature; section 3 introduces the method and discusses the data and variables; section 4 presents and discusses the results; and section 5 concludes the paper.

2.   Theoretical background and literature review

As previously mentioned, the aim of the current study is not to determine the best country in terms of job satisfaction or otherwise. Our goal is to report empirical evidence on the determinants of teacher job satisfaction based on what the data show, and to make any comparison with previous literature as fair as possible. As the theoretical basis of our research, we can draw on two conceptual frameworks.

The first framework was proposed by Seashore and Taber (1975), and it continues to remain dominant in the literature. More than forty years ago, Seashore and Taber classified a multitude of variables associated with job satisfaction into a taxonomy. More specifically, the variables correlated with job satisfaction are classified into several principal classes. First, there are the teacher's individual characteristics, including socio-demographic information (e.g., age, sex, educational achievements). Second, are the characteristics of the workplace, including job and organizational features (e.g., size, work climate, type of ownership, salary, job security). Finally, at the macro level, there are the political and economic environment factors, such as the unemployment rate and the overall state of the national economy, which may influence the perception of job security and can directly impact job satisfaction (Erro-Garcès & Ferreira, 2019). Previous studies have analyzed the relative contribution of demographic, job and organizational characteristics, and macroeconomic factors to job satisfaction.

The second theoretical framework that provides understanding and guides our study is the social-ecological theory perspective (Bronfenbrenner, 1986). In short, this theory suggests that human development is affected by factors in different contextual levels, such as microsystems (e.g., schools) and macrosystems (e.g., societal factors). As noted by Zakariya (2020), the basic tenet of this theory, as applicable to teachers, is that internal feelings or self-evaluations of teachers, such as job satisfaction, are considered a construct that is consistently being shaped by interacting with the work environment. In this case, the work environment includes school leaders, student relations, parent relations, and school community. Thus, teacher job satisfaction is a multi-dimensional construct. In the next section, we will take a closer look at the conceptualization of teacher job satisfaction, as well as its predictors mentioned in previous studies.

2.1   Teacher job satisfaction

Given that social scientists usually analyze job satisfaction as a multidimensional construct, there is no consensus on its definition. As pointed out by Locke (1976), job satisfaction is a positive or pleasant emotional state resulting from a person's appreciation of their own job. In the same vein, Ainley and Carsten (2018) noted that teacher job satisfaction is conceptualized as "the sense of fulfillment and gratification that teachers experience through their work as teacher". This includes teacher self-evaluations of the job, which could be positive or negative (Skaalvik & Skaalvik, 2015). Snipes et al. (2005) showed that job satisfaction consists of several facets, including satisfaction with the supervisor, work, pay, advancement opportunities, and professional collaboration. Skaalvik and Skaalvik (2010) mentioned that a problem with the facet-specific approach is that the importance of particular circumstances may differ between teachers. As a result, such measures overlook the fact that the impact of different circumstances on overall job satisfaction depends on the individual teacher. Torres (2019) showed that a teacher may be satisfied with teaching as a career but dissatisfied with a specific school. Conversely, a teacher may be dissatisfied with the teaching profession entirely regardless of the job location. This view is in accordance with the TALIS 2018 approach. As can be seen in table 1, teacher job satisfaction is regarded as a multidimensional construct with two main components: work satisfaction and professional satisfaction. Work and professional satisfaction are two composite variables considered at the teacher level through several items based on the teacher survey questionnaire.

Table 1

Item wordings of the TALIS 2018 teacher job satisfaction scales.

Subscale	Item wording
Job satisfaction with profession	***How strongly do you agree or disagree with the following statements?***
	G53A The advantages of being a teacher clearly outweigh the disadvantages
	G53B If I could decide again, I would still choose to work as a teacher*
	G53D I regret that I decided to become a teacher*
	G53F I wonder whether it would have been better to choose another profession
Job satisfaction with work	***How strongly do you agree or disagree with the following statements?***
	G53C I would like to change to another school if that were possible*
	G53E I enjoy working at this school
	G53G I would recommend this school as a good place to work
	G53J All in all, I am satisfied with my job

Adapted from TALIS 2018 *Technical Report* (OECD, 2019, p. 302)
Items with (*) were reverse-coded.

According to Dinham and Scott (1998), the determinants of teacher job satisfaction can broadly be classified into three domains (see also Skaalvik & Skaalvik, 2011; Gil-Flores, 2017): (1) intrinsic rewards of teaching, (2) factors extrinsic to the schools, and (3) school-based factors.

The intrinsic rewards of teaching concern the actual activity of teaching, working with the students, and seeing students learn and develop, all of which are primary motives for becoming a teacher and a main source of satisfaction among teachers. Factors extrinsic to the school include external evaluation of schools, the negative portrayal of teachers in the media, and a decrease in the status of teaching. School-based factors or contextual variables at school may include relations with colleagues, parents, and the school leadership, as well as time constraints, disruptive student behavior, and the values emphasized within the school. The literature discussed in the present study focuses more specifically on school-based factors. Among these, the impact of leadership styles on job satisfaction has received some attention in recent literature. For instance, Sun and Xia (2018) pointed out that research most often examined how school principals approach distributed leadership, but there is a lack of research into how teachers perceive this and on the possible relationship between distributed leadership and job satisfaction. In their study, Sun and Xia (2018) used the TALIS 2013 data and found two main results. The first result revealed a direct positive effect of teacher perception of distributed leadership on job satisfaction at both levels. This direct effect was more important at the level of the teacher than of the school. The second result revealed a mediating role played by teacher self-efficacy between the perception of distributed leadership in school and job satisfaction. Torres (2019) used hierarchical linear modeling to investigate the link between distributed leadership and teacher job satisfaction in US schools and found that distributed leadership was positively associated with teacher job satisfaction. Similarly, using a sample of US teachers, Ladd (2011) found that high-quality leadership was negatively associated with leaving intentions. A limited number of studies on leadership quality have explored transformational and transactional leadership styles in relation to teacher job satisfaction. Griffith (2004) found transformational leadership was indirectly associated to teacher turnover via job satisfaction.

Teacher collaboration is another school-based factor that may influence teacher job satisfaction. Teachers collaborate with their colleagues in numerous situations. On average across OECD countries and economies participating in TALIS, the two most frequently reported types of collaboration are "discussing the learning development of specific students" (61% of teachers) and "exchanging teaching materials with colleagues" (47%). Professional collaboration that involves more interdependence between teachers, such as observing other teachers and providing feedback, participating in collaborative professional learning and team teaching, is less frequent. For example, only 9% of teachers in OECD countries and economies in TALIS report providing observation-based feedback to colleagues at least once a month (OECD, 2020). Using TIMSS data, Reeves et al. (2017) examined whether five indicators of teacher collaboration predicted student achievement and teacher job satisfaction in Japan and the US. The results showed that time spent visiting other classrooms was a significant predictor of job satisfaction in the US. The results from TALIS 2013 also showed that professional

collaboration among teachers - such as joint teaching, peer reviewing and engaging in professional discussion - improved job satisfaction (OECD, 2013).

Duyar et al. (2013) used TALIS 2008 data from Turkey and found that professional collaboration was positively associated with teacher job satisfaction. Finally, a more recent study by Lopes and Oliveira (2020) found a strong relationship between teacher collaboration and job satisfaction in Portugal using TALIS 2013 data. Similar results have also been found in Swedish data from TIMSS 2015 (Toropova et al., 2021).

School composition is considered an environmental factor which is potentially related to job satisfaction. Several studies have shown that schools with higher concentrations of students from low socio-economic backgrounds had higher rates of teacher attrition (Ingersoll, 2001). Borman and Dowling (2008) showed that when the student body composition was examined together with other working conditions, the effect of the former on job satisfaction was no longer present. Sims (2017) used data from TALIS 2013 and found that student body composition was no longer significant in its relation to job satisfaction under control for school-working environment. TALIS 2013 study revealed that having a higher percentage of students with behavioral problems in class was associated with lower job satisfaction (OECD, 2014). Teacher self-efficacy is one of the most studied motivation constructs among factors that influence teacher job satisfaction (Burić & Kim, 2021). The concept was first defined in the seminal work by Bandura (1977) as the evaluation of one's own ability to conduct a specific activity with success. In the educational context, teacher self-efficacy refers to the extent to which teachers believe in their own capacity to positively impact student learning (Tschannen-Moran & Hoy, 2001). Researchers have argued that self-efficacy can predict teachers' related performances, particularly when things do not go as expected (Tschannen-Moran & Hoy, 2001). A systematic review found that the association between teacher self-efficacy and job satisfaction was relatively stable across 21 studies, with a median coefficient of 0.33 (Zee & Koomen, 2016). The finding was that primary and secondary school teachers with higher levels of self-efficacy were also more satisfied with their jobs and their relationships in their jobs. By contrast, lower levels of teacher self-efficacy have been found to be associated with teachers experiencing more student misbehavior difficulties, being more pessimistic about student learning, and experiencing higher levels of job-related stress and lower levels of job satisfaction (Caprara et al., 2003; OECD, 2014). Teacher intercultural self-efficacy has recently received some attention in several papers. Indeed, many teachers report low self-efficacy in adapting their teaching to the cultural or ethnic diversity of students (OECD, 2019). Schwarzenthal et al. (2023) studied the sources of teacher intercultural self-efficacy using multilevel analysis and TALIS 2018 data. They found that intercultural professional development, teacher mobility, and multicultural school climate were positively related to teacher intercultural self-efficacy.

Participation in continual professional development activities is also receiving growing attention (European Commission, 2021). According to TALIS 2013, professional development is defined as participating in activities that aim to advance teachers' skills and knowledge, with the ultimate goal of improving their teaching practice (OECD, 2013). McJames et al. (2023) investigated the factors affecting teacher job satisfaction in England. They applied a causal inference machine learning approach to the English data from TALIS 2018 and showed that participation in continual professional development and induction activities has the most positive effect on job satisfaction. They also found a negative impact of part-time contracts on teacher job satisfaction. In the same vein, using Bayesian Hierarchical Linear Modeling, Yang (2020) found that more professional development experience was significantly associated with an increased teacher self-efficacy and job satisfaction. However, these associations do not apply to the most common types of professional development, such as courses, workshops, and conferences or seminars. One challenge often faced by teachers is the existence of barriers to attending these activities. The barriers listed in TALIS 2018 survey (OECD, 2019) for teachers' assessment are the lack of pre-requisites, high costs, lack of support from the employer, lack of time due to family responsibilities and a shortage of relevant subjects for professional development (OECD, 2019). Recent studies have found higher levels of participation in continual professional development activities to be linked to improved teacher job satisfaction (McJames et al., 2023; Yoon & Kim, 2022; Smet, 2021; Zhang et al., 2019; Sims, 2017). Lastly, stress is considered a major concern for teachers. For the first time in TALIS, the 2018 survey asked teachers how much stress they experience in their work. On average across participating OECD countries, 18% of teachers from less disadvantaged schools reported a lot of stress, compared to 20% of teachers from more disadvantaged schools. The sources of stress for teachers were classified into three different groups: workload stress, student behavior stress, and expectation stress. Some researchers have focused on workload stress which refers to the pressure teachers experience from their workload, including stress from lesson preparation, teaching multiple classes, and marking (Collie & Mansfield, 2022) and which has, for example, been associated with lower wellbeing and greater turnover intention among teachers (Skaalvik & Skaalvik, 2018).

Considering the above-mentioned background, our study aims to contribute to the knowledge base on teacher job satisfaction by answering the following research question: How are school and organizational characteristics related to teacher job satisfaction?

3. Methodology

To investigate the factors associated with teacher job satisfaction, we chose a quantitative research approach in which we apply correlation and adjusted multiple regression analysis to data from the most recent wave of OECD Teaching and Learning International Survey (TALIS), conducted in 2018 (OECD, 2019). Pearson correlation analysis is employed to examine the relationships between variables, and adjusted multiple regression to identify independent predictors of job satisfaction. Note that the correlation coefficient indicated by the letter r measures the strength and direction of the statistical association between two variables, and varies between (-1) and (1). Values around 0 indicate a weak association, while the extreme values indicate the strongest possible negative or positive association. Multiple linear regression analysis provides insights into how the value of the dependent variable (job satisfaction) changes when any one of the independent variables varies while all other independent variables are constant. The first step was to make sure data are normally distributed, and there is no issue of multicollinearity for all the independent variables included in the analysis. Since the study involves a very large sample, the Central Limit Theorem can be applied and therefore there is no question on normality of the data. Multicollinearity is a common challenge in educational research. In ordinary least square (OLS) regression, the presence of multicollinearity reduces the precision of the estimated coefficients (Neas & Martens, 1985). Table 2 shows that, despite the number of variables used, the variance inflation factor (VIF) values do not indicate multicollinearity as an issue. The VIF (the reciprocal of tolerance) values are well below the threshold of 10. In addition, the Durbin-Watson value of (1.84) falls in the acceptable range. Finally, to evaluate the reliability of the scales, we used Cronbach's alpha reliability coefficient. The analysis indicated an acceptable reliability for almost all study variables (ranging between 0.69 and 0.94). To reduce the sampling error caused by inequal probability of selection, we also used teacher weights (TCHWGT) obtained by dividing the final teacher weight with the final school weight, as suggested in the TALIS 2018 technical report (OECD, 2019). In the following section, we introduced the data source, sample, and variables.

3.1 Data source and samples

The data used in this analysis are from the last wave of the OECD Teaching and Learning International Survey (TALIS). The data were collected between 2017 and 2018, and made publicly available in 2019. TALIS is the first international large-scale survey where the major focus is on the learning environment and the working conditions of teachers in schools. As a five-year cyclical survey, its first round took place in 2008 with 24 participating countries and the second cycle in 2013 with 34 countries. The main objective of the survey is to provide comparable information about lower secondary (ISCED 2) teachers and principals worldwide. TALIS 2018 offered three additional options: 15 countries and economies took the opportunity to survey teachers and school leaders in primary schools (ISCED 1), and eleven countries and economies did so in their upper secondary schools (ISCED 3). Nine countries and economies conducted the survey in schools that participated in the 2018 OECD PISA. The fact that TALIS 2018 and PISA 2018 were implemented in the same year makes it possible to link the two surveys. The 2018 database comprises school and teacher level data from 48 participating countries and economies. It includes information from more than 15,000 schools and 250,000 teachers, representing more than 8 million teachers in the participating countries and economies. The focus of the present study is on lower secondary school teachers (ISCED 2), which is the central target population of the survey covering all the 48 participating countries and economies across five continents. In total, there are one African, ten Asian, twenty-six European, two Oceanian, two North American, and five South American countries and economies. Two questionnaires were administered (one for teachers and the other for principals) with questions relating to topics including job satisfaction, instructional practices, school climate, teacher self-efficacy, and teacher characteristics. The data used in the final sample amount to a total of 153,374 lower secondary school teachers (69% female) in 47 countries and economies (the Iceland data were not available). The average number of years' experience working as a teacher is 16.5. Most teachers hold a master's degree and a full-time position in a school. The average age of lower secondary teachers across TALIS education systems is 43 years old (SD = 3.8). Regarding the sampling method, TALIS 2018 used a two-stage stratified sampling method in which 200 schools were first randomly selected from each country, then 20 teachers who taught

regular classes were randomly selected from each participating school. This sampling method yields a nationally representative sample of teachers and schools for each country. The response-rate target was at least 75% of schools and at least 75% of teachers in each education system. Responding schools that reached at least 50% of responding teachers were considered as "participating" schools (OECD, 2019).

3.2 Variables and measures

Based on the research objectives and the previous literature, a set of variables was selected for the empirical analysis. This section describes the variables of TALIS 2018 used in this study, which were selected from the teacher questionnaire.

3.3 Dependent variable

The dependent variable was teacher job satisfaction (T3JOBSA), expressed through a composite index based on teacher responses to eight items corresponding to two sub-scales: Job satisfaction with work environment (T3JSENV) and Job satisfaction with profession (T3JSPRO). Participants responded on a four-point Likert scale, ranging from 1 (strongly disagree) to 4 (strongly agree) (for more information, see table 1). The Cronbach's alpha reliability values of the two scales were acceptable (0.79 and 0.82 or higher across all countries).

3.4 Independent variables

Teacher self-efficacy (T3SELF) is measured in the TALIS 2018 teacher questionnaire using twelve items based on three scales: (a) efficacy in classroom management (i.e., "Control disruptive behavior in the classroom"), (b) self-efficacy in instruction (i.e., "Use a variety of assessment strategies"), and (c) self-efficacy in student engagement (i.e., "Motivate students who show low interest in schoolwork"). Teachers were asked on a four-point Likert-scale, ranging from 1 (not at all) to 4 (a lot), to answer the question: "In your teaching, to what extent can you do the following?". Cronbach's alpha values for each teacher self-efficacy domain were acceptable (0.79 for instruction; 0.83 for student engagement and 0.84 for classroom management; see OECD, 2019).

Distributed leadership (T3STAKE) is evaluated using the "Participation among stakeholders" scale which is a variable consisting of five items asking teachers "How strongly do you agree or disagree with these statements as applied to this school?". The five items are: (1) This school provides staff with opportunities to actively participate in school decisions, (2) This school provides parents or guardians with opportunities to actively participate in school decisions, (3) This school provides students with opportunities to actively participate in school decisions, (4) This school has a culture of shared responsibility for school issues, and (5) There is a collaborative school culture which is characterized by mutual support. Teachers responded on a four-point Likert scale, ranging from 1 (strongly disagree) to 4 (strongly agree). The reliability of this scale was 0.93.

Teacher collaboration (T3COOP) is analyzed from two constructs in TALIS. On a 6-point scale, teachers were asked how often on average they performed eight activities. The eight items were divided into two sub-scales: professional collaboration, and exchange and co-ordination. The first scale contained four items: (a) teach jointly as a team in the same class, (b) provide feedback to other teachers about their practice, (c) engage in joint activities across different classes and age groups (e.g., projects), and (d) participate in collaborative professional learning. The other four items make up the second scale: (a) exchange or develop teaching materials with colleagues, (b) discuss the learning development of specific students, (c) work with other teachers in this school to ensure common standards in evaluations for assessing student progress, and (d) attend team conferences. The Cronbach's alpha reliability coefficients of the professional collaboration, and exchange and co-ordination were 0.93 and 0.94 respectively. Cross-cultural evidence suggests that poor school climate and negative student behavior can both be significant risk factors for lower teacher job satisfaction. For example, findings from TALIS 2013 revealed that job satisfaction and self-efficacy declined as the proportion of students with behavioral problems increased (OECD, 2014). TALIS 2018 presents several indicators of school climate, such as the percentage of students with behavioral problems (T33G35E) or the percentage of students from socioeconomically disadvantaged homes (T3G35F). School climate also includes the overall culture of the school in terms of the quality of the relationships between staff and between teachers and students (T3STUD), and the levels of co-operation, respect and sharing (OCDE, 2014). In addition, given the crucial role of salary in career choice, low payment might be an important factor contributing to teacher job dissatisfaction and retention. Teachers' remuneration and career prospects are an intrinsic part of policies aiming to attract the best candidates and ensure they remain in the profession (European Commission, 2023).

Consequently, we added this independent variable as a potential predictor of teacher job satisfaction. In the same vein, because stress is known to be a major concern for teachers, the present study examines one potential

source of stress for teachers, namely workload (T3WLOAD). We recall that this refers to teachers' perceptions of having to do too much lesson preparation, instruction, or marking in the time available to them. TALIS provides data on teachers' reported working hours overall as well as the time they report spending on various tasks in a typical week. For example, across countries, teachers report spending an average of 38 total hours working, ranging from 29 hours in Italy to 54 hours in Japan. Teachers report spending most of their time on teaching. Workload stress was assessed using three items ("Having too much lesson preparation," "Having too many lessons to teach," and "Having too much marking." The reliability coefficient was 0.76 for workload stress.

4. Main results

First, results from Pearson correlation analysis show that distributed leadership is positively and significantly associated with job satisfaction ($r = 0.396$, $p < 0.001$). A positive and significant correlation is also observed between job satisfaction and teacher-student relations ($r = 0.354$, $p < 0.001$), teacher salary ($r = 0.236$, $p < 0.001$), teacher cooperation ($r = 0.206$, $p < 0.001$), teacher self-efficacy ($r = 0.213$, $p < 0.001$). In addition, there is a negative and statistically significant relationship between teacher job satisfaction and workload stress ($r = -0.292$, $p < 0.001$), professional development barriers ($r = -0.250$, $p < 0.001$), teacher-perceived disciplinary climate ($r = -0.233$, $p < 0.001$), percentage of students with behavioral problems ($r = -0.149$, $p < 0.001$), percentage of students from socioeconomically disadvantaged homes ($r = -0.084$, $p < 0.001$), and the percentage of time spent on administrative tasks ($r = -0.084$, $p < 0.001$).

Table 2

Results from adjusted OLS regressions for teacher job satisfaction

Variables	Standardized Regression Coefficient (Beta)	Standard Error (SE)	Collinearity statistics	
			Tolerance	VIF
Leadership	0.226***	0.005	0.746	1.340
Teacher-student relations	0.140***	0.005	0.756	1.323
Teacher collaboration	0.066***	0.004	0.893	1.120
Teacher self-efficacy	0.065***	0.005	0.834	1.199
Teacher-perceived disciplinary climate	-0.093***	0.005	0.785	1.309
Teacher satisfaction with salary	0.144***	0.012	0.932	1.073
Workload stress	-0.154***	0.005	0.888	1.126
Professional development barriers	-0.081***	0.005	0.883	1.133
% of students from disadvantaged homes	-0.046***	0.010	0.770	1.298
% of students with behavioral problems	-0.028***	0.013	0.785	1.274
% of students whose first language is different from the language of instruction	-0.019	0.008	0.833	1.200
Durbin-Watson	1.84			
Adjusted R-squared	0.30			

***Indicates significance at the 1% level.

Table 2 reports the results based on estimates of the adjusted OLS regression with teacher job satisfaction as an explained variable. On average, the explanatory variables account for 30% of cross-country variation in teacher job satisfaction. The F-statistic is statistically significant at the 1% level, indicating a good model fit. It can be observed that practically all aspects of working conditions and school climate are significantly related to teacher job satisfaction. Teacher-perceived distributed leadership emerges as having the strongest positive association with job satisfaction ($\beta = 0.226$, SE = 0.005, $p < 0.001$). One possible explanation for this result is the fact that distributed leadership decentralizes authority and improves teacher autonomy, which in turn has a positive

impact on job satisfaction. Recent studies have shown that the higher the autonomy of teachers, the higher their satisfaction with the working environment and the teaching profession in general (Sun & Xia, 2018). This result is in line with those obtained by Torres (2019) and Sun and Xia (2018) using the TALIS 2013 data. Their findings have revealed that teacher job satisfaction is associated with the level of teacher involvement in the decision-making process in schools. Indeed, some aspects of distributed leadership, for example a culture of shared responsibility and a collaborative school culture characterized by mutual support, can lead to higher job satisfaction. Furthermore, recent educational research shows a growing interest in the quality of the teacher-student relationship, this being an essential aspect of teachers' daily life. Our results show that a positive quality in the teacher-student relationship can positively affect teacher job satisfaction (β = 0.140, SE = 0.005, p < 0.001). This result implies the existence of personal interactions that are positive for the student learning outcomes. Using a Spanish sample from the 2013 edition of TALIS survey, Gil-Flores (2017) also found that the variable of teacher-student relations is among the main predictors of teacher job satisfaction. This result is confirmed by O'Shea (2021) who applied the transactional model of stress and coping (Lazarus, & Folkman, 1984) as a framework on the US sample of TALIS 2018 data.

In addition, the variable related to teacher salary (β = 0.144, SE = 0.012, p < 0.001) shows positive and significant relationships with higher job satisfaction. We find that a one standard deviation increase in teacher salary is associated with a 0.14 standard deviation increase in job satisfaction. This result is important because teacher salaries represent the largest single cost in formal education and have an important impact on the appeal of the teaching profession. Salaries also influence decisions to enroll in teacher education, to become a teacher after graduation, and to return to the teaching profession after a career interruption (OECD, 2005). Teacher collaboration also has a significant and positive relation to job satisfaction (β = 0.066, SE = 0.004, p < 0.001). Liu et al. (2018) produced similar results indicating that teachers who work in a highly collaborative school environment tended to be more satisfied. Another important finding relates to teacher self-efficacy, identified as a positive and significant predictor of job satisfaction. This implies that teachers' individual perceptions of their own self-efficacy influence job satisfaction. A systematic review by Zee and Koomen (2016) found that the association between self-efficacy and job satisfaction among teachers is relatively stable across 21 studies, with a median coefficient of 0.3. This indicates that teachers with higher levels of self-efficacy are also more satisfied with their jobs. Several studies have shown that new teachers with lower self-efficacy scores are less likely to stay in the teaching profession (Tschannen-Moran et al., 1998).

For the first time in TALIS, the 2018 survey asked teachers how much they experience stress in their work. On average across participating countries, 49% of teachers reported feeling quite a bit or a lot of stress in their jobs. Our results demonstrate that the workload stress variable provided a negative and significant beta coefficient with job satisfaction (β = -0.154, SE = 0.005, p < 0.001). This variable emerges as a main predictor of teacher dissatisfaction. The time teachers spend on lesson planning, preparation and marking is found to be detrimental to job satisfaction. Further analysis also shows that the time that teachers spend on administrative tasks has a significant influence on workload stress. Our results are consistent with those obtained by Skaalvik and Skaalvik (2016) and more recently by Toropova et al. (2021), showing that an excessive workload is significantly associated with emotional exhaustion and motivation to quit the teaching profession.

The teacher-perceived disciplinary climate is next examined as a predictor of teacher job satisfaction. Our analysis revealed a negative and significant relationship with teacher job satisfaction (β = -0.093, SE = 0.005, p < 0.001). Teacher-perceived disciplinary climate has been reported to negatively impact self-efficacy which in turn translates to low job satisfaction (Aldridge & Fraser, 2016; Malinen & Savolainen, 2016). As noted by Zakariya (2020), this result means that schools whose teachers waste a lot of time getting students ready for lessons by managing disruption in class, students' interruptions, and unpleasant atmosphere are more likely to cause low job satisfaction. However, this negative effect needs to be interpreted with caution because of how the survey questions are framed.

Turning to the barriers to professional development, this variable also has shown a negative relationship with job satisfaction (β = -0.081, SE = 0.005, p < 0.001). A recent study by Zhang et al. (2020) found the variable of barriers to participation in professional development to be a key predictor of job satisfaction. In TALIS, professional development is defined as participating in activities that aim to advance teachers' skills and knowledge, with the goal of improving their teaching practice. Professional development participation was found to relate positively to job satisfaction, meaning that teachers with longer exposure to professional development tended to be more satisfied with the job. Note, however, that these relations may also be reciprocal as teachers who feel more content in their job might be more inclined to participate in professional development programs (e.g., Nir & Bogler, 2008). Finally, the variables related to the percentage of students from disadvantaged homes and

the percentage of students with behavioral problems showed a negative and significant beta coefficient with job satisfaction (β = -0.046, SE = 0.010, $p < 0.001$) and (β = -0.028, SE = 0.010, $p < 0.001$). This confirms the results of TALIS 2013, which show that having a higher percentage of students with behavioral problems in class was associated with lower job satisfaction among teachers in 29 of the 34 participating countries and regions (OECD, 2014). In this respect, it appears important for teachers to have a strong sense of efficacy in dealing with problematic student behavior.

This study presents several limitations. First, although we take advantage of the rich TALIS 2018 dataset, our results are based on cross-sectional design and do not allow for causal interpretation. Additionally, in our analysis, the sample sizes varied considerably between countries. This may affect parameter estimates and standard errors at the country level. Multilevel analysis would be an appropriate approach to address this potential problem. Longitudinal research would also be needed to gain a deeper understanding of the factors associated with teacher job satisfaction over a long period of time. Second, given that the variables used in our study were self-reported, the data may have been impacted by subjectivity. Future research may wish to complement the TALIS data with other sources. Finally, we should warn against the comparison used to measure job satisfaction across different cultural contexts. TALIS is a large-scale international study that collects data from different contexts. The results may have been impacted by the lack of cross-cultural construct validity of job satisfaction. Despite these limitations, we believe that our findings may have implications for education policy.

5.   Conclusion

This research aimed to investigate the factors associated with teacher job satisfaction using data from the 2018 wave of the OECD's Teaching and Learning International Survey (TALIS) (OECD, 2019). We found that the most important predictor of teacher job satisfaction was distributed leadership, followed by positive relations between teachers and students. Teacher salary and teacher collaboration also showed significant positive relationships with job satisfaction. By contrast, workload stress emerged as the most important factor associated with teacher dissatisfaction, followed by barriers to professional development and disciplinary climate. Our results are broadly consistent with previous studies despite some differences in the methodologies employed. Based on these results, we encourage educational policymakers to pay more attention to teacher working conditions. In particular, the data seemed to indicate that a reduced workload can help teachers, particularly novice teachers, to use this extra time for more lesson planning and preparation, or participation in professional development programs. Preference should be given to professional development activities that promote their efficacy in dealing with problematic student behavior or boosting their intercultural self-efficacy. This seems particularly important since, across OECD countries, novice teachers report teaching about the same number of hours on average as more experienced teachers. In addition, many teachers report low self-efficacy in adapting their teaching to the cultural or ethnic diversity of students. Some attention should also be paid to veteran teachers who have professional development needs, for example, for integrating the latest technology into their classroom and upgrading their knowledge of new curricula. Lack of support may demotivate them from participating in professional development activities. Our results also highlight the necessity for educational policymakers to encourage distributed leadership and collaboration. For example, it appears essential to encourage teachers to be involved in school decision-making at various levels, to give them the right to formulate curriculum plans, and to select their teaching methods. Recent evidence has shown an indirect effect of distributed leadership on teacher job satisfaction through teacher autonomy and professional collaboration. This is important given that, on average across OECD countries participating in TALIS 2018, only 56% of principals report that teachers have a role in school management. Finally, policymakers should continue to pay attention to the quality of the relations that teachers establish with their students. Our results and previous research have found that positive teacher-student relationships are crucial for teacher job satisfaction.

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Mit der Arbeitszufriedenheit von Lehrpersonen verbundene Faktoren: Eine Untersuchung mit TALIS 2018-Daten

Zusammenfassung

Wir verwenden Daten aus der Teaching and Learning International Survey (TALIS) der OECD von 2018, um die Faktoren zu untersuchen, welche mit der Arbeitszufriedenheit von Lehrpersonen verbunden sind. Die Datenbank umfasst mehr als 250'000 Lehrpersonen an 15'000 Schulen in 48 Ländern. Es werden Korrelations- und Regressionsanalysen angewendet, die an das TALIS-Stichprobendesign angepasst sind. Wir stellen fest, dass verteilte Führung der wichtigste Prädiktor für die Arbeitszufriedenheit von Lehrpersonen ist, gefolgt von positiven Beziehungen zwischen Lehrpersonen und Schüler*innen. Auch das Lehrpersonengehalt und die Zusammenarbeit der Lehrpersonen stehen in einem positiven und signifikanten Zusammenhang mit der Arbeitszufriedenheit. Im Gegensatz dazu ist Arbeitsbelastung der wichtigste Faktor für die Unzufriedenheit der Lehrpersonen, gefolgt von Hindernissen für die berufliche Weiterentwicklung und dem disziplinarischen Klima.

Facteurs associés à la satisfaction professionnelle des enseignant·e·s : Une analyse des données de l'enquête TALIS 2018

Résumé

La présente étude cherche à cerner les facteurs associés à la satisfaction professionnelle des enseignant·e·s du secondaire en utilisant les données de l'enquête internationale sur l'enseignement et l'apprentissage (TALIS) 2018. La base de données initiale porte sur plus de 250'000 enseignant·e·s dans 15'000 écoles à travers 48 pays. Les résultats montrent que le leadership, la qualité des relations entre enseignant·e·s et élèves, le salaire et les pratiques pédagogiques collaboratives sont positivement et significativement associés à la satisfaction professionnelle. À l'inverse, le stress lié à la charge de travail, les barrières au développement professionnel et le climat scolaire sont négativement et significativement associés à la satisfaction professionnelle des enseignant·e·s.

Fattori associati alla soddisfazione lavorativa degli e delle insegnanti: Un'indagine basata sui dati TALIS 2018

Riassunto

L'intento del presente studio è quello di identificare i fattori associati alla soddisfazione lavorativa degli e delle insegnanti utilizzando i dati della Teaching and Learning International Survey (TALIS) dell'OCSE del 2018. Il database iniziale copre più di 250.000 insegnanti in 15.000 scuole in 48 paesi. Sono state applicate analisi di correlazione e regressione adattate al modello di campionamento TALIS. I risultati mostrano che il più importante predittore della soddisfazione lavorativa degli e delle insegnanti è la leadership distribuita, seguita dalle relazioni positive tra insegnanti e studenti. Anche lo stipendio degli e delle insegnanti e la collaborazione tra insegnanti sono associati positivamente e significativamente alla soddisfazione lavorativa. Al contrario, lo stress da carico di lavoro è il fattore più importante associato all'insoddisfazione degli e delle insegnanti, seguito dagli ostacoli allo sviluppo professionale e dal clima disciplinare.

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