



Distributed leadership and teacher job satisfaction over time: A large-scale trend analysis of TALIS 2013 and 2018

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ABSTRACT

This study investigates international trends in distributed leadership and teacher job satisfaction, using data from the 2013 and 2018 cycles of the OECD Teaching and Learning International Survey. Focusing on countries that participated in both waves, the study addresses two key aims: (1) to examine cross-national changes in mean levels of teacher job satisfaction, both with the profession and the workplace, between 2013 and 2018, and to assess the statistical significance of these changes; and (2) to explore whether the strength of the relationship between distributed leadership and the two dimensions of job satisfaction has changed over time, and whether these changes varied significantly across countries. The findings revealed a significant overall decline in both aspects of teacher satisfaction from 2013 to 2018, with varying results across countries. However, the decline was larger for teacher satisfaction with the profession. We also found that although the overall association between distributed leadership and job satisfaction with the work environment remained largely stable, the overall relationship between distributed leadership and job satisfaction with the profession showed a slight decline; this change was not statistically significant. We conclude that leadership remains a crucial driver of teacher job satisfaction.

1. Introduction

Referring to how teachers evaluate their contentment with their professional and work environment, teacher job satisfaction has garnered considerable attention in educational research (Eryilmaz et al., 2025; Niu et al., 2023; Toropova et al., 2021; Towers et al., 2022) due to its implications not only for teachers (Bellibas et al., 2024; Skaalvik & Skaalvik, 2017) but also for student learning (Banerjee et al., 2017) and the effective functioning of schools (Wartenberg et al., 2023). For example, a meta-analysis has demonstrated that teacher job satisfaction is linked to teachers' commitment, retention, and absenteeism, and also influences outcomes, including good quality teaching (Harrison et al., 2023), student achievement, and school improvement (Banerjee et al., 2017; Wartenberg et al., 2023). When teachers experience low levels of job satisfaction, they are more likely to disengage from their professional responsibilities (Skaalvik & Skaalvik, 2014), exhibit burnout and depression, and consider leaving the profession (Skaalvik & Skaalvik, 2020), which are important outcomes that can exacerbate the growing

concern of teacher shortages (Rahimi & Arnold, 2025). Consequently, understanding the change in and determinants of teacher job satisfaction has become an indispensable focus for policymakers, practitioners, and researchers (Eryilmaz et al., 2025; Niu et al., 2023; Toropova et al., 2021).

Research has shown that various factors can contribute to high job satisfaction among teachers, including work environment such as student discipline, school climate, teacher cooperation (Lopes & Oliveira, 2020) and teacher workload (Toropova et al., 2021), promotion opportunities, appropriate compensation, support from the school community (such as other teachers and principals), strong social connections (Sahito & Vaisanen, 2020), teacher-student relations, professional development, and team innovativeness (Niu et al., 2023). Among these, school leadership can play an important role (Liu & Watson, 2023), as multiple studies have demonstrated its influence also on teacher motivation, performance, and wellbeing (Bellibas et al., 2024; Karaferye & Bellibas, 2025; Li & Karanxha, 2024; Liu et al., 2021; Özdemir et al., 2024), which are either directly or indirectly related to job satisfaction.

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Specifically, the type of leadership that fosters teacher participation in decision-making processes, promotes shared responsibility, and encourages agency has been found to enhance teachers' sense of commitment (Bellibas et al., 2024), increasing their satisfaction with the profession and work environment (Hulpia et al., 2009). Referring to distributed leadership, a growing body of research has reported evidence that can be interpreted as a potential benefit of this leadership type for teacher job satisfaction, both in terms of their satisfaction with the teaching profession and with their workplace environment (Bellibas et al., 2024; Buyukgoze et al., 2024; García Torres, 2018; García Torres, 2019; Sun & Xia, 2018). However, while some studies suggest a direct association (e.g., García Torres, 2018; Sun & Xia, 2018), others provided evidence of an indirect relationship through multiple individual and organizational variables (Liu et al., 2021; García Torres, 2019). Yet, some research showed a negative association between teachers' involvement in school leadership and their job satisfaction (Liu & Watson, 2023). Finally, research also showed that such variation in the study findings might be explained by the societal and national contexts in which leadership practices occur (Liu et al., 2018; Printy & Liu, 2021).

Despite the insights that past research offers regarding how school leaders might promote teacher job satisfaction, several gaps in the literature remain. Teacher job satisfaction has received substantial attention from researchers due to concerns that it might be declining worldwide (Bellibaş et al., 2025; Eryilmaz et al., 2025; Niu et al., 2023; Toropova et al., 2021). However, there is a lack of research showing comparative evidence of this decline. Consequently we still lack a clear understanding of where teacher job satisfaction is declining and whether there are contextual exceptions. Addressing this issue would enable comparisons between contexts showing improvement and those experiencing decline, allowing policymakers to learn effective strategies from successful countries. Second, the vast majority of the available studies on distributed leadership and teacher job satisfaction rely on data collected at a single point in time, which limits the ability to track changes in these relationships over time (e.g., Bellibas et al., 2024; García Torres, 2018; García Torres, 2019; Sun & Xia, 2018). A third gap is that, although large-scale international datasets, such as the Teaching and Learning International Survey (TALIS) and Programme for International Student Assessment (PISA), provide unique opportunities for conducting trend analyses, these analyses remain underutilized in educational research using these surveys (Kaplan & Jude, 2022; Toropova et al., 2021), particularly in studies focused on educational leadership (e.g., Liu & Watson, 2023; Sun & Xia, 2018). Trend analysis is important because educational systems evolve in response to reforms and policy shifts; therefore, leadership practices and their effects on teachers' attitudes are not static (Pont, 2020). Without temporal data, it is impossible to determine whether observed associations represent enduring patterns. A trend analysis can guide policy and practice by identifying factors that are growing or declining in influence on job satisfaction, enabling them to take evidence-informed measures accordingly. Finally, a third gap is that research on distributed leadership and its relationship with job satisfaction has been conducted primarily within single-country contexts (García Torres, 2018; Liu et al., 2021), which hinders cross-cultural understanding of how teacher job satisfaction develops (Niu et al., 2023). Addressing this gap can help develop a better understanding of how leadership influence may have shifted across different systems over time, providing insight into cross-national variability.

To address these gaps, the current study draws on data from TALIS 2013 and 2018 to conduct a comparative trend analysis. The purpose of this research is twofold: (1) to examine whether teacher satisfaction with the profession and workplace has changed significantly between 2013 and 2018 across participating countries, and (2) to investigate whether the relationship between distributed leadership and these two dimensions of job satisfaction has shifted over time. The following research questions guided the study:

RQ1. How have teachers' satisfaction with the profession and the workplace changed between 2013 and 2018 across countries?

RQ2. How have the strength and direction of the relationship between distributed leadership and teacher job satisfaction shifted between 2013 and 2018 across countries?

2. Literature review

2.1. Distributed leadership

In education, school leadership significantly influences organizational climate, culture, teacher performance, and overall school success (Li & Karanxha, 2024; Liu et al., 2021; Özdemir et al., 2024). Different frameworks outline the concept of effective leadership within educational institutions. One prevailing effective leadership theory is that of distributed leadership (Harris et al., 2022; Harris et al., 2025; Mifsud, 2024). Distributed leadership is characterized by the distribution of leadership responsibilities across several employees who collaborate through leadership teams or groups to accomplish objectives (Berkovich & Hassan, 2023; Bellibaş et al., 2021; Sammut et al., 2021). The concept of distributed leadership emerged in the 1980s and 1990s to address the limitations of a single leader managing the complexities of organizations, including educational organizations (Mifsud, 2024). Researchers such as Spillane (2005) and Harris (2004) argue that a single leader cannot encompass all aspects of leadership and address all the tasks necessary for running an effective school. Distributed school leadership emphasizes collaborative efforts to lead within a professional community, aligning with school objectives and curricular aims (Harris, 2014; Hulsbos et al., 2025). This type of leadership has been associated with collaborative, team-oriented, and democratic procedures, which differentiate it from other leadership models (Harris & DeFlaminis, 2016).

The literature outlines several conceptualizations of distributed leadership. Spillane's offered a practice-centered paradigm of distributed school leadership that emphasizes a set of practices that emerge when leaders, followers, and situations interact (Tian & Virtanen, 2021). The interaction between these three is essential for several educators to collaboratively and effectively execute leadership tasks (Alfadala et al., 2021). Spillane also suggests that different leadership distributions can take, such as collaborative, collective, and coordinated (Halligan & Mulvaney, 2021). In the collaborative form, people lead together, sharing decisions and actions, in the collective form, leadership tasks are performed separately, and there is a joint effect, and in the coordinated form, leadership tasks follow a planned, interdependent sequence (Spillane, 2006). Robinson (2008) proposed an alternative paradigm, defining distributed leadership as the allocation of tasks related to pedagogical expertise and an influence mechanism to improve teaching and learning. Gronn (2002) viewed distributed leadership as a holistic phenomenon expressing what he called "conjoint agency" linked with spontaneous collaboration, intuitive working ties, and institutionalized routines. Harris (2014) emphasized the importance of co-leadership based on a network structure of multiple actors, complementing and at times challenging each other. According to her, this model includes both formal and informal aspects that support collective responsibility. Mayrowetz (2008) identifies three meta-conceptualizations of distributed leadership- as a method for improving democracy, for promoting organizational efficacy, and for capacity building efforts. The adoption of distributed leadership by principals facilitates staff involvement in leadership activities, including decision-making procedures aimed at achieving shared objectives (Berkovich & Hassan, 2023).

While most research on distributed leadership in education focused only on sharing power and decision-making with teachers, there is growing interest in how leadership is shared among administrators, teachers, parents, and students (Erol & Turhan, 2018; Heck & Hallinger, 2009; Nadeem, 2024; Or & Berkovich, 2023). Critical scholars argue that when considering micropolitics and conflict potential, the

conclusion is that all school community stakeholders need to be taken into account for distributed leadership to be effective (Flessa, 2009). Research has indicated that parents' and students' participation in school decision-making is stronger in community schools that have a collective ethos, but it can also be found in regular "individualist" schools (Or & Berkovich, 2023).

In line with the literature above, in the Organisation for Economic Co-operation and Development's (OECD) TALIS framework, distributed leadership is reflected not through leaders' practices, but rather through shared decision-making and stakeholder participation (Bellibaş et al., 2024; Büyükgoze et al., 2024; Veletić & Olsen, 2024). TALIS measures the extent to which schools foster mutual support among staff, promote a shared responsibility for school matters, and include teachers, parents, and students in decision-making processes. In this study, distributed leadership is therefore understood primarily as a decision-making in line with TALIS's operationalization. The TALIS conceptualization of distributed leadership is different from that of Spillane's (2006) practice-based model and Robinson's (2008) expertise-based approach, by shifting the focus from leadership enactment to leadership participation. TALIS is more reflective of Gronn, (2002) view of distributed leadership as a holistic "conjoint agency," specifically that centered on institutionalized routines, and Harris, (2014) emphasis on co-leadership combining both formal and informal elements linked with collective responsibility. Thus, while certain forms of shared decision-making in schools involving parents and students may have negative dynamics, TALIS emphasizes a more effective positive model of shared decision-making.

2.2. Teacher job satisfaction

Job satisfaction is characterized as a favorable psychological condition resulting from the assessment of one's employment or work-related circumstances (Dalal et al., 2023). The literature suggests that the term "job satisfaction" encompasses both affective and cognitive elements (Brief & Roberson, 1989), with the cognitive evaluative aspect linked to the gap between an individual's expectations or perceptions of a situation and the perceived social norm (Liu & Bellibaş, 2018). Teacher job satisfaction is an integral part of effective schooling; low teachers' job satisfaction has been related to lower work engagement, burnout, and even leaving the profession (Skaalvik & Skaalvik, 2014, 2020). These outcomes contribute to the increasingly urgent issue of teacher shortage (Rahimi & Arnold, 2025). As a result, examining shifts in teacher job satisfaction and identifying its key influencing factors has become a critical area of focus for researchers and policymakers (Eryilmaz et al., 2025; Niu et al., 2023; Toropova et al., 2021). The present study examines two dimensions of teacher satisfaction: (1) satisfaction with the working environment and (2) satisfaction with the profession (see Admiraal & Røberg, 2023; Nalipay, 2023). This is in line with the OECD's TALIS framework, which distinguishes between teachers' satisfaction with their current school and their satisfaction with the teaching profession more broadly (Sun & Xia, 2018; García Torres, 2019). Prior research indicates that work satisfaction and professional satisfaction are separate constructs (Admiraal, 2025).

2.3. Teacher job satisfaction with the workplace

The organizational focus on employee job satisfaction of work-related circumstances and its determinants is associated with its contribution to work performance (Katebi et al., 2022). In education, Wartenberg et al. (2023) conducted a meta-analysis and systematic review of the correlates of teachers' job satisfaction at work, which included 105 studies. The results of the meta-analyses confirmed the expected links between job satisfaction and factors like teachers' intentions to leave, absenteeism, interactions with students, and student outcomes, but not with teacher performance. Sahito and Vaisanen (2020) reviewed the literature on antecedents of teachers' job

satisfaction at work in developing countries. The review corpus, which included 70 studies, indicated that positive work conditions, opportunities for promotion, fair pay, support from principals, coworkers, and the community, teacher empowerment, and strong social connections were identified as key contributors to teacher job satisfaction with the school (Sahito & Vaisanen, 2020).

2.4. Teacher professional satisfaction

In addition to job satisfaction reflecting the teacher's content with immediate work settings, there is interest in teacher satisfaction associated with the profession (Courtney et al., 2023). Teacher professional satisfaction reflects teachers' general contentment with teaching as a long-term occupation (Sun & Xia, 2018; Torres, 2019), and it relates to teachers' evaluation of their overall sustainability of remaining in the field (Aderibigbe & Chimucheka, 2019; Ning et al., 2022; Wu et al., 2024). Professional satisfaction, or career satisfaction, is characterized as a psychological condition that indicates the extent to which an individual experiences contentment in their selected field of expertise. It encompasses the individual's perception of a lifetime of work, composed of thousands of working hours, and includes the diverse activities and experiences that constitute a career (Aderibigbe & Chimucheka, 2019; Wu et al., 2024). While an individual may change workplaces or organizations, they may be reluctant to fully transition to their selected field of competence, therefore forsaking years of training and experience (Aderibigbe & Chimucheka, 2019). Professional satisfaction is associated with employee career concerns, which encompass the self-evaluation of one's career alongside the organization's response to and fulfillment of one's evolving needs, opportunities, and aspirations for career advancement in relation to changing workplace conditions (Potgieter et al., 2018).

2.5. The relationship between distributed leadership and teacher job satisfaction with the profession and the workplace

The relationship between effective distributed leadership that includes various school community stakeholders (i.e., principal, teachers, parents, students) and teacher job satisfaction is linked with its positive effects. According to the literature, this style of distributed leadership "capitalizes on the expertise, insights, and contributions of teachers, students, parents, and community members" (Nadeem, 2024, p. 1). Such a type of distributed leadership in schools is linked with healthy communication and collaboration and promotes students' and school success (Erol & Turhan, 2018). While trust can predict collaboration (Strier & Katz, 2016), it can also be produced in the process of collaboration. For instance, a greater number of partnership activities for participation and decision-making was found to be associated with parents' higher trust in preschools (Hummel et al., 2023). Tschannen-Moran (2014) found that interconnectivity of trust in schools (i.e., the positive links of faculty trust in principals, coworkers, and clients, parent trust in the school, and student trust in teachers) and concluded that "trust is not a "nice to have" feature of school climate—it is an essential element of productive schools" (p. 73). Taken together, these works suggest that distributed leadership, which involves multiple stakeholders, tends to increase trust, academic success, and teachers' sense of efficacy, which are all predictors of job satisfaction (Edinger & Edinger, 2018). The associations between this type of distributed leadership and the two dimensions of teacher job satisfaction are also supported by empirical evidence.

A growing body of research using TALIS data has explored the relationship between distributed leadership and teacher job satisfaction in various national and international contexts. García Torres (2019) used hierarchical linear modeling on 2013 TALIS data from the USA and found moderate positive associations between distributed leadership and teacher satisfaction with the workplace, as well as weaker positive associations with satisfaction in the profession. He argued that

leadership, being a school-specific aspect, may have a stronger potential impact on work satisfaction. In a separate study focusing on Singapore, [García Torres \(2018\)](#) also found that distributed leadership significantly and positively predicted both work and professional satisfaction among teachers. Liu and colleagues used TALIS 2013 data from 32 countries to explore these relationships. [Liu and Werblow \(2019\)](#) employed multi-level models and meta-analysis, finding that shared decision-making, a manifestation of distributed leadership, was positively related to teachers' job satisfaction in the workplace. In a subsequent study, [Liu and Watson \(2023\)](#) employed a three-level structural equation model and found that teacher-perceived shared decision-making had a positive relationship with teacher job satisfaction in the profession. [Sun and Xia \(2018\)](#) employed multilevel SEM on the 2013 TALIS data from 34 countries and demonstrated that teacher-level distributed leadership more effectively explained job satisfaction in the work environment than school-level distributed leadership. The findings were also replicated with studies drawing on TALIS 2018 data. [Buyukgoze et al. \(2024\)](#), using data from 47 countries, reported a positive link between distributed leadership and teacher satisfaction with the work environment. Focusing on China, [Liu et al. \(2021\)](#) found a strong positive relationship between distributed leadership and teacher satisfaction with the work environment and a weaker positive relationship between distributed leadership and professional satisfaction. This body of evidence relied on cross-sectional analysis of TALIS data; thus, it denies causal deduction, and there is a need for a longitudinal analysis of the relationships.

2.6. Trend analysis

This study aims to promote knowledge on distributed leadership and teacher job satisfaction, both in the workplace and with the profession, using the framework of longitudinal international large-scale evaluations. The primary goal of international large-scale assessments (ILSAs) in education today, such as Progress in International Reading Literacy Study (PIRLS), PISA, and TIMSS, is to use cross-country data to evaluate education systems and examine the institutional factors influencing educational outcomes ([Benoliel & Berkovich, 2021](#)). Supporters of these assessments argue that researchers can use them to overcome the limitations of national studies and uncover the (in)effectiveness of national aspects, structures, and policies behind (un)successful educational systems ([Feniger & Lefstein, 2014](#); [Klieme, 2020](#)).

However, a significant methodological constraint of contemporary ILSAs in education is their cross-sectional nature, which does not allow for establishing causal inferences ([Chen & Li, 2025](#); [Klieme, 2020](#)). One methodological approach to address this limitation is the use of country-level trend analysis, which is considered a form of longitudinal analysis ([Klieme, 2022](#)). As demonstrated by [Rosén and Gustafsson \(2016\)](#), the trend design of IEA studies can be leveraged for quasi-longitudinal inference using a difference-in-differences approach with country fixed effects and cluster-robust standard errors, illustrating how repeated cross-sections can inform system-level change. The potential for trend analysis in education (i.e., comparisons between cycles) is linked to the periodic administration of ILSAs, such as PIRLS, PISA, and TIMSS, in waves years apart ([Kaplan & Jude, 2022](#)). Yet, this is not a simple matter, as the use of different items and evolving scaling methodologies across assessment cycles necessitates the development of a consistent metric for trend analysis ([Broer et al., 2019](#)). [Toropova et al. \(2021\)](#) argued that "trend analysis of teacher job satisfaction, which would include a longitudinal component at the country level, is warranted" (p. 93). Thus, a study that uses TALIS 2013 and 2018 data in the trend analysis of distributed leadership and teacher job satisfaction seems warranted.

In this study, we rely on the repeated cross-sectional design of ILSAs, which enables the use of **trend analysis across cycles** rather than longitudinal tracking of individuals. While ILSAs such as TALIS, PISA, and TIMSS are not panel studies, their cyclical implementation and

consistent measurement of key constructs allow for the investigation of change over time at the country level. Scholars have emphasized that these repeated cross-sections can be considered a form of longitudinal evidence at the system level, offering insights into how educational conditions evolve across cycles ([Klieme, 2020, 2022](#)). As [Kaplan and Jude \(2022\)](#) note, trend analysis in ILSAs constitutes a methodological framework in its own right, requiring careful attention to issues of measurement invariance and comparability across cycles. Thus, rather than suggesting a distinct "framework of longitudinal ILSAs," we adopt this trend analysis perspective, which leverages the cyclical and cross-national design of ILSAs to capture system-level change.

3. Methodology

3.1. Data

This study draws on data from the TALIS conducted by the OECD in 2013 and 2018. TALIS is a large-scale international survey that gathers comparable information on the learning environment and working conditions of teachers and principals across education systems. The survey targets lower secondary teachers and school principals and is designed to provide policy-relevant insights into the teaching profession ([OECD, 2014a, 2020a](#)).

For this study, we utilize teacher-level data from both TALIS 2013 and TALIS 2018 cycles to investigate temporal changes in key constructs such as distributed leadership, teacher satisfaction with the current work environment, and teacher satisfaction with the profession. The analysis is limited to the 31 countries that participated in both survey waves, enabling meaningful cross-national trend comparisons.

3.2. Variables

This study utilizes harmonized measures from the OECD's Teaching and Learning International Survey (TALIS) 2013 and 2018 cycles to assess teacher job satisfaction and stakeholder participation in school decision-making. Specifically, three core constructs are examined: job satisfaction with the work environment, job satisfaction with the profession, and stakeholder participation.

Job Satisfaction Scales: In TALIS 2013, teacher job satisfaction was measured using two subscales: *Satisfaction with the Current Work Environment* (TJSENV) and *Satisfaction with the Profession* (TJSPROS).

- The *TJSENV* subscale reflects teachers' satisfaction with their immediate school context, including their willingness to stay at the current school. Across countries, this scale demonstrated good to excellent internal consistency, with Cronbach's alpha values ranging from 0.65 (Malaysia) to 0.85 (England, UK) ([OECD, 2014b](#)).
- The *TJSPROS* subscale captures teachers' broader professional commitment and satisfaction with teaching as a career, with Cronbach's alpha coefficients ranging from 0.58 (Mexico) to 0.86 (England, UK) ([OECD, 2014b](#)).

In TALIS 2018, these constructs were assessed using updated subscales: *Job Satisfaction with the Work Environment* (T3JSENV) and *Job Satisfaction with the Profession* (T3JSPRO).

- The *T3JSENV* subscale comprises four items measuring satisfaction with working conditions: "I would like to change to another school if that were possible" (reverse-coded), "I enjoy working at this school," "I would recommend this school as a good place to work," and "All in all, I am satisfied with my job."
- The *T3JSPRO* subscale includes items capturing satisfaction with the profession more broadly: "The advantages of being a teacher clearly outweigh the disadvantages," "If I could decide again, I would still choose to work as a teacher," "I regret that I decided to become a

teacher” (reverse-coded), and “I wonder whether it would have been better to choose another profession” (reverse-coded).

All items in both subscales were rated on a four-point Likert scale ranging from 1 (“Strongly disagree”) to 4 (“Strongly agree”). The psychometric properties of these measures were evaluated using Omega coefficients and stratified Cronbach’s alpha. Results showed acceptable to high reliability across countries. For example, Omega coefficients for *T3JSENV* ranged from 0.743 (Georgia) to 0.891 (United States), while for *T3JSPRO*, values ranged from 0.599 (Lithuania) to 0.943 (Alberta, Canada) (OECD, 2020b).

Distributed Leadership (DISTLEAD): To assess distributed leadership, we used the ready-made stakeholder participation scales provided by TALIS, rather than constructing new scales through confirmatory factor analysis. In TALIS 2013, this scale is labeled TSCSTAKES, and in TALIS 2018, the updated version is labeled T3STAKE. Both scales consist of the same five items:

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”
5. “There is a collaborative school culture which is characterized by mutual support.”

All items were rated on a four-point Likert scale (1 = “Strongly disagree” to 4 = “Strongly agree”). Psychometric evaluations reported in the TALIS technical reports confirmed strong reliability, with Cronbach’s alpha coefficients for 2013 typically above 0.70 (OECD, 2014b) and Omega coefficients for 2018 ranging from 0.712 (Viet Nam) to 0.927 (Shanghai, China) (OECD, 2020b). The items are identical across both cycles and established practice in TALIS-based research (e.g., Liu et al., 2018, 2021; Özdemir et al., 2023; Bellibaş et al., 2024), we treat this stakeholder participation construct as a measure of distributed leadership, capturing the extent to which decision-making authority and responsibility are shared within schools.

Although reliability coefficients vary somewhat across countries, with some falling near 0.60, this level is generally regarded as acceptable in cross-national large-scale survey research (OECD, 2014b; OECD, 2020b). Following standard practice in TALIS-based studies, we used the ready-made OECD scales to maintain cross-country comparability and transparency.

3.3. Analytical strategy

The analytical strategy employed in this study comprises two sequential components aimed at understanding temporal trends and structural relationships between stakeholder participation and teacher job satisfaction across two TALIS cycles (2013 and 2018). Our approach mirrors the strategy adopted by Steinmann et al. (2023) in their cross-national analysis of gender gaps in reading, combining trend analysis with fixed-effects regression models to account for both descriptive shifts and explanatory mechanisms over time (Atasever et al., 2024).

First, we conducted descriptive and inferential analyses to examine changes in key outcome constructs: teacher job satisfaction with both the current work environment and the profession. To this end, we utilized teacher-level survey data and applied survey-weighted mean estimations by country and year to account for the complex sampling design of TALIS. Differences in means across cycles were tested using z-tests, and significance levels were computed to identify countries exhibiting statistically meaningful changes over time.

To assess whether the difference in teacher job satisfaction across

years was statistically significant, we used the following formula for the z-test:

$$z = (X_{(2018)}^- - X_{(2013)}^-) / \sqrt{SE_{(2013)}^2 + SE_{(2018)}^2}$$

where $X_{(year)}^-$ is the survey-weighted mean and $SE_{(year)}$ is the corresponding standard error.

Second, we estimated a series of regression models to assess the associations between distributed leadership and the two dimensions of teacher job satisfaction (Fig. 1). Because all variables of interest are measured at the teacher level, all analyses were conducted at the teacher level using survey weights, rather than aggregated country means. We estimated teacher-level path models in both TALIS 2013 and 2018, with distributed leadership as the predictor and the two job satisfaction dimensions as outcomes. These models were run separately for the 2013 and 2018 cycles to account for potential temporal differences in the strength and direction of relationships. In each model, stakeholder participation served as the independent variable, while job satisfaction with the current environment and with the profession were treated as outcome variables. In addition to pooled models across all countries, we estimated country fixed-effects models to control for unobserved heterogeneity and isolate within-country changes across time. Standard errors were clustered at the country level where appropriate (Table 1).

To estimate the effect of distributed leadership on teacher job satisfaction while accounting for unobserved country-level heterogeneity, we applied a fixed-effects model of the following form:

$$Y_{it} = \beta_0 + \beta_1 * \text{Distributed_Leadership}_{it} + \alpha_i + \varepsilon_{it}$$

where Y_{it} is the outcome (job satisfaction) for country i at time t , $\text{Distributed_Leadership}_{it}$ is the level of distributed leadership, α_i represents country-specific fixed effects, and ε_{it} is the error term.

This two-pronged approach enabled us to capture both the overall trends in teacher-reported experiences and the explanatory role of distributed leadership in shaping job satisfaction over time and across various contexts. Standard errors were clustered at the country level to account for dependence among teachers within the same system. We opted not to use multilevel modeling, as all key constructs are measured at the teacher level and our research questions focused on system-level changes across cycles rather than variation across schools.

To ensure that the constructs were measured equivalently in TALIS 2013 and 2018, we conducted longitudinal measurement invariance testing for each country separately. For distributed leadership (five items) and the two job-satisfaction scales (four items each), we estimated country-wise multi-group confirmatory factor models comparing 2013 and 2018. Items were treated as ordered categorical indicators, and models were estimated using WLSMV with the *std.lv* option to allow meaningful comparison of factor loadings across groups.

We evaluated three increasingly restrictive models—configural, metric, and scalar invariance—following established guidelines for ordered data. Model comparisons relied on the widely used $\Delta CFI \leq 0.01$

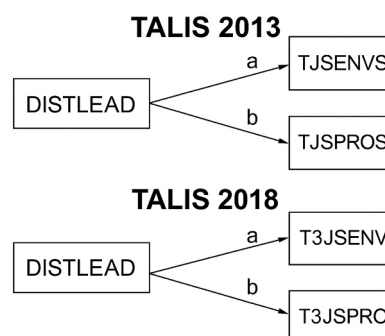


Fig. 1. Path models of the relationship between distributed leadership and teacher job satisfaction in TALIS 2013 and 2018.

Table 1

Country fixed effects estimates for the association between distributed leadership (DISTLEAD) and teacher job satisfaction outcomes (JSENV and JSPRO) in 2013 and 2018.

path	term	estimate	std.error	p.value	formatted
a: DISTLEAD → JSENV	Intercept (2013)	0.464258	0.014709	4.51353E-39	0.464 (0.015) ***
a: DISTLEAD → JSENV	Year 2018	0.008194	0.020801	0.695049984	0.008 (0.021)
b: DISTLEAD → JSPRO	Intercept (2013)	0.260452	0.011405	2.75908E-31	0.26 (0.011) ***
b: DISTLEAD → JSPRO	Year 2018	-0.03155	0.016128	0.055117175	-0.032 (0.016)

Note: This table presents fixed effects estimates from regression models examining the relationship between distributed leadership (DISTLEAD) and two dimensions of teacher job satisfaction: satisfaction with the school environment (JSENV) and satisfaction with the profession (JSPRO). The intercept represents the estimated standardized association in 2013, while the 2018 coefficient reflects the change in this association relative to 2013. Standard errors are shown in parentheses. Statistical significance is indicated as follows: $p < .05$ (*), $p < .01$ (**), $p < .001$ (***).

criterion (Cheung & Rensvold, 2002; Chen, 2007). Across all countries, both metric and scalar invariance were supported for all three scales, indicating that item–factor relations and item thresholds remained stable across cycles. These results, combined with the OECD’s own technical validation of these constructs, provide strong evidence that the measures are comparable over time and justify the use of cross-cycle trend analyses. Full model outputs are available upon request.

4. Results

Longitudinal MI held in all countries for distributed leadership and both job satisfaction scales (metric and scalar $\Delta CFI \leq .01$ throughout), supporting over-time comparability of the scores.

4.1. Difference in job satisfaction between 2013 and 2018

The country-level results for teacher job satisfaction with the school environment from 2013 to 2018 show predominantly declining trends. Notable and statistically significant decreases were observed in Denmark ($\Delta = -1.01$), Mexico ($\Delta = -1.20$), and Spain ($\Delta = -0.30$), indicating substantial declines in satisfaction. In contrast, significant improvements occurred in Shanghai ($\Delta = 1.42$), Korea ($\Delta = 1.19$), and Japan ($\Delta = 1.05$), indicating increased satisfaction with the school environment. Some countries, such as Croatia, Italy, Latvia, and the Russian Federation, showed non-significant or minimal change. Overall, while a few systems experienced improvements, the majority exhibited a statistically significant decline in perceived satisfaction with school environments over time.

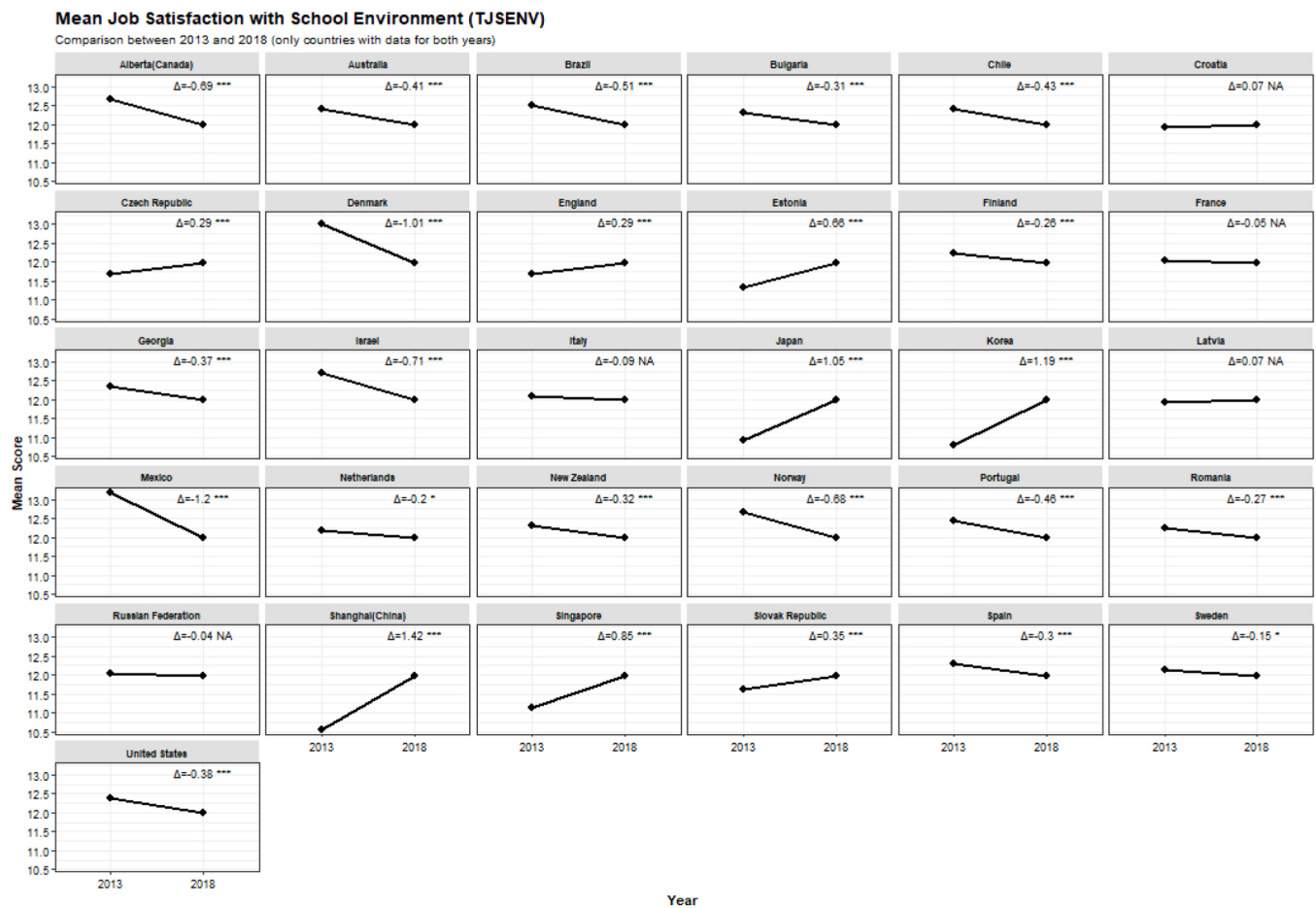


Fig. 2. Mean job satisfaction with school environment (TJSENV) in 2013 and 2018 by country. Note: Each panel shows the mean values of teacher job satisfaction with their school environment for 2013 and 2018, based on TALIS data. Only countries with available data for both years are included. Δ values indicate the mean difference between 2018 and 2013, with statistical significance denoted as follows: $p < .05$ (*), $p < .01$ (**), $p < .001$ (***), NA indicates non-significant.

The country-level results for teacher job satisfaction with the profession between 2013 and 2018 show a consistent and significant decline across most countries (see Fig. 3). Substantial decreases were observed in Spain ($\Delta = -1.12$), Finland ($\Delta = -1.04$), and Mexico ($\Delta = -2.00$), indicating a sharp decline in how positively teachers view their profession. Countries such as the United States, Israel, and New Zealand also experienced notable declines of around 0.8 points. Only a few countries, such as Latvia, Korea, and Shanghai (China), reported small but statistically significant increases, while others, like the Czech Republic and Singapore, showed negligible or non-significant changes. Overall, the results suggest a widespread erosion in teachers' satisfaction with their profession during this period.

The overall mean change in teacher job satisfaction with the school environment (TJSENV) from 2013 to 2018 was -0.083 , indicating a small but statistically significant decline (see Fig. 2). This difference was significant with a standard error of 0.012 , $z = -7.23$, $p < .001$. In addition, the overall mean change in teacher job satisfaction with the profession from 2013 to 2018 was -0.33 , indicating a significant decline across countries. This difference was statistically significant ($SE = 0.012$, $z = -28.41$, $p < .001$).

4.2. Difference in the relationship between DL and JS between 2013 and 2018

Fig. 4 illustrates changes over time in the strength of the relationship between distributed leadership and job satisfaction with the school environment (Path a: Distributed Leadership $\rightarrow$ JSENV) across countries. Most countries showed either stable or slightly increasing associations

between 2013 and 2018, suggesting that in many contexts, the perceived impact of distributed leadership on environmental job satisfaction remained consistent or grew modestly. Notable increases were observed in countries like Israel, Italy, and the Slovak Republic, while countries such as Shanghai (China), Bulgaria, and Latvia experienced a decline. Overall, the results reflect modest country-specific shifts, with no consistent global trend.

Fig. 5 presents the cross-country changes in the relationship between distributed leadership and job satisfaction with the teaching profession (Path b: Distributed Leadership $\rightarrow$ JSPRO) from 2013 to 2018. In contrast to Path a, a general decline in the strength of this relationship is observed across most countries, including Shanghai (China), Korea, and the Netherlands, indicating that distributed leadership became less predictive of professional satisfaction over time. Only a few countries, such as the United States and Denmark, showed slight increases. These results suggest a weakening of the perceived impact of participatory leadership on professional job satisfaction in many education systems during this period.

The fixed-effects results provide insights into how the relationship between distributed leadership and two dimensions of teacher job satisfaction evolved between 2013 and 2018. For Path a (Distributed Leadership $\rightarrow$ Job Satisfaction with the School Environment), the estimated standardized coefficient in 2013 was 0.464 ($SE = 0.015$), indicating a strong and statistically significant ($p < .001$) positive association between perceived distributed leadership and satisfaction with the school environment. This suggests that, in 2013, teachers who felt more distributed leadership in their work settings also reported higher satisfaction with their work environment. The 2018 coefficient,

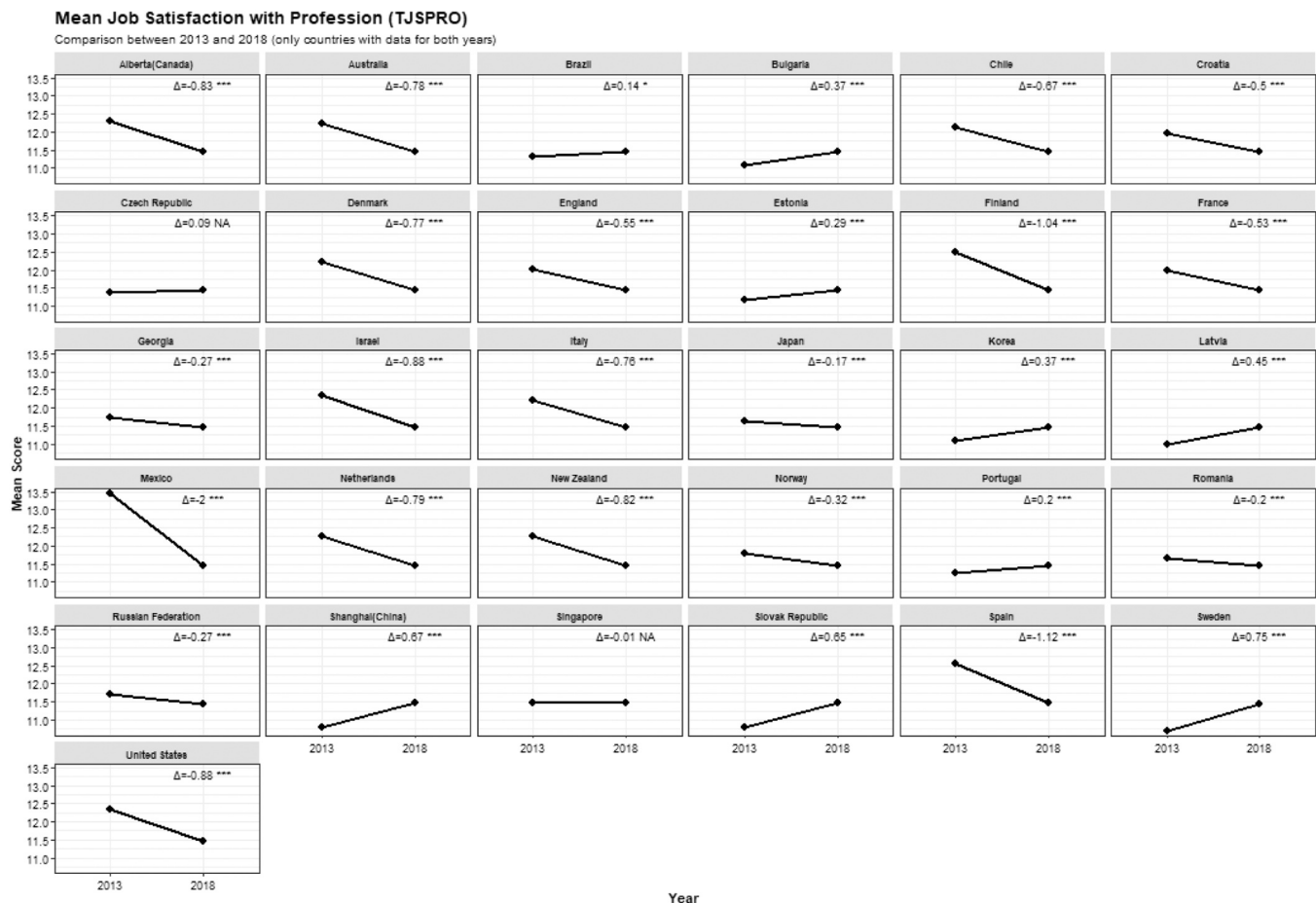


Fig. 3. Mean job satisfaction with profession (TJSPRO) in 2013 and 2018 by country. *Note:* Each panel shows the mean values of teacher job satisfaction with their profession for 2013 and 2018, based on TALIS data. Only countries with available data for both years are included. Δ values indicate the mean difference between 2018 and 2013, with statistical significance denoted as follows: $p < .05$ (*), $p < .01$ (**), $p < .001$ (***), NA indicates non-significant.

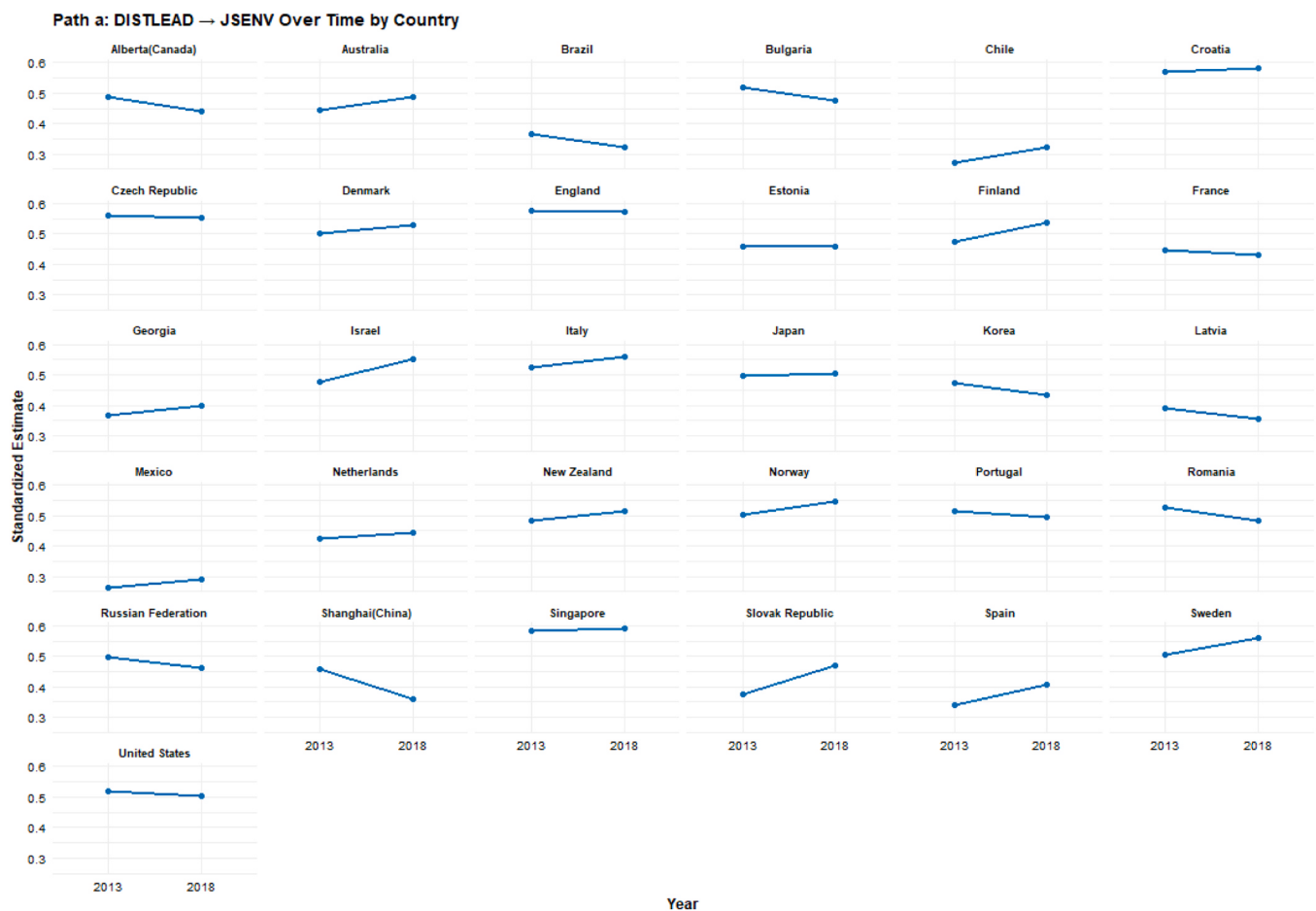


Fig. 4. Path a (DISTLEAD → JSENV) over time by country. *Note:* This figure presents standardized estimates for the path from perceived distributed leadership (DISTLEAD) to job satisfaction with the school environment (JSENV) across 2013 and 2018, disaggregated by country. Only countries with data available for both years are included. Each panel illustrates the change in path strength over time, based on structural equation modeling results.

representing the change from 2013, was 0.008 ($SE = 0.021$) and not statistically significant, implying that the strength of this relationship remained stable over time without any meaningful shift.

For Path b (Distributed Leadership → Job Satisfaction with the Profession), the 2013 coefficient was 0.260 ($SE = 0.011$), also statistically significant at the $p < 0.001$ level. This reflects a moderate positive relationship between distributed leadership and professional satisfaction among teachers in 2013. However, the coefficient for 2018 was -0.032 ($SE = 0.016$), which was marginally non-significant. This result suggests a potential weakening in the association between distributed leadership and satisfaction with the profession over time, although the change does not reach conventional levels of statistical significance.

5. Discussion

This study provides important cross-national evidence regarding trends in teacher job satisfaction with the work environment and the profession using TALIS 2013 and 2018 data from 31 countries. Overall, the findings indicate a decline in both dimensions of job satisfaction across participating countries. However, the decline in satisfaction with the profession is more substantial and statistically significant in more countries than the decline in satisfaction with the work environment. This is consistent with the growing global concerns about the status, workload, and public perception of the teaching profession, which have intensified over the past decade (Mo & Morris, 2024; Räsänen et al., 2020). The decline in job satisfaction related to the work environment may be addressed by appropriate policy initiatives that aim to support leadership, school culture, and collaboration, etc., as suggested by

previous studies (e.g., García Torres, 2018; García Torres, 2019; Liu et al., 2021; Liu & Watson, 2023; Sun & Xia, 2018). However, the more substantial decline in satisfaction with the profession itself may reflect a deeper issue, such as, teachers' growing intentions to leave the profession altogether (Aderibigbe & Chimucheka, 2019). Supporting this concern, previous research has documented a global trend of increasing teacher attrition or the intention to leave the profession (Räsänen et al., 2020; Skaalvik & Skaalvik, 2020). Those who remain despite experiencing low professional satisfaction may have a deleterious impact on the overall education system, undermining the quality of teaching (Harrison et al., 2023), school effectiveness, and student learning outcomes (Banerjee et al., 2017; Wartenberg et al., 2023). Furthermore, it is important to note that our dataset does not account for the negative effects of the COVID-19 pandemic, which are likely to have lowered job satisfaction among teachers and accelerated attrition rates. Taken together, the findings suggest that teachers are experiencing increasing pressure due to declining job satisfaction, a trend that appears likely to intensify.

While our findings reveal an overall decline in teacher job satisfaction across most countries, they also highlight important cross-national variations. For example, significant decreases in job satisfaction with the work environment were observed in Denmark, Mexico, and Spain. In contrast, improvements were found in East Asian regions, including Shanghai (China), Korea, and Japan. Similarly, although job satisfaction with the teaching profession declined in most countries, a few exceptions—Latvia, Korea, and Shanghai—showed small but statistically significant increases. Cultural and systemic differences may partly explain these patterns. In East Asian contexts, such as Japan, Korea, and

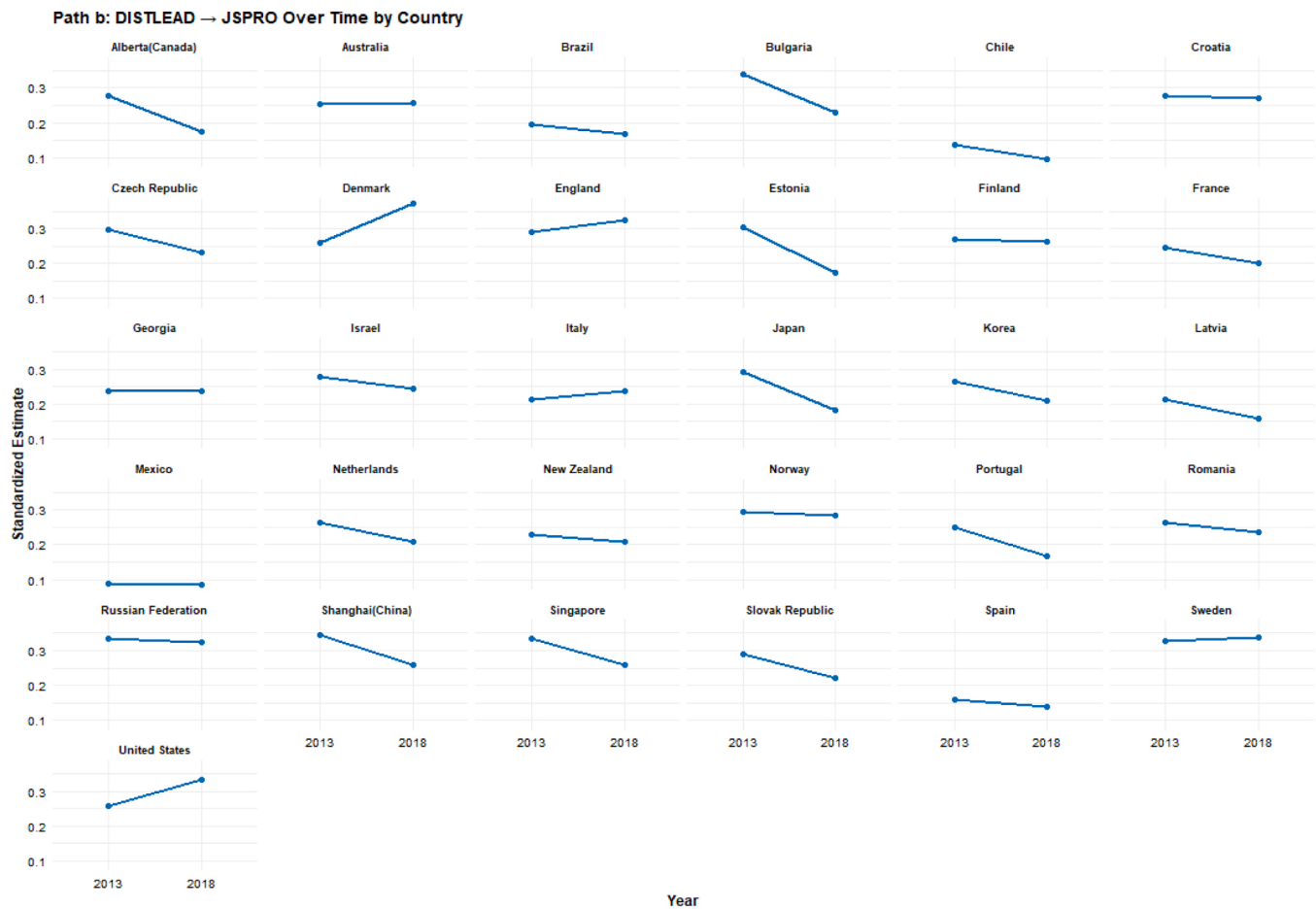


Fig. 5. Path b (DISTLEAD → JSPRO) over time by country. *Note:* This figure displays standardized estimates for the path from perceived distributed leadership (DISTLEAD) to job satisfaction with the profession (JSPRO) across 2013 and 2018, separately by country. Only countries with available data for both years are shown. Each panel illustrates how the strength of the relationship evolved over time, based on structural equation modeling results.

China, teaching is traditionally regarded as a prestigious and highly respected profession. Recruitment into teaching is highly competitive, and teachers tend to enjoy elevated social status and strong institutional support (Niu et al., 2023).

The findings reveal that trends in teacher job satisfaction with the work environment are mixed across countries: some show improvement, while others report declines. In contrast, satisfaction with the teaching profession shows a more consistent downward trend across nations with few exceptions. This divergence may be explained by the different features of the two concepts: satisfaction with the work environment is often shaped by school-level factors such as leadership, collegial support, and workload, which vary by national context and policy implementation (Liu et al., 2021). In contrast, satisfaction with the profession reflects broader societal and systemic perceptions of teaching, including public esteem, career advancement opportunities, and policy stability, which have generally declined worldwide (Niu et al., 2023). Moreover, reform fatigue, increased accountability pressures, and stagnating teacher salaries may have further diminished a sense of professional esteem and identity (Kraft & Lyon, 2024; Towers et al., 2022).

In contrast to the decline in job satisfaction levels, our research showed that the strength of the association between distributed leadership and teacher job satisfaction remained largely stable between 2013 and 2018. The path coefficients from distributed leadership to both job satisfaction dimensions showed minimal overall change across the study period. Although there is a slight downward trend in the strength of this association in many countries, the overall decline is not statistically significant, confirming previous studies indicating that leadership plays a crucial role in supporting teacher satisfaction (Bellibas et al.,

2024; Buyukgoze et al., 2024; Liu & Watson, 2023; Sun & Xia, 2018; Torres, 2018, 2019). Yet, variation still exists across countries. For example, only a few countries, such as the United States and Denmark, showed slight increases. This could be due to their less hierarchical education system that supports the distribution of leadership roles among teachers (Liu, 2020). With this being said, our study provides evidence that leadership remains important over time, even in periods of broader dissatisfaction. This means that while various external factors (e.g., accountability pressures, increased workload) may reduce general satisfaction with teaching, the relational and participatory nature of distributed leadership provides a stable foundation for fostering teachers' satisfaction and hence commitment (Liu et al., 2021). The result highlights the importance of policy initiatives that promote and strengthen distributed leadership structures within schools, as they continue to buffer against systemic or contextual challenges that undermine teachers' overall satisfaction with the profession and work environment.

6. Limitations and future research directions

Several limitations of this study should be acknowledged, offering important avenues for future research. First, although this study utilizes identical items from two waves of TALIS to assess changes over time, it remains based on cross-sectional data collected at two distinct time points. Hence, while the findings imply potential shifts in teacher job satisfaction and its relationship with distributed leadership, they do not establish causal relationships. Longitudinal or panel data designs would be needed to determine causality and to track the developmental

trajectories of leadership practices and teacher outcomes more precisely.

Second, the present study analyzes data from only two cycles: the 2013 and 2018 TALIS cycles. The 2024 TALIS data were not yet available at the time of writing. We recommend that future research replicate and extend this study using the 2024 dataset, which may offer valuable insights into how the COVID-19 pandemic and its aftermath have influenced changes in teacher job satisfaction and leadership dynamics across countries.

Third, while this study is among the first to conduct a trend analysis using TALIS data, the dataset offers many additional opportunities for such work. TALIS contains a rich array of variables related to teacher behaviors, professional development, school climate, and principal roles. Future trend analyses leveraging this rich set of information could uncover important patterns and transformations in teaching and leadership practices globally, contributing to a more nuanced understanding of educational change.

Finally, another limitation lies in the observed variation across countries in both the direction and magnitude of changes in teacher job satisfaction and its association with distributed leadership. While our findings highlight these cross-national differences, the study does not offer detailed explanations for why such variations occur. For instance, it remains unclear why teacher job satisfaction has increased over time in some countries while declining in others. Future research should investigate these discrepancies by examining national-level factors, such as policy reforms or cultural attitudes toward the teaching profession, that may help explain the divergent trends.

7. Conclusion and implications for policy and practice

This study analyzed data from the 2013 and 2018 cycles of TALIS across 31 countries to examine changes in teacher job satisfaction and its relationship with distributed leadership. In doing so, it contributes to addressing key gaps in the literature by offering one of the first cross-national trend analyses on the evolving dynamics of leadership and job satisfaction. This enhances our understanding of how teachers' job satisfaction levels and their relationship with school leadership have changed over time and across contexts. Our research indicated that, despite cross-national variation, there was an overall decline in teachers' satisfaction with both their work environment and the teaching profession. A larger decline was observed in satisfaction with the profession compared to satisfaction with the work environment. However, the strength of the association between distributed leadership and teacher job satisfaction remained relatively stable over time. We conclude that leadership practices involving the distribution of authority, promotion of shared responsibility, and encouragement of teacher participation in decision-making continue to play a vital role in supporting teacher job satisfaction, even in contexts where overall satisfaction levels are declining.

The sustained relevance of distributed leadership in promoting teacher job satisfaction, despite an overall decline in satisfaction levels, presents clear implications for policy. Given that satisfaction with the teaching profession has declined more significantly than satisfaction with the work environment, we believe that policy initiatives prioritizing the enhancement of the profession's attractiveness are important. Since teacher job satisfaction is closely tied to burnout, turnover, and teachers' intentions to leave the profession, investing in policies that improve professional status, working conditions, and career development opportunities could help retain current teachers and attract new ones. Based on our findings, we suggest that educational policymakers examine the work conditions and teaching profession in East Asian countries to learn from their success in keeping the profession attractive and teachers satisfied. Strengthening job satisfaction through strategic policy-level reforms specific to the national context can effectively reduce teacher attrition and build a more satisfied, motivated, and stable teaching workforce.

The decline in satisfaction with the work environment highlights the need for school-level interventions. Here, school leaders can play a key role. They can, for example, focus on creating supportive and collegial climates where teachers feel valued, respected, and engaged, as highlighted in previous research. Distributed leadership, by fostering teacher participation in decision-making, promoting shared responsibility, and encouraging collaboration, is a particularly effective approach to improving the work environment. Strengthening teacher agency and promoting shared leadership are practical strategies for formal leaders that can directly contribute to increasing teachers' satisfaction with their daily work environment.

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Izhak Berkovich: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Resources, Investigation, Conceptualization. **Eryilmaz Nurullah:** Writing – review & editing, Writing – original draft, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Mehmet Şükrü Bellibaş:** Writing – review & editing, Writing – original draft, Validation, Supervision, Methodology, Formal analysis, Conceptualization.

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