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Examining Teachers' Time Poverty: Scale Adaptation, Validation, and Influencing Factors

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ABSTRACT

This study aimed to adapt the "Teachers' Time Poverty Scale" developed by Liu et al. (2023) for use in Turkey and to assess whether teachers' time poverty in Turkey varies based on gender, years of experience, and employment level by utilizing the adapted scale. The research was performed in two phases: adaptation and implementation of the scale. The data were collected from 38 teachers for linguistic equivalence, 254 for EFA, 300 for CFA, and 106 for retesting during the scale adaptation phase. A single-factor structure explaining 54.02% of the total variance was calculated through EFA. The CFA results indicated that the compliance indices for the 7-item, single-factor structure were at an appropriate level. The internal consistency coefficient of the scale was determined as 0.854 and a positive and significant relationship was observed between the results of the two evaluations in the test-retest analysis. Thus, the Turkish adaptation studies of the original 5-point Likert-type scale, which has 7 items and a single factor, derived a valid and reliable 5-point Likert-type scale with 7 items and a single factor. A total of 363 teachers supplied data for the implementation phase of the scale. Research results show that teachers' time poverty levels significantly vary by gender and years of experience, whereas there is no significant difference by employment level.

1 | Introduction

"Poverty" is inherently ambiguous (Williams et al. 2015). Still, since the development of the official poverty index in the 1960s, the term has generally been used to describe material income (Vickery 1977). Nevertheless, poverty is a multidimensional structure (Sezer et al. 2023; Spinney and Millward 2010). Income is a crucial yet insufficient factor in determining poverty. Hence, social and cultural factors impacting individual welfare should not be overlooked when defining poverty (Sezer et al. 2023). This is because poverty is not merely about being worse off compared to other individuals. Poverty is also the lack of basic amenities needed for well-being (Sen 1985).

Time is an essential commodity that people require to participate in activities that enhance their well-being (Vega-Rapun et al. 2020; White 2016; Williams et al. 2015). However, the standard measure of poverty is based on the assumption that individuals have enough time and is, therefore, inaccurate (Antonopoulos et al. 2012). This is because studies suggest that poverty levels vary significantly when time is included among resources (Davis and You 2011; Douthitt 2000).

Vickery (1977) argued that governments should not consider only income when determining the poverty line; he asserted that time should also be viewed as an important resource. This is because if poverty is explained only by income, other factors affecting people's welfare are neglected (Vega-Rapun et al. 2020). This leads policymakers to believe that by erasing material disparities, they can remove the injustices stemming from differences in resources among individuals or groups, thereby ensuring prosperity (Vickery 1977). Studies that started

Summary

- The Turkish version of the Teachers' Time Poverty Scale is a valid and reliable tool for identifying teachers' time-related problems.
- Female teachers and teachers with more than 21 years of experience reported higher levels of time poverty.
- Identifying teachers' time poverty and the variables that affect it provides an important basis for educational administrators and policy makers to develop strategies to support teachers' professional well-being and sustainability.

in the United States in the 1970s and subsequently extended to other countries have shown that, in the long run, even if countries experience economic growth, people's happiness levels do not increase correspondingly (Easterlin 1995; Easterlin and Angelescu 2007; Easterlin et al. 2010). This prompted studies (Helliwell 2006; Karademas 2006) to concentrate on the idea that intangible factors also affect people's well-being. The "time" factor, according to Giurge et al. (2020), has a significant impact on welfare and should be considered within this perspective. This is particularly relevant because studies suggest that individuals with ample time report greater life satisfaction (Whillans et al. 2017) and are less prone to health issues stemming from work-related stress (Goh et al. 2016). Therefore, recent studies emphasize that time is a crucial factor in determining poverty (Kalenkoski and Hamrick 2012; Antonopoulos et al. 2012).

The concept of time poverty was introduced by Vickery (1977). However, although a considerable amount of time has passed, limited studies focus on "time poverty." This has contributed to the lack of a unifying framework on "time poverty" (Williams et al. 2015). Time poverty, which highlights the feeling of scarcity that individuals feel whenever they do not have enough time (Liu et al. 2023), is defined as insufficient free time (Kalenkoski and Hamrick 2012).

Time is crucial for individuals to participate in long-term activities that promote well-being (White 2016) Time-poor individuals tend to have unhealthy diets and are less likely to engage in activities such as travel and exercise that affect their well-being (Kalenkoski and Hamrick 2012). Time poverty restricts skills development by preventing individuals from engaging in activities that affect their development (Burchardt 2008).

Time is an essential resource alongside income for people to maintain a certain standard of living (Douthitt 2000.) In fact, studies indicate that time poverty is more influential than low-income levels in individuals' regular participation in physical activities (Spinney and Millward 2010) and that families with the same socioeconomic status but less time poverty support their children's educational processes better and contribute more to their development (Newman and Chin 2003). Burchardt (2008) argues that time poverty affects individuals' current situation and future capabilities.

Teachers contribute to societies' future prosperity and success while shaping individuals' academic and social development. Teachers must possess the necessary qualifications and fair and supportive conditions to fulfill this critical role effectively. Psychological and mental withdrawal from work in times outside of the workplace is one of the essential criteria for an individual to be healthy and productive (Sonnentag and Fritz 2014; Virtanen et al. 2019). Teachers are generally deemed relatively unsuccessful at mentally isolating themselves from their work compared to other professions (Varol et al. 2021). A significant impediment for teachers to achieve mental detachment is the "time" factor (Varol et al. 2021). This is because teachers have several responsibilities outside of compulsory teaching hours, and these tasks are usually performed at home during off hours (Garrick et al. 2017). This prevents teachers from maintaining mental distance from their work (Kreuzfeld et al. 2022). Teachers represent a distinct and unique professional group (Buskila and Chen-Levi 2021) and are acknowledged as essential to global development (UNESCO 2021). However, in recent years, the profession of teaching has been transforming globally, and their workloads have become heavier and more intense (Easthope and Easthope 2000; Green 2021; OECD 2021; Polat and Erdem 2023; Thompson et al. 2021).

Teachers are typically idealistic and highly motivated individuals (Haritos 2004). Nevertheless, the teachers indicated that their work was becoming more complex, which led them to work more (Easthope and Easthope 2000). Teachers often feel they lack sufficient time and lose control over their schedules (Şengül Erdem and Yakut 2022; Liu et al. 2023). The study by Garrick et al. (2017) shows that few teachers can spare time for their hobbies. Hence, time poverty is becoming a common experience for teachers, and the perceived acceleration of work demands can lead to stress, burnout, and dissatisfaction (Creagh et al. 2023).

Teachers' professionalism is directly related to their level of well-being (Mavi et al. 2024; Thien and Liu 2024). Thus, attracting talented individuals to teaching is achievable only by making working conditions more attractive (OECD 2021). According to Creagh et al. (2023), intervening in the problem of time poverty is intervening in teachers' working conditions. This is because time poverty is associated with well-being, health, and productivity. Yet, individuals, organizations, and policymakers often overlook the negative impacts that time poverty can cause (Giurge et al. 2020). A full investigation of the time dimension of poverty, as Williams et al. (2015) argue, will pave the way for a deeper understanding of poverty (Williams et al. 2015). Nevertheless, a review of the literature reveals that studies on time poverty in educational fields are limited (Creagh et al. 2023; Liu et al. 2023).

Creagh et al. (2023) reviewed prior studies on the workload and demands faced by teachers and administrators, and based on their research findings, they defined time poverty from the perspective of teaching. Time poverty refers to the relationship between the amount of work a teacher performs or believes they must perform and the intensity of that work. This can be quantified by the number, complexity, or risks associated with the decisions that must be made within a specific timeframe.

Liu et al. (2023) developed a 7-item "Teachers' Time Poverty" scale based on their research indicating that the absence of a valid and reliable scale specific to the field significantly

contributes to the lack of progress in studies on time poverty within the realm of education. According to the scarcity theory, time poverty among teachers refers to the feeling of time scarcity, where teachers have a heavy workload that prevents them from fulfilling their responsibilities.

In Turkey, there are very few studies conducted on time poverty in different areas other than education in the literature (Ekiz Gökmen 2017; Sezer et al. 2023). However, no study conducted on time poverty in the field of education in general and teachers in specific has been encountered. It has been revealed by research that teachers, who constitute a significant part of the public and private sector employees in Turkey as a profession, have many problems, especially professional ones (Başturan and Görgü 2020; Bozkuş 2020; Erbil 2024; Yaraş and Turan 2021; Yılmaz et al. 2014). We believe that addressing time poverty, a significant dimension of poverty in general, in the context of revealing, understanding, and solving the professional problems of teachers in Turkey will contribute to the literature as it will fill a great gap in this sense. However, the lack of a valid and reliable measurement tool that will specifically assess time poverty among teachers in Turkey limits studies to be conducted in this field and makes it difficult to reveal the problems experienced by teachers comprehensively. To fill this gap, the "Teachers' Time Poverty Scale" developed by Liu et al. (2023) was adapted to Turkish. The adapted scale will enable researchers to measure the time poverty levels of teachers in line with cultural aspects and properly analyze the relationship of time poverty with various demographic and professional variables. The findings to be obtained may significantly contribute to the development of policies and applications regarding the lives of teachers in general and their time management skills, workload balance, and professional well-being in specific. In addition, this adapted measurement tool can be used in studies to make international comparisons. Thus, the time poverty profiles of the teachers in Turkey can be compared against those in different countries. Moreover, the present study provides an opportunity to systematically analyze the time poverty issue that gradually becomes more prominent in the professional lives of teachers. Therefore, the aim of this study was to adapt the "Teachers' Time Poverty Scale" developed by Liu et al. (2023) to Turkish and to determine whether the time poverty of teachers in Turkey differs by gender, years of experience, and level of employment by using the adapted scale.

2 | Methods

2.1 | Study Model

This study aimed to provide evidence on the reliability and validity of the Turkish adaptation of the "Teachers' Time Poverty Scale" (TTS) developed by Liu et al. (2023) and examine the time poverty of teachers in Turkey concerning various factors. The study was conducted using the survey model accordingly. The problem is described as it is without intervention in the survey model (Creswell and Creswell 2017). The scale adaptation steps proposed by Hambleton and Patsula (1998) were followed in the scale adaptation process. First, linguistic equivalence studies were conducted, followed by data collection processes for validity and reliability analyses, with the process reported based on the analyses.

TABLE 1 | Demographic data of the study group.

		f	%
Study Group 1 (Linguistic Equivalence)	Female	22	57.8
	Male	16	42.2
	Total	38	100
Study Group 2 (EFA)	Female	187	73.6
	Male	67	26.4
	Total	254	100
Study Group 3 (CFA)	Female	162	54.0
	Male	138	46.0
	Total	300	100
Study Group 4 (Test-Retest)	Female	65	61.3
	Male	41	38.7
	Total	106	100
Study Group 5 (Implementation)	Female	203	55.9
	Male	160	44.1
	Total	363	100

2.2 | Study Group

This study was conducted with five different study groups for five primary purposes: linguistic equivalence, exploratory factor analysis, confirmatory factor analysis, test-retest, and implementation group. The study included 38 participants for linguistic equivalence, 300 for EFA, 300 for CFA, 106 for test-retest, and 363 for examining variables. Demographic information of the study group is presented in Table 1.

The teachers participating in the study revealed that 38 participants were involved in linguistic equivalence. Of these participants, 57.2% (22) were female and 42.2% (16) were male. Data collected for the EFA included 73.6% (187 individuals) females and 26.4% (67 individuals) males; data for the CFA comprised 54% (162 individuals) females and 46% (138 individuals) males; the test-retest application involved 61.3% (65 individuals) females and 38.7% (41 individuals) males, and the implementation data consisted of 55.9% (203 individuals) females and 44.1% (160 individuals) males.

2.3 | Data Collection Tool

The scale adaptation part of the study employed the Teachers' Time Poverty Scale (TTPS) developed by Liu et al. (2023). For the second phase, a personal information form was prepared by the researchers.

2.3.1 | Teachers' Time Poverty Scale (TTPS)

The TTPS consists of 7 items and a single factor. The original scale was administered initially to 713 teachers working in China. The total variance explained by the EFA results was 62.991%. CFA analysis revealed that the fit coefficients yielded

an excellent fit. The Cronbach's Alpha reliability coefficient of the scale developed by Liu et al. was calculated as 0.914. The scale had no reverse-scored items and was formed on a 5-point Likert scale.

2.3.2 | Personal Information Form

In the second part of the study, the researchers used a personal information form to examine the time poverty of teachers based on several variables. Gender, years of experience, and employment levels were included as categorical questions in the personal information form.

2.4 | Data Collection Process

The scale's adaptation began with linguistic equivalence. A forward and backward translation procedure was performed to translate the TTPS from the original language, English, into Turkish, and experts were consulted to evaluate the content of the items obtained. Subsequently, the implementation was performed with bilinguals, ensuring language equivalence. Following this, data collection commenced, and an exploratory factor analysis of TTPS was conducted on the collected data set. The consistency of the obtained factor structure with the original scale was examined. The Kaiser-Meyer-Olkin (KMO) criterion, derived using correlation and partial correlation coefficients, is essential for assessing the data's suitability for factor analysis. KMO, the sampling adequacy criterion, ranges between 0 and 1. A data set is not suitable for factor analysis if the KMO value is less than 0.5 (Cerney & Kaiser, 1997). Kaiser-Meyer-Olkin (KMO) and Bartlet's Test of Sphericity were performed to assess the suitability of the data set of 254 participants for the EFA conducted in this study. The KMO sample suitability coefficient was 0.86, and the Bartlett's Test of Sphericity value was 735.65 (p <0.001, SD = 253). Therefore, the data are suitable for factor analysis. The normality distribution of the data was also analyzed. The skewness and kurtosis of the data were analyzed to evaluate their normal distribution, and the reference value range for the normality assumption was accepted as ±1 (Büyüköztürk 2002). The results indicated that the skewness coefficient of the data set collected for EFA was 0.533, while the kurtosis coefficient was 0.134. The results show that the research data are normally distributed. The principal components method was used to derive the factors. The factor selection criterion of eigenvalues greater than one was included in determining the appropriate number of factors. No rotation was used in the study since it is a single-factor structure. Confirmatory factor analysis was also employed to assess the alignment of the factors produced by exploratory factor analysis with hypothetical or theoretical factor structures. Confirmatory factor analysis confirms the structure or theoretical factor structure obtained from exploratory factor analysis (Brown 2015). Exploratory factor analysis identifies the suitable number of factors to define the underlying construct based on the data matrix, while confirmatory factor analysis requires the number of factors to be predetermined The confirmatory factor analysis (CFA) of the teachers' time poverty scale was analyzed to determine the normality assumption of the collected data set. The analysis revealed that the skewness coefficient was 0.471 and the kurtosis coefficient was 0.120, indicating that the data were normally distributed. The scale adaptation study, which yielded sufficient results for reliability and validity based on the analyses conducted, was followed by the implementation of the adapted scale for the teachers. Several variables were used to examine the teachers' time poverty.

2.5 | Data Analysis

The normality assumption, one of the study's prerequisites for parametric tests, was analyzed using the Kolmogorov Smirnov/Shapiro-Wilk test. The results indicated compliance with parametric tests (KS = 3.656 $p > 0.05$). The t-test and ANOVA analyses were performed in the section where the dependent variable was analyzed for other variables. The study used descriptive statistics, exploratory factor analysis, SPSS for reliability analysis, and AMOS for confirmatory factor analysis.

2.6 | Results of the Scale Adaptation Study

2.6.1 | Results on Linguistic Equivalence

Thirty-eight participants were recruited for the linguistic equivalence study of the "Teachers' Time Poverty Scale." The correlation of the items in the English and Turkish forms was statistically analyzed, and the results are presented in Table 2.

An examination of Table 2 reveals that the correlation coefficient for all items in the English and Turkish forms is above 0.70. This means that the English and Turkish forms may be considered linguistically equivalent. The correlation coefficient expected for perfect equivalence is, in fact, above 0.70 (Secer, 2018). Table 2 demonstrates that the correlation coefficient for all items in the English and Turkish forms is above 0.70. Therefore, the English and Turkish forms can be regarded as having excellent linguistic equivalence.

2.6.2 | Results on Construct Validity

Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were performed to examine the scale's factor structure.

TABLE 2 | Findings regarding the linguistic equivalence study.

Item No	N	r
Item 1	38	0.802**
Item 2	38	0.777**
Item 3	38	0.781**
Item 4	38	0.828**
Item 5	38	0.798**
Item 6	38	0.842**
Item 7	38	0.788**

**$p < 0.01$

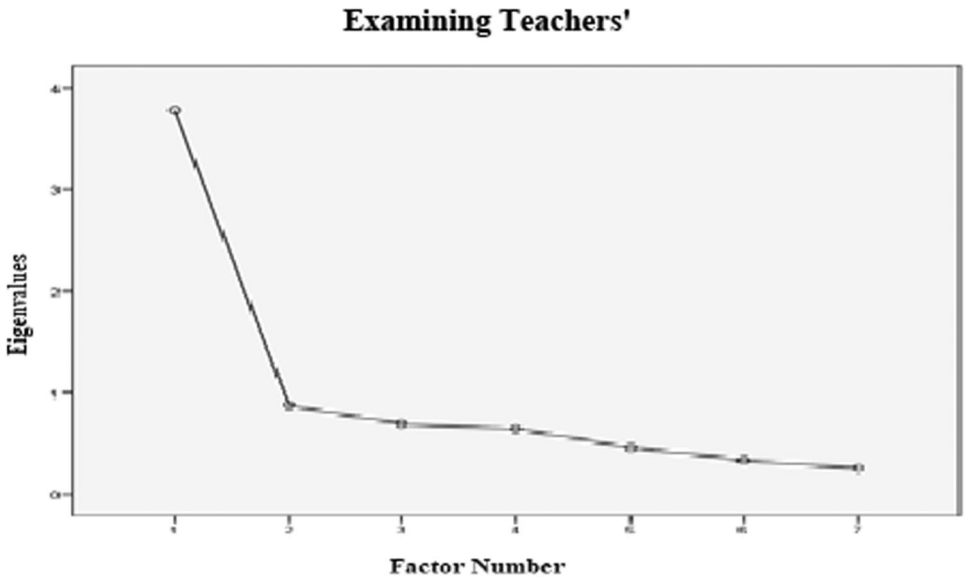

FIGURE 1 | demonstrates a single-factor structure with an eigenvalue above 1. The factor loads and the variance ratios of the items are presented in Table 3.

2.6.3 | Exploratory Factor Analysis

The principal components method was used in EFA. The principal components method is a multivariate statistical technique that allows recognition, classification, dimension reduction, and interpretation to eliminate dependency structure (Jolliffe 2002). The EFA resulted in a single-factor structure explaining 54.02% of the total variance and overlapping with the items in the original form. The eigenvalue and factor slope graph of the analysis is provided in Figure 1.

The EFA results in Table 3 indicate that the factor loadings of all items in the scale are greater than 0.30. It can, therefore, be concluded that there is no need to remove any item from the scale. The variance accounted for by all seven items was 54.02%, and the Cronbach's Alpha reliability coefficient for all of these items was 0.854. These results suggest that the Turkish scale is a single-factor scale like the original scale and that the reliability level of this structure is adequate.

2.6.4 | Results of Confirmatory Factor Analysis

The structural validity of the 7-item scale was analyzed with Confirmatory Factor Analysis (CFA) on a separate data set of 300 participants. The initial results of the fit indices suggest a low fit [$\chi 2 = 128.190$, df (degrees of freedom) = 14, $p < 0.001$, $\chi 2/df = 9.156$, GFI = 0.874, AGFI= 0.870, CFI = 0.870, NFI= 0.900, NNFI = 0.951, RMSEA = 0.165, SRMR = 0.0772]. The standardized regression loads of the items ranged between 0.48 and 0.82 (see Figure 2).

Covariances were added to the error scores of some items (2nd and 3rd item; 1st and 2nd item; 3rd and 4th item; 1st and 3rd item; 3rd and 5th item) to improve the fit indices based on the modification indices. The CFA graph after the modifications is given in Figure 3.

TABLE 3 | Factor structure and loadings of TTS.

Items	Factor loading	Explained variance %	Cronbach's alpha
i4	0.84	54.02	0.854
i6	0.81		
i7	0.80		
i3	0.77		
i1	0.65		
i2	0.64		
i5	0.60		

Note: Kaiser-Meyer-Oklin (KMO) = 0.861 Df = 253 $\times^2 = 735.65$ $p < 0.001$.

According to the standardized coefficients in Figure 3, the factor loads of the items vary between 0.87 and. 41. Model fit improved as a result of the modifications, and a perfect fit was achieved [χ^2/df = 2,876, GFI = 0.975.874, AGFI= 0.972, CFI = 0.981, NFI= 0.971, NNFI = 0.982, RMSEA = 0.079, SRMR = 0.0398]. The values obtained are presented comparatively in Table 4.

According to Table 4, the model provided an acceptable fit in χ^2/df and RMSEA fit coefficients and an excellent fit in GFI, AGFI, CFI, NFI, NNFI, and SRMR fit coefficients after modification.

The t-values for the items were calculated based on the relationship between the items in the single-factor scale and the whole scale in confirmatory factor analysis. Moreover, convergent and discriminant validity were analyzed to determine the established CFA model's composite reliability (CR). The values are presented in Table 5.

The values in Table 5 suggest that the calculated t-values greater than 1.96 are significant at the 0.05 level, and those greater than 2.58 are significant at the 0.01 level. Hence, the

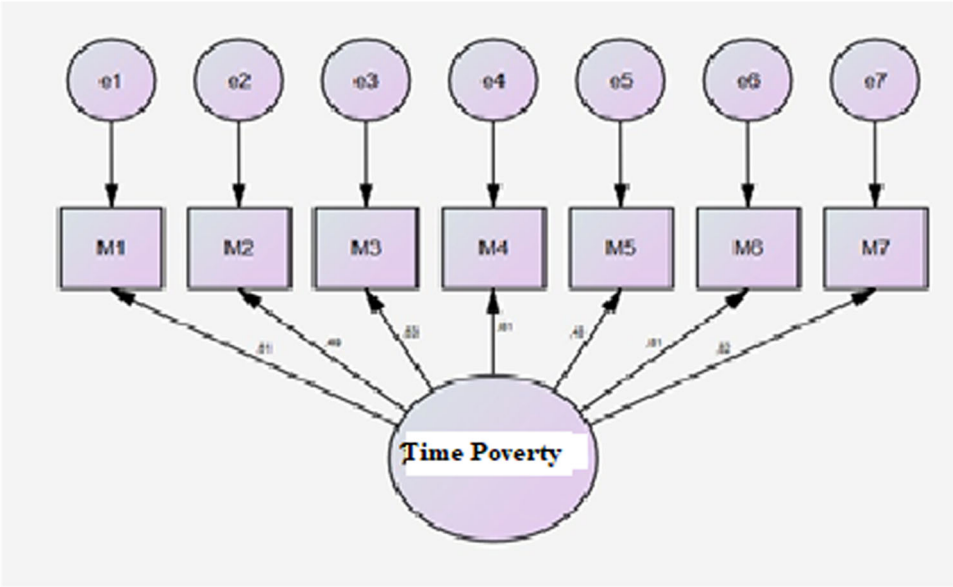

FIGURE 2 | CFA Graph Before Modification.

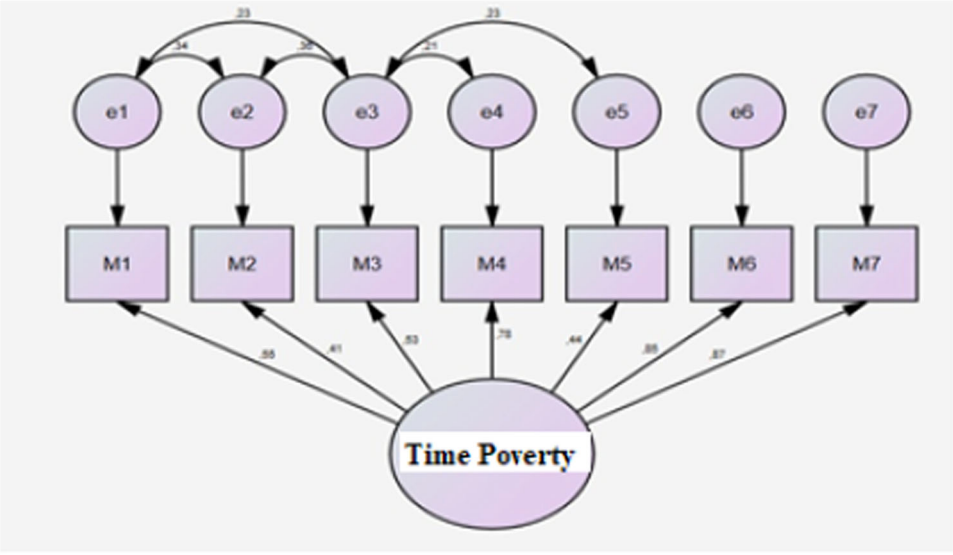

FIGURE 3 | CFA Graph After Modification.

TABLE 4 | Values of obtained fit indices.

Fit indices	Perfect fit	Acceptable fit	Fit indices obtained before modification	Fit indices obtained after modification
X^2/sd	$0 \leq \chi 2/sd \leq 2$	$2 \leq \chi 2/sd \leq 3$	9.156	2.876
GFI	$0.95 \leq GFI \leq 1.00$	$0.90 \leq GFI \leq 95$	0.874	0.975
AGFI	$90 \leq AGFI \leq 1.00$	$85 \leq AGFI \leq 0.90.$	0.870	0.972
CFI	$0.95 \leq CFI \leq 1.00$	$0.90 \leq CFI \leq 0.95$	0.870	0.981
NFI	$0.95 \leq NFI \leq 1.00$	$0.90 \leq NFI \leq 0.95$	0.900	0.971
NNFI	$0.97 \leq NNFI \leq 1.00$	$0.95 \leq NNFI \leq 0.97$	0.951	0.982
RMSEA	$0.00 \leq RMSEA \leq 0.05$	$0.05 \leq RMSEA \leq 0.08$	0.165	0.079
SRMR	$0.00 \leq SRMR \leq 0.05$	$0.05 \leq SRMR \leq 0.10$	0772	0.0395

TABLE 5 | Unstandardized regression weights and t values.

			β	S.E.	t	CR	AVE	DV
i1	<---	Time Poverty	1.000			0.845	0.62	0.79
i2	<---	Time Poverty	0.756	0.105	7.233**			
i3	<---	Time Poverty	0.977	0.118	8.268**			
i4	<---	Time Poverty	1.645	0.175	9.414**			
i5	<---	Time Poverty	0.882	0.137	6.424**			
i6	<---	Time Poverty	1.801	0.184	9.782**			
i7	<---	Time Poverty	1.816	0.184	9.863**			

TABLE 6 | Reliability coefficients of the scale.

Scale	Cronbach's alpha	Test-retest
Teachers' Time Poverty Scale	0.854	0.888

TABLE 7 | Results of t-test for teachers' time poverty scores by gender.

	N	$\bar{X}$	SD	t	df	p
Female	203	26.1478	5.25186	6.667	361	0.000
Male	160	22.1813	6.07176			

t-values of all items in the CFA model were statistically significant ($p < 0.001$). The composite reliability (CR) value for each factor is above 0.7, the AVE value is greater than 0.4, convergent validity is maintained, and the square root of the AVE indicates the presence of discriminant validity (DV) (Fornell and Larcker 1981; Huang et al. 2013). According to Table 5, the CR value of the CFA model was 0.845, the AVE value was 0.62, and the discriminant validity value was 0.79. These values demonstrate that the measurement model has good convergent validity.

2.6.5 | Results on Reliability

The internal consistency coefficient (Cronbach's Alpha) and test-retest method were used to assess the scale's reliability. The results are presented in Table 6.

Table 6 indicates that the reliability coefficients were above 0.70, demonstrating that the scale's reliability value was adequate. The reliability value of the scale is above 70%; therefore, the reliability value of the scale is sufficient.

2.7 | Results on the Examination of Teachers' Time Poverty

The time poverty scale, adapted for teachers, was administered to 363 educators to explore how their time constraints relate to gender, seniority, and the type of school they work in. An unrelated sample t-test was performed to determine the differentiation between the time poverty levels of teachers based on their gender. The results are presented in Table 7.

TABLE 8 | Descriptive statistics for seniority and school level variables.

Variable	Category	N	Mean	SD
Seniority	0–5 years	61	22.3607	7.87408
	6–10 years	69	24.6667	5.51646
	11–15 years	85	23.9059	5.79742
	16–20 years	66	25.3788	5.15533
	21 years and above	82	25.4146	5.12535
School Level	Preschool	15	24.2000	5.44059
	Primary School	77	24.6234	5.59849
	Middle School	203	24.0394	6.11024
	High School	68	25.2647	6.01148

Table 7 reveals that teachers' time poverty levels differ significantly by gender favoring female teachers ($t_{361} = 6.667$; $p < 0.05$). Time poverty scores of female teachers ($\bar{X} = 26.1478$) are higher than those of male teachers ($\bar{X} = 22.1813$).

Teachers' time poverty was evaluated by ANOVA analysis based on their seniority and level of employment. Table 8 presents the descriptive statistics of teachers' time poverty scores based on their seniority and level of employment.

TABLE 9 | ANOVA results for seniority and school level variables.

	Source of variance	Sum of squares	f	Mean square	F	p	Significant difference
Seniority	Between Groups	427.001	4	106.750	3.078	0.016	0–5 yıl/21 ve üstü
	Within Groups	12414.079	358	34.676			
	Total	12841.080	362				
School Level	Between Groups	81.682	3	27.227	0.766	0.514	—
	Within Groups	12759.398	359	35.541			
	Total	12841.080	362				

Table 8 revealed that the mean scores of teachers working between 0 and 5 years on a time poverty scale were lower than those of teachers with other experience levels based on seniority. A comparison of the mean scores of teachers' time poverty showed that the highest mean score was among senior teachers with 21 years or more tenure. Thus, based on years of experience, teachers with 0–5 years experienced the lowest mean time poverty, while those with 21 or more years faced the highest mean time poverty. An analysis of the mean time poverty of teachers based on their level of employment revealed that the mean time poverty of teachers working at the high school level was higher than that of teachers working at other levels. Based on employment levels, secondary school teachers experienced the lowest mean of time poverty, while high school teachers faced the highest average time poverty. ANOVA was used to analyze the statistical significance of this difference. Table 9 shows the ANOVA results for the difference between the participants' mean time poverty scores based on their seniority and the level of education in which they work.

Table 9 reveals that teachers' time poverty levels show a significant difference based on their seniority ($F_{4.358} = 3.078$; $p < 0.05$). The Scheffe test was used in post-hoc analysis to determine between which groups the difference occurred. The analysis results show a significant difference between teachers with 0–5 years of experience and teachers with 21 or more years of experience, favoring teachers with 21 or more years of experience. An analysis based on the teachers' employment levels shows that the time poverty levels of the teachers do not differ based on the level of employment. ($F_{3.359} = 0.766$; $p > 0.05$).

3 | Conclusion—Discussion

The study aimed to adapt the 7-item "Teachers' Time Poverty Scale" developed by Liu et al. (2023) into Turkish and to investigate the time poverty experienced by teachers in Turkey using the adapted scale.

Scale adaptation started with the linguistic equivalence study, which used data from 38 participants to perform a linguistic equivalence analysis of the scale. The correlation coefficient for all items in the English and Turkish forms was higher than 0.70, and it was concluded that the English and Turkish forms of the 7-item scale were deemed linguistically equivalent. The validity of the scale was ensured by analyzing the construct validity. EFA and CFA were performed for construct validity; discriminant validity was also assessed. The EFA data were collected from 254 participants, and as a result of the analysis, a single-factor structure explaining 54.02% of the total variance was achieved. The CFA study of the scale was performed with the data from 300 participants, and the fit indices of the single-factor structure were at the desired level. Cronbach's Alpha (internal consistency coefficient) and test-retest method were conducted to test the reliability of the scale. The internal consistency coefficient of the scale was 0.854 and after the test-retest analysis, a positive and significant relationship was observed between the results of the two implementations. The original scale consisted of 7 items and a single factor, and as a result of the adaptation into Turkish, a valid and reliable scale composed of 7 items and a single factor was achieved. The resulting scale is a 5-point Likert-type scale and contains no reversed items.

The implementation study of the scale adapted into Turkish as part of the research was performed with the data obtained from 363 participants, and the time poverty levels of teachers were examined by gender, seniority, and level of employment. The study's findings indicate that teachers' time poverty levels differ significantly by gender and years of experience. At the same time, there is no difference based on the level of employment.

The findings of the study indicate that female teachers experience significantly higher levels of time poverty compared to their male counterparts. No study was identified in the literature that examined teachers' time poverty by gender. However, a review of studies in different fields reveals that the results support the results of the research. Studies reveal that women have higher levels of time poverty (Chatzitheochari and Arber 2012; Ekiz Gökmen 2017; Pinto et al. 2018; Vega-Rapun et al. 2020; Sezer et al. 2023). The reasons for this are that domestic care and supervision are viewed as a natural duty of women, even if they are part of the workforce (Sezer et al. 2023), and that men assume less responsibility in these areas (Vega-Rapun et al. 2020). Even when socioeconomic conditions are balanced, studies have concluded that women are more disadvantaged concerning time (Chatzitheochari and Arber 2012). However, delegating domestic responsibilities to women impedes their participation in the public domain, from political life to volunteer work (Bryson 2007; Kaplan 2011). According to Küçük Aksu (2022), removing women from the public sphere and condemning them to the private sphere results from the value attributed to women in society. Although they practice teaching, which is an intellectual profession (Tutar 2022), it can still be said that women are unable to escape gender roles. The fact that women are

more time-poor in this regard can be viewed as a consequence of gender roles.

The research results indicate that the time poverty levels of teachers with 21 or more years of work experience are significantly higher than those of teachers with 0-5 years of work experience. Teaching is a profession that is physically and mentally exhausting (Erdem 2010). This is because the workload of teaching is heavy and intense (Bozkuş 2020; Green 2021; Thompson et al. 2021). Compared to other professions, teachers are known to work fewer days per year (Eurydice 2018; Lee et al. 2007). However, by nature, teaching has a distinct way of working (Allen et al. 2020), and most of the time, what needs to be done as part of the job is not limited to working hours (Felsing et al. 2019; Garrick et al. 2017). Teachers are generally obliged to fulfill various duties other than teaching activities, which are determined by legislation (Taşkın and Nartgün Sezgin 2023). Teachers' workload becomes even more difficult, especially in periods when educational programs are undergoing changes (Erdem 2010). Furthermore, technological developments have affected education, as in every other field, and the use of technology in education has become a fundamental requirement of the contemporary era (Allahverdi and Gelzheiser 2021; MoNE 2024). Teachers are expected to adapt to technological developments and bring technology into the educational environment appropriate for pedagogical use (Uçar Sarımanoğlu 2019). However, as Hawkridge (2022) argues, the adoption and use of information technologies by teachers is time-consuming and difficult. While teaching is already a stressful profession (Buskila and Chen-Levi 2021; Montgomery and Rupp 2005; Wang et al. 2024), using information technologies as a requirement of the contemporary era further pressurizes teachers mentally.

When considering the conditions of the teaching profession, teachers are expected to be individuals who can use technology effectively, manage time effectively, and have enough energy. When considering the challenges faced by teachers, it is notable that those with over 21 years of experience must dedicate more time to learning and utilizing technology compared to their counterparts with 5 years or less of experience. Additionally, their prolonged tenure often results in greater fatigue, leading to longer task completion times. Consequently, it is understandable that their levels of time-related stress and pressures are higher as a result.

The research results reveal that teachers' levels of time poverty do not differ based on the level of employment. Poverty is a state of inability to fulfill "capabilities" (Sen 1985). "Capability" is associated with having the freedom to make choices (Pressman and Summerfield 2000). That is, the ability of individuals to organize their time based on their capabilities is an important factor affecting their well-being (Sezer et al. 2023). Therefore, teachers working at pre-school and primary school levels, who have more freedom in planning education and training than other levels, are expected to have lower levels of time poverty. However, Liu et al. (2023), in their study, consider time poverty in a single dimension by combining work and family factors. Though studies in the literature examine time poverty as a two-dimensional construct in the context of work and family (Dugan et al. 2012; Kleiner 2014), it is deemed appropriate to consider time poverty as a one-dimensional construct when it comes to teachers. This is because teachers are generally known to continue some of the tasks related to their profession at home (Felsing et al. 2019; Garrick et al. 2017). This increases the permeability of the boundary between home and work for teachers. From this perspective, preschool and primary school teachers may have more freedom in planning instructional activities than at other levels. Still, understandably, they generally have a level of time poverty equivalent to teachers working at different levels.

The quality of an education system is determined by its teachers (Barber and Mourshed 2007; Atanur Baskan et al. 2006). Thus, the professional development and retention of the teacher workforce should be a priority for the education systems in all countries. Teachers' level of well-being is an important determinant of their professionalism (Mavi et al. 2024; OECD 2021). Since "time" is one of the most critical resources needed for well-being (Giurge et al. 2020; Vega-Rapun et al. 2020; White 2016; Williams et al. 2015), determining teachers' time-related poverty levels and the factors that have an impact on poverty levels will provide essential data to guide educational administrators and policymakers.

Based on the results of the study, the following recommendations can be made to reduce time poverty experiences of teachers and increase knowledge accumulation in this field:

- The study results show that the time poverty levels of female teachers are significantly higher compared to male teachers. This indicates that female teachers are professionally under time pressure due to their gender-based roles and responsibilities. Therefore, difficulties experienced by female teachers regarding time management can be considered in educational policies and school-based applications, measures that will balance the workload of female teachers can be taken, and support mechanisms that will enable social gender equality can be developed.
- The necessity to adapt to the fast-developing technology, accumulating professional fatigue, and resulting burnout can be evaluated among the reasons causing high levels of time poverty among senior teachers. Hence, in-service training programs focusing on technology integration can be offered regularly for teachers with professional seniority of 21 years and above. Besides, support programs that will boost motivation and reduce professional exhaustion/burnout can be implemented. Thus, digital competencies of senior teachers can be increased, and their time poverty experiences can be reduced.

The following recommendations can be made for implementers and researchers for future studies:

- To reveal in depth how the phenomenon of time poverty has evolved in different contexts and the reasons underlying time poverty, mixed-method and large-scale studies that consider regional living and working conditions in Turkey, address different variables, and in which qualitative and quantitative methods are employed in combination can be conducted.

- Time management training programs to be developed to decrease time poverty and the effectiveness of interventions that will reduce workload can be tested with experimental studies.
- To demonstrate how the phenomenon of time poverty has evolved within the context of different sociocultural structures and educational systems, the universal and contextual dimensions of time poverty can be revealed through comparative studies to be conducted in different countries.

3.1 | Limitations

The present study was conducted with certain limitations. First of all, data were collected from 698 teachers in the scale adaptation process and 363 teachers in the implementation stage. The representation power of the sample group can be limited in terms of reflecting the diversity of the teacher population in Turkiye. Secondly, the data were collected from teachers through a self-report questionnaire. This situation bears the risk of the effectiveness of the social acceptance inclinations and subjective perceptions of the participants in their responses. Another limitation of the study is that time poverty was evaluated in terms of only the variables of gender, professional seniority, and the grade level teachers were employed in. Many variables, such as branch, marital status, number of children, income level, region of work, school context, etc., were not included in the analysis. These limitations should be considered in the interpretation of the study results, and they should be evaluated as a guide for future studies.

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Ethics Statement

All subjects (raters) gave their informed consent for inclusion before they participated in the study. Approval was obtained from the local ethics committee of Sakarya University, and the protocol was approved by the Ethics Committee of Sakarya University (E-61923333-050.99-426634).

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data are available on request from the authors. The data that support the findings of this study are not openly available due to human personal data, including raters' identity information, and are available from the corresponding author upon reasonable request. Please make a clear statement when you request the data.

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