Article

Exploring the Predictors of Teacher Well-Being: An Analysis of Teacher Training Preparedness, Autonomy, and Workload

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Abstract: Utilizing the job demand-resource theoretical framework, this study expands on previous research by examining the role of teacher workloads in the relationship between teachers' resources and teacher well-being. The study used data from Taiwanese lower secondary school teachers in the TALIS 2018 survey and conducted a structural equation modeling analysis. The results showed that teacher training preparedness had a direct positive effect on well-being and an indirect effect that was mediated by teaching and student behavior workloads. On the other hand, teachers' perceived autonomy did not have a direct impact on well-being but was indirectly related to well-being through the teaching workload. Additionally, the study found that teaching and student behavior workloads were negatively associated with well-being. By incorporating workload as a mediator, this study offers new insights into the complex relationship between job demands, resources, and well-being in the teaching profession.

Keywords: student behavior workload; teacher autonomy; teacher training preparedness; teaching and learning international survey (TALIS); teaching workload; well-being; teacher workload

1. Introduction

Education aims to develop students into well-rounded individuals by promoting their cognitive, social, and emotional growth. This whole-person approach is also applicable to teachers who should be seen as skilled professionals with values and expertise, not simply technicians delivering a curriculum [1,2]. However, the increased accountability in today's educational environment has placed enormous pressure on teachers [3]. Teacher attrition has become a problem, as [4] pointed out that one-third of teachers leave the profession within their first five years. On average, across the OECD, 14% of teachers under age 50 wish to leave teaching within the next five years, before reaching retirement age [5]. Given these challenges, it is vital to address the well-being of teachers and acknowledge their emotional and professional needs for a healthier educational environment.

The job demands-resources (JD-R) theory has emerged as a valuable framework for understanding teachers' occupational experiences. This theory provides a comprehensive approach to interpreting and explaining the factors that impact teacher well-being in the workplace, addressing the fragmented or unclear theoretical frameworks in teacher well-being research [6–9]. The JD-R model consists of two key elements: job demands and job resources. Job demands refers to the physical or mental effort required by the profession, while job resources includes personal, social, and organizational factors that enable teachers to cope with demands and mitigate negative effects. Recent conceptualizations of the JD-R theory also recognize the significance of personal resources in influencing employees' workplace experiences [10,11].

Previous studies have investigated job demands such as workload, discipline problems, time pressure, and low student motivation. Job resources, on the other hand, in-

clude autonomy support, professional development opportunities, and colleague relationships [12–14], while personal resources encompass traits such as adaptability, coping strategies, and self-efficacy [11,14]. Job demands and job/personal resources are associated with two independent psychological processes: the health impairment process, in which job demands predict burnout, and the motivational process, in which job/personal resources enhance work engagement and well-being [7]. By applying the JD-R theory, researchers can gain a deeper understanding of the relationships between job demands and resources, and teacher well-being.

This study utilized the JD-R theoretical framework to investigate the well-being of teachers in the current educational landscape, which is characterized by heightened accountability. Job/personal resources were operationalized as teacher training preparedness and autonomy, based on self-determination theory, which emphasizes their importance in enhancing intrinsic motivation and job performance [15]. Although teacher training preparedness is a critical factor in teacher retention [16], it has received less attention than self-efficacy in the JD-R framework [13,14,17]. Moreover, teacher workloads were identified as the main construct of job demands in this study. A manageable workload is essential for maintaining teacher well-being, yet studies show that teachers often report dissatisfaction with their workload [18,19]. Among the aspects of workload, increased demands for assessment, marking, and data entry to meet accountability requirements are perceived as the most negative by teachers [19,20]. In Taiwan, a series of education policies such as the Nine-year Integrated Curriculum reform, teacher evaluations for professional development, professional learning communities, and the recent curriculum reform of the 12-year basic education format have significantly impacted teachers' daily work, adding pressure to an already demanding job. The emphasis on academic achievement in Confucian society, particularly in preparing students for achieving high grades and admission to prestigious schools [21], exacerbates teachers' workload. Therefore, our study assessed teacher workloads from the sources of teaching and student behavior, including managing student discipline and advancing student achievement.

In summary, this study intended to contribute to the existing literature in two ways. Firstly, unlike the JD-R theoretical framework [7–9], which primarily considers resources and demands solely as predictors of well-being, we examined how teachers' resources influenced their perception of job demands and how this affected their well-being. Given that job resources can mitigate the negative impact of job demands on teacher outcomes [7], we sought an alternative method of exploration. Secondly, we distinguished ourselves from previous research (e.g., [22,23]) by assessing individual variables of resources and demands instead of single latent variables. Specifically, this study sought to explore the impact of teacher workloads (i.e., teaching and student behavior workloads) on teacher well-being, as well as how these variables mediated the relationships between teacher resources (i.e., teacher training preparedness and perceived autonomy) and well-being. To achieve these objectives, we analyzed data from lower secondary school teachers in Taiwan of the TALIS 2018 survey.

2. Conceptual Background

2.1. The Job Demands-Resources Theory and Teacher Well-being

Drawing on positive psychology, the Job Demands-Resources (JD-R) theory seeks to explain employees' workplace experiences [24]. This theory categorizes working conditions in all occupations into job demands or resources [8]. In recent years, the JD-R theory has been widely applied to investigate teachers' well-being, burnout, engagement, and job satisfaction [8,9]. Within the literature on teacher research, job demands refers to the mental and physical effort required of teachers, such as time pressure, discipline problems, low student motivation, and role ambiguity [23,25–28]. Job resources initially referred to those from the job and was later extended to include personal resources. Previous studies have explored job resources such as teacher autonomy, social support, feedback, professional development, and supervisory coaching [23,29], as well as personal resources such as self-

efficacy, organizational-based self-esteem, and optimism [14]. The JD-R model provides a framework for understanding how teachers' resources and job demands impact their well-being.

The well-being of teachers is a shared goal for the education profession worldwide, as highlighted by the OECD Future of Education and Skills 2030 project [30]. The World Health Organization (WHO) has also recognized the importance of well-being since 1946, referring to positive experiences and feelings in life derived from physical, mental, and social aspects. The definition of well-being has evolved from treating it as life satisfaction (subjective well-being) [31] to viewing it as individuals' ability to think, feel, and function in pursuit of a meaningful and purposeful life [32]. Teachers' well-being can be assessed using subjective measures [33]. A key factor impacting teachers' well-being is their ability to perform effectively in the school environment, feel satisfied with their job performance, and maintain good mental health [34]. Various instruments are available to measure teachers' well-being, including questionnaires, index calculators, and qualitative methods such as interviews and focus groups [35–40]. The 2018 Teaching and Learning International Survey (TALIS) included questions on teachers' well-being, covering dimensions such as subjective well-being and physical and mental well-being.

The significance of teacher well-being cannot be overstated, as studies have shown that it has a direct relationship with teaching quality [29] and impacts students' learning [41–43]. Hence, it is imperative to investigate the factors that contribute to teacher well-being. While job demands have been shown to affect teacher well-being, studies have also demonstrated that positive aspects of the job, known as job resources, play a crucial role. For instance, positive relationships with colleagues and the school administration, as well as the feeling of doing meaningful work, have been found to be positively associated with teachers' engagement and well-being while also reducing teacher stress [23,28,36]. This study aimed to expand the existing literature by examining the role of teacher training preparedness and autonomy as personal and job resources, respectively, in relation to teacher well-being.

2.2. Teacher Preparedness and Autonomy

The teaching profession requires a wide range of knowledge and skills, and gaining mastery takes time. According to Admiraal [44], teacher education programs typically cover 10 learning domains, including pedagogy, classroom management, and subject of specialty. In Taiwan, teacher preparation involves a combination of educational professional courses, academic subject courses, and a six-month internship. The Ministry of Education has also established 10 Teacher Professional Guidelines to outline the core competencies for teachers in the new era. With the implementation of the Master Framework for the 12-year Basic Education Curriculum Guidelines, starting in 2019, teachers are expected to possess interdisciplinary lesson planning skills and the ability to collaborate with teachers from different specialties. This curriculum reform requires both preservice teachers and practicing teachers to receive the necessary training and knowledge to meet these new expectations [45].

Teaching preparedness refers to a teacher's subjective level of readiness toward a new topic or lesson. Manasia, Ianos, and Chicioreanu [46] developed a model to identify the factors that influence teaching readiness and to improve teacher preparation before entering the profession. The study found that three crucial components contribute to promoting teaching readiness: professional knowledge and practice, professional engagement, and self-management. A study by Giallo and Little [47] assessed the relationships among self-efficacy, behavior management, discipline, and classroom experience by including the preparedness variable. The results showed that there was a significant relationship between teachers' preparedness and their ability to manage student behavior. Thus, it can be inferred that teachers who are more prepared experience less stress when it comes to managing student behavior and teaching workload. In this study, we focused on assessing teacher training preparedness as one of the teachers' resources in the JD-R framework, since

teacher readiness in preservice education has been shown to significantly impact teacher retention [16].

In the JD-R model, teacher training preparedness is considered a personal resource, while teacher autonomy is a job resource. When teachers feel they have control and freedom in their teaching and classroom management, they report higher job satisfaction, increased commitment, and reduced stress and burnout, especially when job resources are limited [48,49]. Teacher autonomy is a source of self-empowerment that helps teachers cope with exhaustion and develop leadership among colleagues [50]. It can also bring about positive systemic change at the school level, impacting colleagues, the working environment, and the school climate [51]. The literature on teacher autonomy and psychological functioning supports our hypotheses that autonomy contributes to decreased stress regarding workloads and elevated well-being.

Teacher autonomy is a multidimensional concept that can be examined by considering who makes decisions regarding teachers' work across different domains in the school setting. These domains include the educational (lesson planning, instruction, and assessment), social (discipline policies, tracking of students, and treatment of students with special needs), developmental (professional development of school staff), and administrative (timetabling and resource use) domains [52]. Additionally, the Teacher Work-Autonomy (TWA) scale developed by Friedman [53] measures teacher autonomy across four dimensions: class teaching, school mode of operation, staff development, and curriculum development. Decisions related to the educational domain, such as course content, teaching methods, assessment, and student discipline, are central concerns in this study.

2.3. Teacher Workload and Its Sources

Teacher workloads are job demands in the J-D R theoretical framework. Studies have shown that a heavy workload can lead to burnout among teachers [54]. According to the TALIS survey, sources of teacher workload stress include teaching responsibilities, student behavior in classrooms, administrative work, and management duties [55]. While routine tasks such as lesson planning, grading, and instruction take up most of a teacher's time, teachers are also expected to handle additional duties such as counseling and parent–teacher conferences. Dealing with disruptive or confrontational students can also be a significant source of teacher workload stress [56].

Various factors contribute to teacher workloads, such as the number of courses taught, evaluation methods, teaching strategies, support from teaching assistants, coordination of industrial training, final year projects, individual private lessons, and course coordinator workload [57]. Coordinating large classes can also be challenging and time-consuming for the coordinator [57]. Frequently preparing for new courses also increases the workload for teachers [58]. While stress from various sources has been cited as a cause of concern for teachers, stress related to student behavior and discipline consistently appears in the literature [25,26,59,60]. Moreover, the growing pressure to comply with external accountability systems leads to increased workloads, especially the demands of assessment and marking [3,61]. The pursuit of advancing student achievement is not only a global trend in education but also has a cultural connotation. In Confucius-heritage societies, intense academic competition places a heavy responsibility on teachers to prepare students with good performance for higher-level entrance examinations. The relevant literature denotes various sources of workload stress, including teaching (such as lesson preparation, teaching lessons, and marking) and student behavior (such as accountability for student achievement and discipline), which are the scope of job demands this study was intended to explore.

Measuring workload can be accomplished using different methods, including calculating the number of working hours [61,62] and utilizing teachers' self-reported perceptions of workload demand [63,64]. It has been well documented that excessive workload, defined as working more than 50 h per week, can negatively impact teacher well-being and work–life balance, and is associated with stress and burnout [65]. Additionally, research

has demonstrated that high workloads can negatively affect teaching quality, student learning experience [61], and teacher well-being [13,61]. Furthermore, high workloads are a significant factor in the likelihood of teachers quitting their jobs [66]. Student behavior-related workload has also been linked to decreased professional commitment and increased emotional exhaustion among teachers [27,59]. Previous research has laid the foundation for us to postulate that teachers' perceptions of workload stress are linked to their well-being.

Moreover, Bakker et al. proposed that job resources can act as a buffer against the negative impacts of job demands on work engagement [7,12]. Another avenue of exploration is to investigate whether resources that reduce workloads can lead to improvements in teacher outcomes, such as well-being. Thus, we attempted to expand upon the JD-R theoretical framework by examining the role of job demands (specifically teacher workloads) as a mediator. Our study was designed to investigate the relationships among teacher resources (i.e., teacher training preparedness and teacher autonomy), teacher workloads (i.e., teaching and student behavior workloads), and teacher well-being. Figure 1 outlines our hypothesized model, and our hypotheses are as follows:

1. Teachers' resources (teacher training preparedness and teacher autonomy) are directly associated with teacher workloads (teaching and student behavior workloads).
2. Teacher workloads (teaching and student behavior workloads) directly connect with teacher well-being.
3. Teachers' resources (teacher training preparedness and teacher autonomy) have direct and indirect linkage with teacher well-being, with the indirect connection being mediated by teacher workloads (teaching and student behavior workloads).
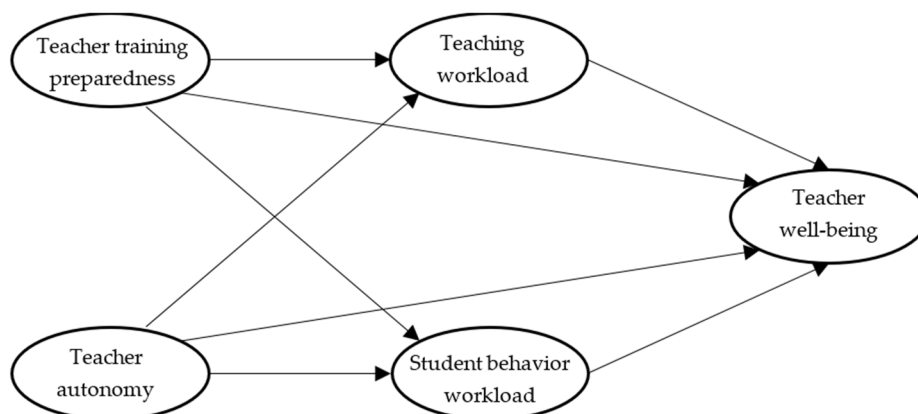
Figure 1. The hypothesized model of teacher resources, teacher workloads, and teacher well-being.

3. Methodology

3.1. Participants and Procedures

In this study, we utilized a quantitative research methodology to analyze data from the 2018 Teaching and Learning International Survey (TALIS 2018), which is publicly available [55]. The TALIS 2018 research team employed a stratified random selection method, selecting a minimum of 200 schools and 20 teachers per school in each participating country or economy. The response rates for both schools and teachers were set at over 75%, resulting in a total response rate of 56.25% when considering the potential population size indicated by the sample size of each country [67]. The survey included 48 countries and economies, and our study focused specifically on data from lower secondary school teachers in Taiwan. Our analysis was based on 3835 valid responses, with a sample comprising 2606 male teachers (68%) and 1229 female teachers (32%). On average, teachers in our sample had 15.23 years of teaching experience (SD = 7.61), had 11.32 years of teaching experience at their current school (SD = 7.32), and had attained a bachelor's degree (35.2%), master's degree (63.8%), or doctorate (0.8%).

3.2. Instruments

In this study, the instruments used were from TALIS 2018. To ensure the quality of the scales, we conducted reliability tests and confirmatory factor analyses. The results, including values for composite reliability (CR) and average variance extracted (AVE) from the confirmatory factor analysis, are reported in the findings section.

The dependent variable for this study was teacher well-being, which consisted of three items (TT3G51A, C, and D) that measured teachers' work-related emotions. Participants were asked to rate their experiences on a four-point Likert scale (1 = Not at all, 2 = To some extent, 3 = Quite a bit, and 4 = A lot) in response to questions such as "In your experience as a teacher at this school, to what extent do the following occur?" One sample item was "My job negatively impacts my mental health." The Cronbach's α of the scale was 0.85.

The factors that influence teacher well-being were determined to be teacher training preparedness, teacher autonomy, and teacher workloads.

- Teacher training preparedness: Seven items (TT3G06A2, B2, C2, D2, E2, I2, and J2) from the Teacher Questionnaire in TALIS 2018 were used to measure teacher training preparedness for preservice education. The items assessed participants' perceptions of their preparedness for their preservice education regarding content and pedagogical knowledge, subject teaching, teaching mixed-ability classes, managing the classroom, and monitoring student learning using a four-point Likert scale (1 = Not at all, 2 = Some-what, 3 = Well, and 4 = Very well). An example item is "Content of some or all subject(s) I teach." The Cronbach's α for this scale was 0.92.
- Teacher autonomy: Five items (TT3G40A, B, C, D, and E) were used to assess teachers' perceived autonomy over course content, teaching methods, student assessment, and discipline. Participants responded to statements using a four-point Likert scale (1 = Strongly disagree, 2 = Disagree, 3 = Agree, 4 = Strongly agree). An example item is "Determining the amount of homework to be assigned." The Cronbach's α for this scale was 0.93.
- Teacher workloads: This study assessed the stress of workloads associated with teaching and student behavior. The teacher workloads scale included three items to measure teaching workload (TT3G52A, B, and C) and two items for student behavior workload (TT3G52F and G). All items used a four-point Likert scale (1 = Not at all, 2 = To some extent, 3 = Quite a bit, and 4 = A lot). An example item for teaching workload is "Having too many lessons to teach," and for student behavior workload, "Being held responsible for students' achievement." The Cronbach's α for the teacher workloads scale was 0.77.

3.3. Analysis Strategies

To assess the mediated effects of teacher workloads on the relationships between teacher resources and well-being, this study employed the structural equation modeling (SEM) technique [68]. We first performed confirmatory factor analysis (CFA) to analyze the reliability and validity of the measurement model. Next, we checked the path effects and their significance in the structural model. Maximum likelihood estimation (MLE) was used to assess the measurement model in terms of factor loadings, measurement reliability, convergent validity, and discriminant validity.

4. Findings

4.1. Preliminary Analysis

Table 1 displays the descriptive statistics for the variables. On a four-point scale, the mean scores for teacher training preparedness, teacher autonomy, teaching workload, student behavior workload, and teacher well-being were 2.87, 3.37, 1.98, 2.33, and 2.81. The findings reveal that the teacher autonomy perception was the highest, whereas the teaching workload perception was the lowest. All of the relationships among the variables were significant. Additionally, the workloads of teaching and student behavior were found to

have a negative correlation with teacher training preparedness, autonomy, and well-being (Table 1).

Table 1. The means and correlation matrix.

	M	SD	1	2	3	4
1. Teacher training preparedness	2.87	0.55				
2. Teacher autonomy	3.37	0.50	0.201 ***			
3. Teaching workload	1.98	0.63	−0.060 ***	−0.069 ***		
4. Student behavior workload	2.33	0.70	−0.069 ***	−0.047 **	0.462 ***	
5. Teacher well-being	2.81	0.66	0.130 ***	0.018	−0.373 ***	−0.393 ***

*** $p < 0.001$, ** $p < 0.01$.

4.2. Measurement Model

The study involved conducting confirmatory factor analyses to evaluate the convergent and discriminant validity of the measurement model. The reported values comprise composite reliability (CR), which measures the internal consistency of the latent variables [69], and average variance extracted (AVE), which indicates the average explanatory power of each observed variable with its corresponding latent variable [70]. Table 2 provides an overview of the model parameter estimation and convergent validity.

Table 2. Results for the measurement model.

Variable	Items	Model Parameter Estimation			Convergent Validity			
		Regression Weights	S.E.	C.R.	Standardized Regression Weights	SMC	CR	AVE
TTP	TT3G06A2	1.000			0.804	0.647		
	TT3G06B2	1.020	0.016	62.426 ***	0.853	0.728		
	TT3G06C2	0.853	0.018	47.995 ***	0.716	0.513		
	TT3G06D2	1.044	0.017	60.314 ***	0.849	0.721	0.920	0.623
	TT3G06E2	0.947	0.020	47.188 ***	0.715	0.511		
	TT3G06I2	0.950	0.018	51.508 ***	0.773	0.598		
	TT3G06J2	0.962	0.018	54.051 ***	0.801	0.642		
TA	TT3G40A	1.000			0.805	0.647		
	TT3G40B	1.014	0.014	72.202 ***	0.934	0.872		
	TT3G40C	1.017	0.014	72.347 ***	0.940	0.884	0.934	0.742
	TT3G40D	0.913	0.017	55.144 ***	0.783	0.613		
	TT3G40E	0.965	0.016	59.903 ***	0.831	0.690		
TWL	TT3G52A	1.000			0.705	0.496		
	TT3G52B	1.256	0.036	35.036 ***	0.762	0.580	0.780	0.542
	TT3G52C	1.213	0.034	35.379 ***	0.740	0.547		
SBW	TT3G52F	1.000			0.698	0.487		
	TT3G52G	1.014	0.070	14.463 ***	0.704	0.496	0.659	0.491
TWB	TT3G51A *	1.000			0.672	0.452		
	TT3G51C *	1.371	0.029	46.819 ***	0.886	0.785	0.853	0.663
	TT3G51D *	1.340	0.029	46.231 ***	0.867	0.752		

Note: TTP: Teacher training preparedness, TA: Teacher autonomy, TWL: Teaching workload, SBW: Student behavior workload, TWB: Teacher well-being. * Denotes the reverse coded item. *** $p < 0.001$.

The results indicated that the range of all question standardized regression weights, which varied from 0.672 to 0.940, was considered appropriate, demonstrating the convergent validity of all queries. All of the constructs' composite reliability ranged from 0.659 to 0.934, higher than the 0.6 thresholds suggested by Fornell and Larcker [70], indicating that all constructs exhibited internal consistency. Furthermore, all average variance extracted (AVE) values, ranging from 0.491 to 0.742, were above the value proposed by Hair et al. [71], demonstrating sufficient convergent validity for all constructs.

For discriminant validity, the square root of a construct's extracted average variance (AVE) was compared to the correlations between the construct and the other constructs [70]. If the square root of a construct's AVE is higher than the off-diagonal elements in the corresponding rows and columns, then the indicators are more closely associated with the construct than the others. The bold numerals in Table 3 represent the square roots of AVEs in the diagonal direction. Because all of the numbers in the diagonal direction are greater than those in the off-diagonal direction, the discriminant validity is adequate for all of the constructs.

Table 3. Discriminant validity of the main constructs.

|	AVE	1	2	3	4	5
1. Teacher training preparedness	0.623	0.789				
2. Teacher autonomy	0.742	0.227	0.861			
3. Student behavior workload	0.491	−0.086	−0.053	0.701		
4. Teaching workload	0.542	−0.072	−0.081	0.008	0.736	
5. Teacher well-being.	0.663	0.146	0.030	−0.364	−0.298	0.814

4.3. Structural Model

This study utilized a structural model to assess the relationships among the variables as proposed in the research hypotheses. The fit of the model was evaluated using various fit indicators, as recommended by Kline [72] and Schumacker and Lomax [73] and the criteria established by Jackson et al. [74].

The sample size can affect the significance of the chi-square value; therefore, this study employed other measures to assess the model fit. The Goodness of Fit Index (GFI) and the Adjusted Goodness of Fit Index (AGFI) were found to be 0.910 and 0.882, respectively, both of which meet the recommended criterion of 0.80 [75]. The root mean square residual (SRMR) was 0.0679, which is below the threshold of 0.1, and the Root Mean Square Error of Approximation (RMSEA) was 0.076, which is also below the threshold of 0.08. These values indicate that the model fits the data well. Additionally, the comparative fit index (CFI) and incremental fit index (IFI) values, both 0.926, surpass the criterion of 0.90, indicating a good fit for the model. To conclude, the results suggest that the proposed model has a satisfactory fit and can be used to make valid inferences about the relationships between the variables.

The findings of the structural equation model's path coefficients are presented in Figure 2. Three factors were significantly related to teacher well-being: student behavior workload ($\beta = -0.35$, $p < 0.001$), teacher training preparedness ($\beta = 0.10$, $p < 0.001$), and teacher workload ($\beta = -0.29$, $p < 0.05$). The impact of teaching workload was determined by teacher autonomy ($\beta = -0.07$, $p < 0.001$) and teacher training preparedness ($\beta = -0.05$, $p < 0.001$). Additionally, teacher training preparedness ($\beta = -0.08$, $p < 0.01$) was associated with student behavior workload. The results of the model support most of the research hypotheses, except for the influence of teacher autonomy on student behavior workload.

Table 4 also presents the indirect and direct effects of the model. Teaching workload has a mediating effect on both the relationships between teacher preparation and well-being (indirect effect: 0.012, $p < 0.05$) and teacher autonomy and well-being (indirect effect: 0.020, $p < 0.05$). On the other hand, student behavior workload had a mediating effect on the association of teacher training preparedness and well-being (indirect effect: 0.027, $p < 0.01$); however, its mediating effect on teacher autonomy and well-being was not significant (indirect effect: 0.012, $p > 0.05$). All the direct paths in the model were statistically significant, except for the relationship between teacher autonomy and student behavior workload.
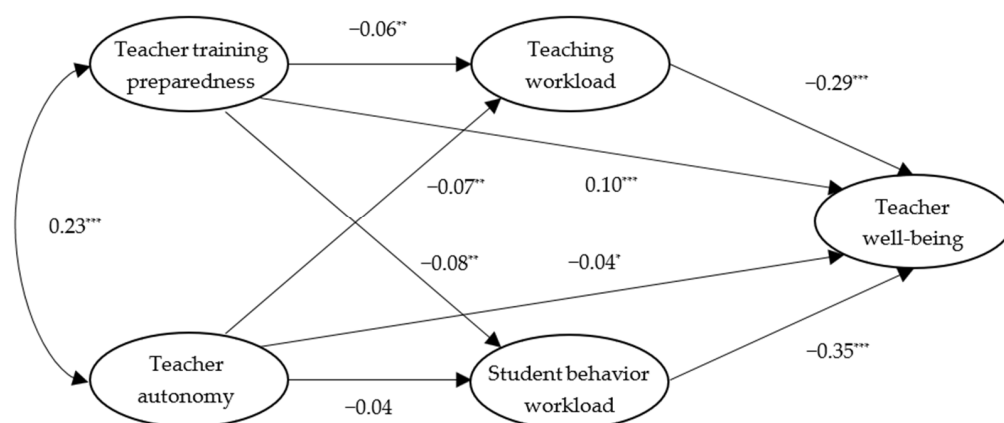
Figure 2. The mediation model of teachers' resources, teacher workloads, and well-being. Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 4. Bootstrapping of direct and indirect effects.

| | **Point Estimates** | **Product of Coefficients** | | **Bootstrapping** | | |
| | | | | **Percentile 95% CI** | | **P** |
		SE	**Z**	**Lower**	**Upper**	
Indirect effects						
TTP→TWL→TWB	0.012	0.006	2.000	0.002	0.025	0.022
TTP→SBW→TWB	0.027	0.008	3.375	0.012	0.044	0.001
TA→TWL→TWB	0.020	0.006	3.333	0.009	0.034	0.001
TA→SBW→TWB	0.012	0.008	1.500	−0.004	0.028	0.134
Total indirect effects	0.073	0.017	4.294	0.040	0.105	0.000
Direct effects						
TTP→TWB	0.090	0.017	5.294	0.056	0.123	0.000
TA→TWB	−0.033	0.018	−1.833	−0.068	0.003	0.067
Total effects	0.130	0.024	5.417	0.082	0.176	0.000

Note: TTP: Teacher training preparedness, TA: Teacher autonomy, TWL: Teaching workload, SBW: Student behavior workload, TWB: Teacher well-being.

5. Discussion and Conclusions

This study used variables of teacher resources and job demands to examine the relationships among teacher training preparedness, autonomy, and workloads on teacher well-being, as informed by job demand-resource theory [8,9]. It analyzed the role of teacher workloads as a mediator using structural equation modeling and surveyed lower secondary teachers in Taiwan using data from TALIS 2018. The study yielded several significant findings.

First, with respect to the effect of personal resources, we found that the level of preparedness in teacher training was negatively associated with teachers' perceptions of stress related to student behavior workload. In this study, preservice education preparedness was evaluated in various areas, including content and pedagogical knowledge, subject teaching, teaching mixed-ability classes, managing the classroom, and monitoring student learning. Prior research has shown that teacher content knowledge is linked to student achievement [76,77]. Shechtman et al. [78] did not find a direct connection, but suggested that teachers need to foster student thinking to effectively use their subject knowledge to improve student achievement. Moreover, Giallo and Little [47] discovered that teacher preparedness is related to their ability to competently manage student behavior. These studies underscore the significance of professional knowledge and competence in managing student behavior, which is in line with the findings of our study. Teachers with a higher perception of their preparedness were found to be less likely to view student

achievement and classroom management as sources of workload stress. Furthermore, the insignificant effect of preparedness on teaching workload may be due to the routine nature of teaching tasks, such as lesson preparation and marking, which teachers perceive as part of their duties.

Second, our findings indicate that Taiwanese teachers had a positive perception of their autonomy, which is considered a job resource. In Taiwanese schools, teachers have a great deal of freedom to make decisions about course content, teaching methods, student assessment, discipline, and homework. This autonomy serves as a source of self-empowerment, helps teachers cope with exhaustion, and fosters leadership among colleagues [50]. The study showed that teachers who felt they had greater autonomy were less stressed by their teaching workload. This aligns with the findings of Pearson and Moomaw [49], who found that teachers with more autonomy in their teaching—such as selecting activities and materials and planning lessons—experience less job-related stress. However, we discovered a lack of significance in the connection of teacher autonomy with student behavior workload. This implies that having control over teaching issues does not necessarily reduce the stress caused by student behavior workload. Several studies have identified student misbehavior as a stressor for teachers [25,26,59,60]. Additionally, in Taiwan's academically competitive context, teachers are responsible for promoting student achievement. These are plausible explanations for this finding.

The third finding of our study indicates a significant relationship between both teaching workload and student behavior workload and teacher well-being. Teachers who reported lower stress in their workloads showed higher perceptions of well-being. Previous research has established the impact of job demands on teacher well-being [13,59,61,65]. For instance, Skaalvik and Skaalvik [13] found that teacher stress caused by job demands, such as time pressure and discipline issues, is linked to decreased well-being. Similarly, Aldrup et al. [59] found that teacher-rated student misbehavior has a negative impact on teacher enthusiasm and a positive impact on teacher exhaustion. Our results align with these previous findings while providing additional evidence of the impact of workload on teacher well-being in two ways. On the one hand, our study measured teaching workload in terms of lesson preparation, teaching, and marking rather than just time pressure. This provides a more nuanced understanding of the effects of teaching workload on well-being. On the other hand, our study used not only discipline problems but also teacher responsibility for student achievement to measure student behavior workload. This is particularly relevant in the Confucius-influenced Taiwanese culture, where education is highly valued, and school performance is closely tied to a school's reputation [21]. Moreover, student misbehavior has been found to be a stressor for teachers [25,26,59,60]. Maintaining classroom discipline problems also poses challenges for classroom management and contributes to the reduced well-being of Taiwanese teachers.

Finally, our results from the mediation model showed that teacher training preparedness had a direct and positive link with well-being, and had an indirect connection with well-being through student behavior workload. Meanwhile, teacher autonomy did not directly impact well-being but did have an indirect effect through teaching workload. These findings align with the job demand-resource theory, which suggests that job resources can lead to better well-being outcomes. Previous research has demonstrated that teachers with a higher sense of competence have lower levels of burnout [79], and job resources such as supportive colleagues, supervisory support, collective school culture, and value congruence can predict higher well-being [13]. Our results support these findings and further suggest that teacher training preparedness has a more significant impact on well-being than teacher autonomy. Moreover, we found that the effect of perceived autonomy on well-being was indirect and occurred through teaching workload. These findings differ from previous research about the direct effect of teacher autonomy on well-being [80], possibly due to the use of different measurements or the analysis of teaching workload as a mediator. This finding regarding mediation underscores the need to consider the complex relationship between job demands, resources, and well-being in the context of teacher work.

In conclusion, this study has yielded important insights. Our findings indicate that teacher training preparedness had a direct impact on teacher well-being, and this effect was also mediated by the workloads associated with teaching and student behavior. On the other hand, teacher autonomy did not have a direct impact on well-being, but it was associated with well-being via the teaching workload. Our results also highlight that a lower workload was associated with higher levels of teacher well-being.

This study contributes to the field by extending the JD-R theoretical framework to include personal and job resources as teacher resources. We also identified workloads as a crucial mediator in the relationships between teacher resources and teacher well-being. However, it is essential to acknowledge the limitations of our study, such as its cross-sectional design, which precludes establishing causality. To more accurately establish cause-and-effect relationships, future research could conduct a longitudinal study to evaluate planned changes or uncover the roles of demands and resources over time. Additionally, our study relied on a single indicator for personal and job resources. Future research could benefit from exploring these factors using multiple indicators to gain a more comprehensive understanding of their impact on teacher well-being, as well as examining the differential effects of various job demands and teacher resources. Furthermore, it is worth noting that previous research in this domain has mainly relied on variable-centered analytic approaches. While these approaches offer valuable insights into the interrelationships among variables, they tend to overlook subpopulations and individual variations in different variables. A person-centered approach is an alternative choice [10].

Moreover, this study underscores the importance of enhancing both personal and job resources for enhancing teacher well-being. The teaching profession is known to be demanding, with numerous challenges such as workload, long hours, and student behavioral issues [28,81,82]. Given these challenges, and the shift towards constructivist pedagogy in Taiwan's ongoing curriculum reform, it is becoming imperative for educational administrators to focus on expanding job resources and implementing well-being interventions. At the same time, teachers must also be proactive in leveraging their personal resources to maintain their well-being. Lastly, the study revealed that teacher preparedness in preservice education played a significant role in reducing workload-related stress and promoting well-being. Thus, preparing competent teachers for their vocational careers has become a critical task.

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