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Exploring the correlation between teacher work motivation and engagement in online classes: the mediating role of job satisfaction

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Abstract

While prior research highlights the impact of teacher work motivation (TWM) on teacher job satisfaction (TJS) and teacher job engagement (TJE), the nuanced relationships among these constructs in the specific context of Iranian teachers in online classes have received limited attention. Addressing this gap, this study examined the interplay between TWM and TJE, with a focus on the mediating role of TJS among Iranian teachers in online classes. To this end, the study adopted a quantitative research design, involving a sample of 412 EFL teachers (female, $n=226$, male, $n=186$) recruited through convenience sampling. Data were gathered using standardized instruments for measuring TWM, TJS, and TJE, and analyzed using Structural Equation Modeling (SEM). Findings indicated that TWM significantly predicts TJS and TJE. Additionally, the results uncovered that TJS was significantly correlated with TJE. Furthermore, TJS significantly mediated the effect of TWM on TJE. These insights provided tangible implications for various stakeholders, emphasizing the need to prioritize initiatives that cultivate TJS as a pathway to improved engagement and effectiveness.

Keywords Teacher work motivation, Teacher work engagement, Teacher job satisfaction, Iranian teachers

Introduction

Teacher work motivation (TWM) plays a crucial role in shaping educators' effectiveness, satisfaction, and overall professional well-being. According to Richardson et al. [58], it encompasses a spectrum of internal and external factors that drive teachers to approach their responsibilities with energy and commitment. In essence, TWM reflects the degree of drive compelling educators to fulfill their duties, shaped by an interplay of personal, social, and organizational dynamics [60, 70]. The significance of TWM extends beyond individual teachers, as it profoundly influences TJS, teaching quality, and student outcomes [2, 50]. As underscored by Collie [20], motivated teachers are more likely to exhibit resilience, adopt innovative practices, and engage deeply with their work, even in challenging circumstances. This enthusiasm not only enhances their professional performance but also fosters a vibrant learning environment and a supportive school culture, ultimately contributing to improved educational quality [34, 40].

One of the most comprehensive frameworks for understanding teacher motivation is the Multidimensional Work Motivation Scale (MWMS) developed by Gagné et al. [26]. This framework categorizes motivation into six distinct dimensions, offering a nuanced understanding of the factors driving teachers' engagement. The first dimension, Amotivation, refers to the absence of intention or drive to act. Extrinsic Regulation—Social involves

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motivation derived from social recognition or the desire to avoid disapproval, while Extrinsic Regulation—Material relates to tangible rewards or the avoidance of penalties [26]. Introjected Regulation is characterized by internal pressures, such as feelings of guilt or the need to maintain self-esteem, that compel individuals to act. Identified Regulation occurs when tasks are performed due to their perceived personal importance, and finally, Intrinsic Motivation reflects engagement driven by inherent enjoyment or interest in the activity itself [26]. By highlighting the multifaceted nature of motivation, the MWMS provides a valuable lens for examining how various motivational drivers influence teachers' attitudes, behaviors, and overall professional performance.

Recent research has approved the pivotal role of motivation in teachers. For example, Watt and Richardson [75] explored various motivational theories and identified a direct relationship between TWM, teaching quality, and student engagement. Similarly, Chang and Sung [18] investigated the mediating role of teacher self-efficacy in the relationship between TWM and TJS. Their findings revealed that highly motivated teachers with strong self-efficacy reported greater TJS and demonstrated enhanced capacity to manage professional challenges. These studies confirmed the critical importance of fostering teacher motivation as a means to enhance both individual and systemic educational outcomes. TWM can affect teacher-related constructs such as TJE and TJS.

TJE is a critical factor in the educational landscape, influencing both teacher performance and student outcomes. Defined as a positive, fulfilling, work-related state of mind, TJE is characterized by vigor, dedication, and absorption [47, 53]. Operationally, according to Dağdeviren Ertaş and Özdemir [21], it refers to the extent to which teachers are physically, emotionally, and cognitively involved in their work, demonstrating enthusiasm, commitment, and a deep sense of purpose in their teaching roles. The significance of TJE for teachers cannot be overstated. Engaged teachers are more likely to exhibit higher levels of motivation, which is essential for maintaining the energy and enthusiasm required to inspire and educate students effectively [79]. Wang [74] points out that TJE is crucial as it directly impacts their ability to create a positive learning environment, manage classroom dynamics, and foster student engagement and achievement. Engaged teachers are also more resilient to stress and burnout, contributing to their overall well-being and job satisfaction [46].

Among the various models developed to explain the dimensions of TJE, the model presented by Houle et al. [35] stands out. The JES encompasses three dimensions: emotional engagement, cognitive engagement, and physical engagement. Emotional engagement refers to the affective connection teachers feel towards their work, cognitive engagement involves the intellectual investment in teaching tasks, and physical engagement pertains to the energy and effort teachers put into their work activities [35].

TWM can play a crucial role in determining how engaged teachers are in their work, encouraging them to dedicate time, effort, and emotional energy. Teachers who feel motivated are more likely to experience greater vigor, dedication, and absorption in their tasks—these are all core aspects of work engagement [21, 80]. Motivation sparks enthusiasm, commitment, and a strong sense of purpose in teaching [62, 65]. Intrinsic motivation, like a deep passion for teaching and a desire to help students succeed, nurtures a strong bond with the profession. At the same time, extrinsic factors such as recognition or opportunities for career growth can further enhance engagement, especially when these align with a teacher's personal values [32]; Ryan & Deci [59], Wang [74]. Additionally, when teachers' basic psychological needs, autonomy, competence, and relatedness, are met, their motivation increases, helping them manage job-related challenges and stay engaged even in difficult situations (Deci & Ryan [60]). In the end, motivation serves as the psychological fuel that drives teachers' involvement, productivity, and emotional investment in their work [4, 47].

Recent studies have highlighted the importance of TJE. Simpson [68] reviewed the literature on TJE, emphasizing its role in enhancing job performance and reducing turnover. Schaufeli and Bakker [64] also found that job demands and resources significantly influenced burnout and engagement levels among teachers. Similarly, Hakanen et al. [32] demonstrated that TJE is inversely related to burnout, proving that engaged teachers were less likely to experience burnout. Additionally, Zhang et al. [80] explored strategies to improve TJE in China, identifying supportive leadership and professional development as key factors. Plus, Pourtousi and Ghanizadeh [54] linked teacher motivation with job commitment and TJE, underscoring the interconnectedness of these constructs. Finally, Dağdeviren Ertaş and Özdemir [21] examined the mediation role of organizational commitment between collective teacher efficacy and TJE, highlighting the importance of a supportive organizational culture. These findings underscore the critical role of TJE in fostering a productive and sustainable teaching environment, ultimately benefiting both educators and students.

The last construct investigated in this research was TJS. It is a fundamental aspect of the educational environment, shaping both the well-being of educators and the overall functioning of educational institutions [69]. Broadly, according to Scarpello and Campbell [63], TJS refers to the degree to which individuals feel fulfilled and content in their work roles. Specifically, in the context of education, it pertains to how positively teachers

perceive their roles, responsibilities, and work conditions [1, 17]. This satisfaction is influenced by various factors, including the quality of relationships with colleagues and supervisors, the availability of resources and support, and how well job expectations align with personal and professional aspirations [39, 56]. Understanding these factors is crucial for improving the quality of education and ensuring a positive school climate.

The importance of TJS extends far beyond individual contentment; it directly impacts the effectiveness of educational systems [18, 72]. Research consistently has approved that satisfied teachers are more motivated, engaged, and productive in their teaching roles [10, 45]. Furthermore, high TJS contributes to lower turnover rates, which reduces the financial and organizational challenges associated with hiring and training new staff [73]. Teachers who are satisfied with their work environment are better positioned to create positive and conducive learning atmospheres, leading to enhanced student engagement, achievement, and overall school performance [13, 41]. Therefore, fostering TJS is essential for creating a stable and thriving educational system.

One of the often-cited models presented to specific the different dimensions of TJS belongs to Spector [71]. This model includes supervision, which evaluates the quality and effectiveness of support from school administrators; colleagues and communication, focusing on relationships and interactions among staff; and working conditions, examining the physical and psychological environment. Additionally, it assesses payment and benefits, addressing financial aspects and perceived fairness; the work itself, considering the intrinsic aspects of teaching; contingent rewards, evaluating recognition and rewards for performance [71]; and opportunities for advancement, examining potential for career growth and professional development [71]. By assessing these dimensions, the TJSQ provides a detailed understanding of the factors that contribute to or detract from TJS, helping to identify specific areas for improvement to enhance overall TJS.

TWM is one of the critical factors influencing TJS. Motivation, driven by both intrinsic and extrinsic factors, plays a significant role in determining how teachers perceive their work [15, 27]. Chang and Sung [18] stress that highly motivated teachers are more likely to derive satisfaction from their roles, as they find their work both meaningful and rewarding. Factors such as recognition, opportunities for professional development, and supportive leadership have been shown to boost teacher motivation and, in turn, improve TJS [6, 38]. These elements help teachers feel valued, fostering a sense of purpose and increasing their commitment to their profession. On the other hand, TJS can directly impact TJE. Teachers who are satisfied with their roles are more likely to be highly engaged in their teaching, demonstrating increased energy, commitment, and persistence [49, 56]. This heightened engagement not only benefits teachers' personal growth but also positively affects student learning outcomes and the overall performance of schools [45, 70].

Theoretically, TJS is proposed to function as a key mediator between teacher work motivation and job engagement. This mediating role can be understood through frameworks like Self-Determination Theory (SDT) and the Job Demands-Resources (JD-R) model. SDT suggests that when teachers experience autonomous motivation, fulfilling their needs for competence, autonomy, and relatedness, this intrinsically rewarding state enhances job satisfaction [60]. Subsequently, this heightened satisfaction, representing a positive appraisal of the work environment and one's role within it, likely provides the psychological resources and positive affect necessary for teachers to invest energy and effort, thereby fostering job engagement (Bakker & Demerouti, 2017; Schaufeli & Bakker [64]. In essence, motivation may fuel the positive state of satisfaction, which in turn enables or encourages active engagement with work tasks.

Building on this theoretical importance, empirical research consistently highlights the significance of TJS within the educational context. For instance, investigations reveal substantial links between TJS and other crucial teacher variables; [52] identified significant correlations between TJS, teacher self-efficacy, and work engagement, suggesting an interconnectedness among these positive states. Further studies underscore the reciprocal nature of these relationships, indicating that teacher work engagement can also act as a predictor of TJS, alongside factors like proactive personality [44]. Moreover, recent work emphasizes that TJS is not merely an outcome but a critical factor contributing significantly to teachers' overall well-being and, consequently, to the quality of education provided [41]. These findings collectively affirm the central role TJS plays in the professional lives of teachers and the functioning of educational institutions.

While considerable research has examined various facets of teacher job satisfaction, a noticeable gap persists concerning the precise interplay between TWM and TJE, particularly when considering the potential mediating function of TJS. Much of the existing literature tends to investigate motivation and engagement as separate constructs, or explores their direct relationship. However, the specific pathway through which TWM might influence TJE via TJS has received less empirical attention. Furthermore, a significant portion of this research originates from Western educational contexts. There remains a particular need to explore these dynamics within the unique circumstances faced by Iranian teachers, especially those navigating the complexities of online instruction. This

context presents distinct challenges and opportunities related to technological infrastructure, pedagogical adaptation, and cultural expectations, potentially shaping the relationships between TWM, TJS, and TJE in ways not captured by studies elsewhere. Therefore, this study aims to address this specific gap by examining how TJS mediates the link between TWM and TJE among Iranian EFL teachers working in online environments. By focusing on this under-investigated mechanism within a specific, relevant context, the research seeks to offer a more nuanced understanding of the factors underpinning teacher effectiveness and well-being in contemporary Iranian education.

This study is significant both theoretically and practically. Theoretically, it makes an important contribution by integrating perspectives from motivation theory, TJS, and TJE. This theoretical framework helps to clarify the complex relationships among these variables, offering fresh insights into how teachers' motivation can enhance TJS, which in turn leads to higher levels of TJE. From a practical standpoint, the findings of this research can inform educational policies and practices by highlighting the importance of fostering an environment that supports teacher satisfaction. Understanding the factors that drive motivation and engagement enables school leaders and policymakers to develop targeted strategies aimed at improving teacher retention, boosting job performance, and, ultimately, enhancing student outcomes. Thus, this study not only advances academic knowledge but also offers actionable recommendations that can positively impact educational settings. To meet these purposes, the following research questions (RQs) were posed:

RQ1 Is there a significant relationship between teacher work motivation and teacher job engagement among Iranian EFL teachers?

RQ2 Does a significant relationship exist between teacher work motivation and teacher job satisfaction among Iranian EFL teachers?

RQ3 Is there a significant relationship between teacher job satisfaction and teacher job engagement among Iranian EFL teachers?

RQ4 Does teacher job satisfaction mediate the relationship between teacher work motivation and teacher job engagement among Iranian EFL teachers?

Method

Research design

This study employed a quantitative, cross-sectional research design using SEM to investigate relationships between TWM and TJE, with TJS as a potential mediator. Data were collected at a single time point from participating EFL teachers. We chose SEM because it allows simultaneous examination of multiple relationships between observed and latent variables [16], making it particularly suitable for testing complex mediation models. The SEM approach offers several advantages for this study. First, it enables testing of both direct and indirect pathways in one comprehensive model. Second, it accommodates the theoretical complexity of relationships between TWM, TJS, and TJE. Third, it provides robust statistical evidence for the proposed mediation effects. These features aligned perfectly with our goal of examining how TJS mediates the relationship between TWM and TJE in educational settings.

Participants

This study employed a convenience sampling approach to recruit 412 EFL teachers from various educational institutions across Iran. This method was chosen due to its practicality in accessing participants within the researchers' professional networks, as well as time and resource constraints common in educational research [57]. While convenience sampling limits generalizability, it ensures feasibility for exploratory studies targeting specific populations—in this case, Iranian EFL teachers. The sample comprised 226 female teachers (54.9%) and 186 male teachers (45.1%), with ages ranging from 24 to 52 years ($M = 36.7$, $SD = 7.2$). Teaching experience varied from 2 to 25 years ($M = 11.3$, $SD = 5.8$), reflecting a mix of early-career and seasoned educators. Participants held diverse academic qualifications: applied linguistics (48.1%, $n = 198$), English literature (32%, $n = 132$), TESOL (19.9%, $n = 82$), and related disciplines (4.9%, $n = 20$). Most (69.7%, $n = 287$) had postgraduate degrees, while 30.3% ($n = 125$) held bachelor's qualifications.

Prior to data collection, ethical approval was obtained from the Ethics Committee of the IAU of Ahvaz (code: 23.B-2024-0412). Participants were contacted through various channels, including email, WeChat, and professional networks, and provided with detailed information about the study's objectives, procedures, and potential implications. Informed consent was obtained through a secure online platform, ensuring voluntary participation and the right to withdraw at any stage of the research. It should be noted that to uphold ethical standards, stringent measures were implemented to safeguard participants' confidentiality and anonymity. All data were de-identified and securely stored, with restricted access to the research team. Participants were reassured that their responses would be used solely for research purposes and would not impact their professional standing.

Instruments

The Teacher Work Motivation Scale (TWMS), adapted from the Multidimensional Work Motivation Scale (MWMS) [26], was used to assess teacher motivation across six dimensions. The scale comprises 19 items rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The six subscales include Amotivation (e.g., "I don't know why I'm doing this job; it's pointless work"), Extrinsic Regulation—Social (e.g., "To get others' approval, such as from supervisors or colleagues"), Extrinsic Regulation—Material (e.g., "Because others will reward me financially only if I put enough effort into my job"), Introjected Regulation (e.g., "Because otherwise I will feel ashamed of myself"), Identified Regulation (e.g., "Because putting efforts into this job aligns with my personal values"), and Intrinsic Motivation (e.g., "Because what I do in my work is exciting"). Each subscale captures a distinct aspect of motivation, ranging from external rewards and pressures to intrinsic enjoyment and alignment with personal values.

The second instrument employed in the study was the Teacher Job Satisfaction Questionnaire (TJSQ), developed and validated by Spector [71] (See Appendix B). The TJSQ was specifically designed to assess TJS across multiple dimensions and consisted of 36 items. These dimensions included supervision (e.g., "My supervisor is quite competent in doing his/her job."), colleagues and communication (e.g., "I like the people I work with."), working conditions (e.g., "Many of our rules and procedures make doing a good job difficult."), payment and benefits (e.g., "I feel I am being paid a fair amount for the work I do."), work itself (e.g., "I enjoy my actual day-to-day responsibilities."), contingent rewards (e.g., "I don't feel my efforts are rewarded the way they should be."), and opportunities for advancement (e.g., "There is really too little chance for promotion on my job."). The participants responded to each item using a five-point Likert scale, ranging from highly dissatisfied (1) to highly satisfied (5), allowing for a nuanced assessment of their satisfaction levels. The comprehensive structure of the questionnaire ensured the inclusion of both intrinsic and extrinsic factors influencing TJS.

The Job Engagement Scale (JES), developed by Houle et al. [35], was the third instrument used in this study to assess TJE. The JES consists of three dimensions: emotional engagement (6 items), cognitive engagement (6 items), and physical engagement (6 items). These dimensions examine specific elements of engagement, such as emotional attachment to work (e.g., "I feel enthusiastic about my job"), cognitive focus during tasks (e.g., "My thoughts are fully absorbed in my work"), and physical participation in job activities (e.g., "I dedicate full effort to my work tasks"). Responses were collected using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). To ensure relevance to EFL teaching, slight modifications were made to the instrument. For example, in item 8, the original phrase "at work" was changed to "in my teaching role."

Data collection procedures

The data collection process for this study was carefully planned to ensure the accuracy and validity of our findings. After selecting the primary data collection instruments, a crucial initial step involved translating them into Farsi, the participants' first language. To manage this, we employed a standard back-translation procedure, recognized as a valuable technique in cross-cultural research. Two bilingual translators, proficient in both English and Iranian language and culture, were recruited. Each translator produced an independent Farsi version of the instruments. These versions were then compared, and any discrepancies were discussed and resolved collaboratively to achieve linguistic accuracy. However, the authors recognized that effective instrument adaptation requires more than direct translation; achieving cultural equivalence is paramount [33]. While time and resource constraints precluded extensive cognitive interviewing with potential participants, we took specific steps to assess the cultural relevance and appropriateness of the translated items. The finalized Farsi instruments were carefully reviewed not only by the research team for conceptual clarity but also by three experienced Iranian EFL teachers. This expert panel was asked specifically to evaluate whether the items would be clearly understood, culturally resonant, and relevant to the lived experiences and educational context of the target population. Their feedback was instrumental in refining the instruments, aiming to minimize potential cultural bias and enhance the contextual validity of the measures used in this study.

Prior to the main data collection phase, a pilot study was conducted to evaluate the internal consistency of the chosen instruments. This involved 30 EFL teachers whose characteristics mirrored those of the target population. The results yielded satisfactory Cronbach's alpha values: 0.88 for the TWMS, 0.84 for the TJSQ, and 0.91 for the JES. These findings affirmed the reliability of the measures, supporting their use for the primary investigation. Subsequently, for the main study, participants were recruited using a convenience sampling approach. This resulted in a sample of 412 EFL teachers ($n = 226$ female; $n = 186$ male) employed across various educational institutions in Iran. Data collection was carried out using an electronic questionnaire administered via Google Forms. Potential participants initially received a concise explanatory email which clearly outlined the research objectives and provided an estimate of the time required to complete the survey. Alongside this, an instructional video was made available to guide respondents through

the different sections of the questionnaire. While the survey link was likely distributed through various channels, potentially including email, WeChat, and professional networks as suggested by common practice in such contexts, specific details regarding the procedures used to manage the response process were not fully elaborated. For instance, information concerning the methods for sending reminders to encourage participation or the steps taken to identify and exclude potential duplicate submissions was not specified. Participants were requested to complete and submit the questionnaire within a one-week timeframe. This approach ultimately yielded a robust response rate of 88.2%, with 412 teachers submitting usable, completed questionnaires. All responses were recorded digitally and subsequently stored securely, ensuring data integrity for the analysis phase. It should be noted that the data were collected between June and August 2024.

Data analysis procedures

To analyze the collected data, Structural Equation Modeling (SEM) was conducted using Analysis of Moment Structures (AMOS) 26 software. The data analysis process in this study followed a meticulous two-stage approach to ensure the reliability and validity of the measurement model and the accuracy of the hypothesized structural relationships. In the initial stage, the assessment focused on the measurement model to evaluate the psychometric properties of the instruments utilized. This entailed scrutinizing convergent validity, discriminant validity, and composite reliability for each construct. Convergent validity was evaluated by examining the factor loadings of each item on its respective latent variable, with values exceeding 0.50 indicating sufficient convergence [30]. Discriminant validity was appraised by comparing the Average Variance Extracted (AVE) of each construct with the squared correlation between constructs, ensuring that the AVE for each construct surpassed the squared correlation with other constructs [25]. Composite reliability was computed for each scale, with values above 0.70 denoting robust internal consistency [30].

Table 1 *Results of structural model goodness of fit indices*

Fit Indices	Recommended value	Estimated Value	Result
cmin/df	< 3	1.277	Acceptable
RMSEA	< 0.08	0.019	Acceptable
GFI	> 0.80	0.972	Acceptable
AGFI	> 0.80	0.962	Acceptable
CFI	> 0.90	1.000	Acceptable
IFI	> 0.90	1.000	Acceptable
TLI	> 0.90	1.000	Acceptable
NFI	> 0.90	0.979	Acceptable
PCFI	> 0.50	0.842	Acceptable

Subsequently, in the second stage, the structural model was scrutinized to test the hypothesized relationships among the variables. Specifically, the study delved into the connections between TWM, TJS, and TJE, with TJS serving as a mediator between TWM and TJE. The mediation effect was assessed utilizing a bootstrapping method to gauge indirect effects and their significance [55]. Model fit was appraised using various indices, including the Chi-square statistic, the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI), and the Root Mean Square Error of Approximation (RMSEA), with the acceptance criteria set at CFI and TLI values greater than 0.90, and RMSEA values less than 0.08 [12, 48]. The outcomes of the SEM analysis were leveraged to validate the direct and indirect effects among the constructs and to examine the mediation hypothesis.

Results

The internal consistency reliability of the data collection instruments was evaluated using Cronbach's Alpha. The resulting alpha coefficients ranged from 0.782 to 0.924, exceeding the commonly accepted threshold of 0.70 and indicating adequate reliability for the scales. Following this assessment, multivariate normality was examined via kurtosis values and the critical ratio. As noted by Hair et al. [31], multivariate normality is considered supported if the critical ratio remains below 5. The analysis yielded a kurtosis value of 13.409 and a critical ratio of 1.337, confirming that the dataset met the assumption of multivariate normality.

To assess the reliability and validity of the constructs within the proposed theoretical framework, confirmatory factor analyses (CFA) were conducted at both first- and second-order levels. Key indicators, including factor loadings, composite reliability (CR), and average variance extracted (AVE), were examined. According to Hair et al. [31], item factor loadings exceeding 0.5 and associated T-values greater than 1.96 are indicative of reliability. Furthermore, construct validity requires CR values of at least 0.7, AVE values of 0.5 or higher, and CR values exceeding the corresponding AVE [28]. The results indicated factor loadings ranging from 0.704 to 0.737 for first-order constructs and 0.798 to 0.880 for second-order constructs. As all loadings surpassed the 0.6 threshold applied in this study, reliability was supported. Composite reliability values ranged from 0.782 to 0.924, exceeding the 0.7 benchmark, while AVE values ranged from 0.545 to 0.671, surpassing the 0.5 requirement. Consistent with the criteria for discriminant validity, CR values exceeded AVE values for all constructs. Following this validation, structural equation modeling (SEM) was performed, with the results presented in Table 1.

The analysis presented in Table 1 indicates that the proposed model exhibits strong alignment with the observed

data, satisfying established criteria across multiple goodness-of-fit indices. Notably, the chi-square to degrees of freedom ratio (χ^2/df) was 1.277, well below the acceptable threshold of 3 (Kline, 2016). Additionally, the root mean square error of approximation (RMSEA) was 0.019, substantially lower than the conventional cutoff of 0.08 (Browne & Cudeck, 1993). Furthermore, key fit indices—including the goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), normed fit index (NFI), and Tucker-Lewis index (TLI)—all exceeded the recommended minimum of 0.90 (Hu & Bentler, 1999). Specifically, these indices yielded values of 0.972, 0.962, 1.000, 0.979, and 1.000, respectively, providing robust support for the model's validity and appropriateness. Importantly, no post hoc modifications (e.g., adding covariances) were applied to the initial model, thereby maintaining its theoretical coherence.

Figure 1 illustrates the results obtained from the structural model estimation. The analysis employed Maximum Likelihood Estimation (MLE), incorporating the mediator variable to assess the hypothesized relationships. To further validate the robustness of the findings, a bootstrapping procedure with 5,000 resamples was conducted, thereby strengthening the reliability and stability of the results.

The results presented in Fig. 1 indicate squared multiple correlations (R^2) of 0.93 for TWE and 0.69 for TJS. These values suggest that TWM explains 69% of the variance in TJS, while the combined influence of TWM and TJS accounts for 93% of the variance in TWE. According to Hair et al. [31], R^2 values exceeding 0.75, 0.50, and 0.25 represent strong, moderate, and weak predictive power, respectively. The obtained coefficients demonstrate moderate to strong explanatory capacity, thereby reinforcing the robustness of the predictor variables and supporting the validity of the proposed conceptual model [31].

Furthermore, the interrelationships among latent constructs were examined through comprehensive path analysis. As presented in Table 2, the proposed structural model's efficacy is demonstrated through standardized path coefficients (β), accompanied by their respective standard errors (SE) and corresponding probability values (p-values), providing robust empirical validation of the hypothesized relationships.

As evidenced in Table 2, a statistically significant relationship emerges between TWM and TJE ($\beta = 0.406$, $p < 0.05$), thereby substantiating the first hypothesis. These findings indicate a positive association between TWM and the extent of TJE among EFL teachers. Correspondingly, the analysis reveals a strong positive relationship between TWM and TJS ($\beta = 0.829$, $p < 0.01$), confirming the second hypothesis and highlighting TWM's pivotal role in enhancing TJS within EFL contexts. Furthermore, a significant direct relationship is

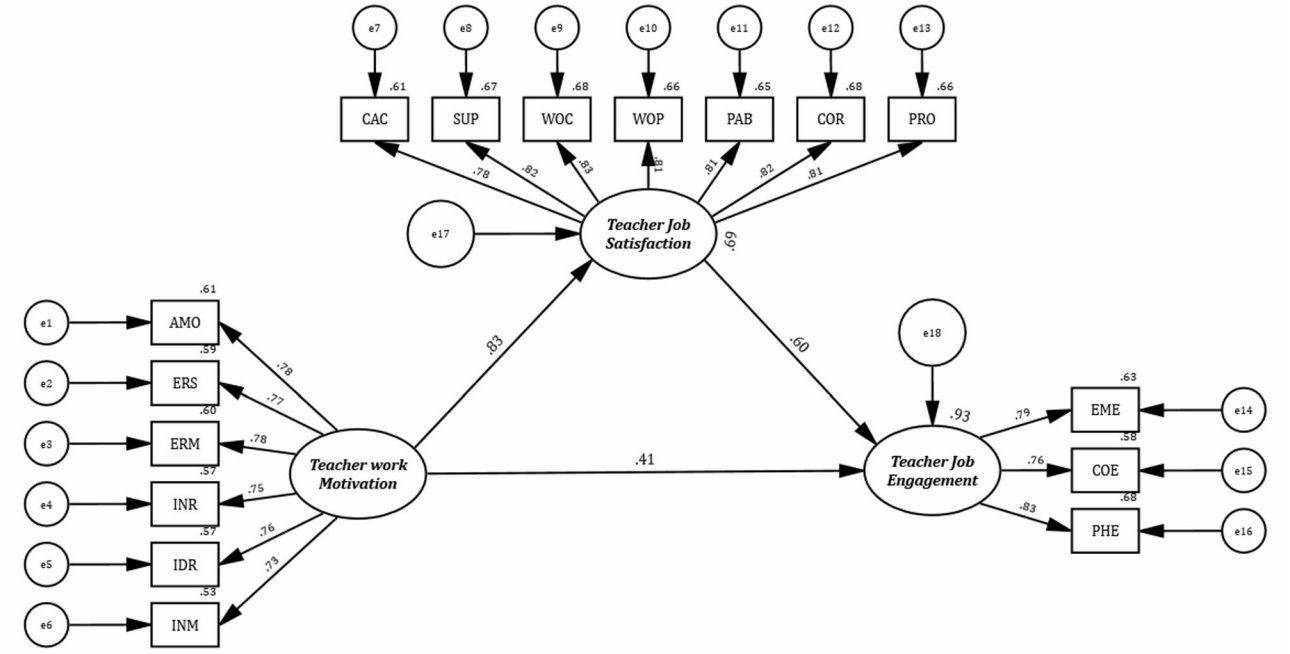

Fig. 1 Outcomes of estimating the structural model

Table 2 Results of path estimates of the models

Direct Path						β	SE	Bootstrapping 95% Confidence Interval BC	
								Lower	Upper
H1:	TWM		→	TJS		0.829 **	0.041	0.741	0.900
H2:	TWM		→	TJE		0.406 *	0.146	0.098	0.662
H3:	TJS		→	TJE		0.598 **	0.145	0.340	0.906
Indirect Effect									
H4:	TWM	→	TJS	→	TJE	0.496 **	0.134	0.275	0.797

Note: $P < 0.01$**; Teacher Work Motivation = TWM; Teacher Job Satisfaction = TJS; Teacher Job Engagement = TJE β = Standardized Coefficients; SE = Standard Errors

established between TJE and TJS (β = 0.598, $p < 0.01$), validating the third hypothesis and demonstrating that elevated TJS positively influences TJE. Importantly, the mediating role of TJS is confirmed through a statistically significant indirect effect of TWM on TJE via TJS (β = 0.496, $p < 0.01$). These results collectively support the fourth hypothesis, indicating that TJS serves as a critical mediator that strengthens the TWM-TJE relationship in EFL settings.

Discussion

The first research question examined whether there was a significant correlation between TWM and TJE among teachers. The findings revealed a significant positive correlation between these two variables, revealing that higher levels of work motivation were associated with greater TJE among the teachers. In tune with the study's findings, Zhang et al. [80] found that teacher autonomy significantly enhanced TWE through the satisfaction of basic psychological needs and intrinsic motivation. Similarly, along with the results of this research, Chang and Sung [18] demonstrated that teacher motivation positively influenced TJS and engagement, mediated by self-efficacy. Additionally, the findings of the study are consistent with Tentama and Pranungsari [72] who found that work motivation and TJS were crucial for organizational commitment, which in turn affects TJE.

To justify these findings, it can be drawn on Self-Determination Theory (SDT) [23]. SDT posits that motivation is driven by the fulfillment of basic psychological needs: autonomy, competence, and relatedness [22]. Given SDT, it may be argued that when the teachers experienced autonomy in their work, felt competent in their abilities, and had meaningful connections with colleagues and students, their intrinsic motivation increases, leading to higher TJE [61]. Additionally, to recap the study's findings, it can be referred to Herzberg's Two-Factor Theory [3], which explains that motivators such as recognition, responsibility, and opportunities for growth enhance TJS and engagement. In contrast, the absence of hygiene factors like adequate salary and working conditions can lead to dissatisfaction but not necessarily disengagement [36]. Therefore, addressing both motivators and hygiene factors was essential for sustaining high levels of the teacher engagement.

The second research question explored whether there existed a significant correlation between TWM and TJS among teachers. The findings revealed a significant positive correlation between TWM and TJS, indicating that higher levels of motivation among teachers are associated with greater TJS. Comparing these findings with previous studies, it is evident that the relationship between TWM and TJS is consistent with recent research. For instance, a study by Tentama and Pranungsari [72] found that TWM significantly influences TJS and organizational commitment. Similarly, research by Iqbal et al. [37] demonstrated a strong positive correlation between TJS and various motivational factors among teachers.

The significant correlation between TWM and TJS can be explained using Expectancy-Value Theory [77]. According to this theory, it may be argued that the teachers were motivated when they believe their efforts would lead to successful outcomes and when they valued these outcomes highly [78]. In line with this, it may be stated that the motivated teachers, who expected their efforts to result in effective teaching and student success, were more likely to experience TJS [24]. To discuss further the study's results, it can be referred to Achievement Goal Theory [67]. Along with this theory, it may be argued that the teachers with mastery goals, who focused on improving their teaching skills and knowledge, were intrinsically motivated and derive satisfaction from their professional growth [11]. These teachers, according to Chazan et al. [19], were likely to find their work more fulfilling and satisfying, as they observed tangible progress in their abilities and student outcomes. Therefore, the significant relationship between work motivation and TJS could be attributed to the alignment of the teachers' goals and values with their professional achievements, as supported by these theories.

The third research question explored whether there was a significant correlation between TWM and TWE among the teachers. The findings revealed a significant positive correlation between TWM and TWE, indicating that higher levels of work motivation among teachers were associated with greater engagement in their work. These findings align with previous studies. For instance,

the study by Klassen et al. [40] found that teachers' self-efficacy and TJS significantly predicted their TWE. Similarly, the research by Skaalvik and Skaalvik [69] demonstrated that motivated teachers who feel competent and valued were more likely to be engaged in their work. However, some studies, such as those by Hakanen et al. [32], have reported that external factors like workload and administrative support can also influence this relationship.

To explain the significant correlation between TJM and TWE, it can be referred to Social Cognitive Theory [7]. Along with this theory, it may be argued that the teachers' beliefs in their capabilities (self-efficacy) could play a crucial role in their motivation and engagement [8]. The teachers with high self-efficacy, according to Bandura [9], were more likely to set challenging goals, persisted in the face of difficulties, and found their work engaging and fulfilling. As this theory postulated, the motivated teachers who believed in their ability to impact student learning were more engaged because they observed their efforts as effective and meaningful [66]. Additionally, it can be referred to the Attribution Theory [76] to discuss the study's findings. Corroborating with this theory, the teachers who attributed their successes to internal factors such as effort and ability were more likely to be motivated and engaged [29]. They might view their achievements as a result of their hard work and competence, which enhanced their TJS and engagement. Collectively, these findings can be attributed to the teachers' positive self-beliefs and their internal attributions for success.

The fourth research question explored whether TJS mediates the correlation between TWM and TWE among EFL learners. The findings revealed that TJS significantly mediated the correlation between TWM and TWE, indicating that TJS plays a crucial role in enhancing the impact of work motivation on TWE. Comparing these findings with previous studies, it is evident that the mediating role of TJS is consistent with recent research. For instance, the research by Hakanen et al. [32] demonstrated that TJS acted as a mediator between job resources and TWE, highlighting its importance in the motivational process. Additionally, the study's findings are in line with those of [51] in Nigeria revealing that TWM and TJS were crucial for high productive performance, further supporting the mediating role of TJS.

The significant mediation effect of TJS can be explained using Job Demands-Resources (JD-R) Theory [5]. Grounded in this theory, it can be argued that job resources such as TJS could buffer the impact of job demands and enhance motivation, leading to higher TWE. When the teachers were satisfied with their jobs, they were more likely to utilize their motivation effectively, which might result in greater engagement [6]. Along with the results of the study, it can be argued that TJS could provide the necessary emotional and psychological resources that help teachers cope with job demands and stay engaged in their work. To further discuss the findings, it may be referred to Social Cognitive Career Theory (SCCT) [14, 43]. Rested on this theory, it may be argued that the satisfied teachers had higher self-efficacy and positive outcome expectations, which might strengthen the relationship between work motivation and job engagement [42]. They were more confident in their abilities and optimistic about the outcomes of their efforts which might pave the way for greater engagement. Overall, as supported by these theories, the significant relationship between TJM and TWE, mediated by TJS, can be attributed to the alignment of teachers' self-beliefs and positive attributions with their professional achievements.

Conclusions and implications

This study set out to examine the complex connections between TWM, TJS, and TWE among Iranian EFL teachers. The results revealed that TWM played a pivotal role in shaping both TJS and TWE, highlighting its foundational impact on teachers' professional experiences. A strong and positive correlation was also identified between TJS and TWE. Notably, TJS emerged as a mediating factor between TJM and TWE, underscoring its critical role in fostering a motivated and engaged teaching workforce. From a theoretical perspective, this study contributes to a deeper understanding of the motivational processes that underpin teacher engagement, particularly within the Iranian educational context, where cultural and systemic factors may influence these dynamics. By emphasizing the centrality of TJS, the findings align with broader theories of workplace motivation and engagement, suggesting that enhancing satisfaction can amplify the positive effects of TJM on TWM.

The implications arising from this study offer potentially valuable directions for several key stakeholders within the Iranian education system. For educational policy-makers, the research underscores the significance of TJS as a lever for enhancing both teacher engagement and performance, particularly within the growing domain of online education. Policy initiatives might therefore focus on cultivating a more supportive professional atmosphere. This could involve not only ensuring competitive remuneration structures but also formally recognizing teacher accomplishments and providing relevant, high-quality professional development opportunities tailored to the demands of distance teaching. For instance, implementing targeted surveys on teacher well-being, specifically addressing the challenges of online delivery, could pinpoint areas requiring intervention. Such data could inform the development of resources or support systems – perhaps access to robust digital

platforms like domestically supported Learning Management Systems (LMS) or secure communication channels (akin to Shad, adapted for professional collaboration) – designed to alleviate online workload and enhance both TJS and TJM.

Turning to school principals, these findings highlight their crucial role in fostering a positive and supportive school culture, a task that requires adaptation for remote or hybrid environments. Principals can actively promote both motivation and engagement through considered initiatives. Introducing virtual mentoring programs, facilitating collaborative online workshops using shared digital whiteboards or platforms, or establishing digital forums for peer-to-peer support can help teachers feel valued and connected, even when physically apart. Specific examples relevant to Iran might include school-supported training on creating engaging asynchronous content or using virtual tutoring systems effectively to connect with students needing extra support online. Critically, balancing extrinsic and intrinsic motivation at a distance requires deliberate effort from school leadership. This balance might be achieved by coupling extrinsic rewards (e.g., stipends for mastering new educational technology, formal recognition for innovative online pedagogy) with actions that boost intrinsic drives, such as granting teachers autonomy in selecting digital tools or pedagogical approaches suited to their online classrooms, and ensuring teachers participate meaningfully in school decisions regarding online learning policies. Such involvement respects their expertise and can significantly enhance TJS.

Finally, for teachers themselves, this study offers practical perspectives on navigating and enhancing their own professional satisfaction and motivation, especially within online settings. Teachers could proactively seek out professional development opportunities that resonate with their personal interests and address the specific challenges of virtual instruction, such as workshops on digital pedagogy or student engagement strategies for online environments. Connecting with peers through online communities of practice can also provide vital support and shared learning. Furthermore, consciously reflecting on intrinsic motivators – identifying what aspects of teaching provide the deepest sense of purpose – remains important. Finding ways to align daily online teaching practices with these core values, for example by focusing on building strong virtual relationships with students despite the physical distance or designing creative, interactive online lessons, can be crucial for sustaining satisfaction and engagement in the long term.

Limitations of the study and suggestions for further research

In using the study's findings, certain limitations should be acknowledged. These limitations, however, also serve to identify productive avenues for future research in this area. First, the use of convenience sampling represents a constraint, potentially limiting the extent to which these findings can be generalized beyond the specific cohort of Iranian EFL teachers who participated. Consequently, future studies employing randomized or stratified sampling methods would be valuable for ascertaining whether these results hold across more diverse teacher populations within Iran and potentially beyond. Second, the reliance on self-reported data, although a common practice in survey research, introduces the possibility of inherent biases, such as social desirability effects or common method variance. To address this, subsequent research could benefit significantly from incorporating mixed-methods approaches. Qualitative methods, including in-depth interviews or classroom observations, could provide valuable triangulation, offering richer contextual understanding and complementing the quantitative findings presented here. Third, this investigation focused exclusively on the context of Iranian EFL teachers. This specificity means that the applicability of the observed relationships to teachers in different cultural systems or educational settings remains an open question. Therefore, extending similar investigations to other contexts is warranted to explore the potential cultural contingency or universality of these motivational dynamics.

Furthermore, while the study established TJS as a significant mediating variable, the complex interplay between motivation and engagement likely involves other factors. Future research might fruitfully explore the role of additional potential mediators or moderators. Variables such as teachers' emotional regulation skills, the availability and quality of professional development opportunities, or specific aspects of the school climate could offer a more nuanced understanding of the pathways linking TWM to TWE. Finally, the cross-sectional design employed in this study captures relationships at a single point in time. Although informative, this approach cannot fully illuminate the dynamic nature of these constructs. Longitudinal research designs are therefore strongly recommended for future work. Tracking changes in TWM, TJS, and TWE within the same individuals over an extended period would allow researchers to observe how these variables influence one another dynamically. Such an approach could provide critical insights into, for instance, how shifts in educational policy impact teacher satisfaction and subsequent engagement over time, or how motivation and engagement patterns evolve across different stages of a teaching

career. Ultimately, longitudinal data offers a more robust method for examining developmental trends and potentially strengthening inferences about the causal ordering among these important variables.

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Author contributions
GSH (conception and design; Methodology; Data collection; Data analysis and interpretation; Writing-Original draft preparation); WW (Editing, Reviewing, and writing the final draft). GSH and WW revised the manuscript critically for important intellectual content and finally approved the manuscript.

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Data availability
The dataset of the present study is available upon request from the corresponding author.

Declarations

Human Ethics and Consent to Participate
The studies involving human participants were reviewed and approved by the Research Ethics Review Committee at IAU of Ahvaz, approval number [23.B-2024-0412]. All the experiments in our study were conducted in accordance to the relevant guidelines and regulations of 1963 Helsinki declaration and its later amendments.

Human Ethics and Consent to Participate
This study was approved by Research Ethics Review Committee at IAU of Ahvaz. All participants provided written informed consent to participate in the study. Participants were informed of their rights to confidentiality and voluntary participation, and they provided written consent to participate.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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