



OPEN ACCESS

EDITED BY

Ilhan Çiçek,
Batman University, Türkiye

REVIEWED BY

Hossein Isaee,
Islamic Azad University of Ayatollah
Amoli, Iran
Firat Ünsal,
Bitlis Eren University, Türkiye

*CORRESPONDENCE

Amayra Tannoubi
✉ amayra.tannoubi@issepgf.ugaf.tn
Abdullah Hamed Alliheibi
✉ aalliheibi@ksu.edu.sa

RECEIVED 08 June 2026

REVISED 11 July 2026

ACCEPTED 13 July 2026

PUBLISHED 24 July 2026

CITATION

Chebbi T, Tannoubi A, Bonsaksen T,
Geantă VA, Alliheibi AH, Woll A and
Azaiez F (2026) Teacher professional
procrastination as a well-being and self-
regulation challenge: development and
validation of the Arabic teacher
professional procrastination scale.
Front. Educ. 11:1903123.
doi: 10.3389/feduc.2026.1903123

COPYRIGHT

© 2026 Chebbi, Tannoubi, Bonsaksen,
Geantă, Alliheibi, Woll and Azaiez. This is
an open-access article distributed under
the terms of the [Creative Commons
Attribution License \(CC BY\)](#). The use,
distribution or reproduction in other
forums is permitted, provided the
original author(s) and the copyright
owner(s) are credited and that the
original publication in this journal is
cited, in accordance with accepted
academic practice. No use, distribution
or reproduction is permitted which does
not comply with these terms.

Teacher professional procrastination as a well-being and self-regulation challenge: development and validation of the Arabic teacher professional procrastination scale

Taha Chebbi¹, Amayra Tannoubi^{2,3*}, Tore Bonsaksen^{4,5},
Vlad Adrian Geantă^{6,7}, Abdullah Hamed Alliheibi^{8*},
Alexander Woll⁹ and Fairouz Azaiez^{10,11}

¹High Institute of Sport and Physical Education of El Kef, University of Jendouba, Jendouba, Tunisia, ²High Institute of Sport and Physical Education of Gafsa, University of Gafsa, Gafsa, Tunisia, ³Sports Performance Optimization Research Laboratory (LR09SEP01), National Center for Sports Medicine and Science (CNMSS), Tunis, Tunisia, ⁴Department of Health, Faculty of Health Science, VID Specialized University, Stavanger, Norway, ⁵Department of Health and Nursing Sciences, Faculty of Social and Health Sciences, University of Inland Norway, Elverum, Norway, ⁶Department of Physical Education and Sport, Faculty of Physical Education and Sport, Aurel Vlaicu University of Arad, Arad, Romania, ⁷Research Center for Physical Activities, Arad, Romania, ⁸Department of Physical Education, College of Sport Sciences and Physical Activity, King Saud University, Riyadh, Saudi Arabia, ⁹Institute of Sports and Sports Science, Karlsruhe Institute of Technology, Karlsruhe, Germany, ¹⁰Research Laboratory Education, Motricity, Sport and Health, LR19JS01, High Institute of Sport and Physical Education of Sfax, University of Sfax, Sfax, Tunisia, ¹¹High Institute of Sport and Physical Education of Sfax, University of Sfax, Sfax, Tunisia

Background/objective: Educator well-being and resilience are increasingly recognized as critical for sustainable teaching and professional effectiveness. Professional procrastination may undermine teachers' occupational functioning through difficulties in self-regulation, emotional coping, and motivation. This study aimed to develop and validate the Arabic Teacher Professional Procrastination Scale (TPPS) and examine its associations with factors relevant to educator well-being and resilience.

Methods: A cross-sectional study was conducted among 1375 Tunisian middle- and high-school teachers (mean age = 44.84 ± 6.78 years). The sample was randomly divided for exploratory factor analysis ($n = 688$) and confirmatory factor analysis ($n = 687$). Reliability, validity, measurement invariance, and temporal stability were assessed.

Results: Exploratory analyses supported a five-factor structure comprising instructional procrastination, professional self-regulation, emotional avoidance, professional motivation, and psychological consequences, explaining 83.76% of total variance. Confirmatory factor analysis demonstrated excellent model fit (CFI = 0.987, TLI = 0.985, RMSEA = 0.033). The TPPS showed excellent reliability ($\alpha = 0.95$; $\omega = 0.96$). Professional procrastination was positively associated with neuroticism, perfectionism, fear of failure, and dysfunctional decision-making, and negatively associated with conscientiousness, psychological resources, and time structure.

Conclusions: The Arabic TPPS is a valid and reliable instrument for assessing teacher professional procrastination. Findings highlight professional procrastination as a multidimensional challenge linked to educator well-being, self-regulation, and resilience-related resources.

KEYWORDS

Arabic scale, confirmatory factor analysis, exploratory factor analysis, psychometric validation, reliability, self-regulation, teacher professional procrastination, teachers

1 Introduction

Procrastination is commonly defined as the voluntary delay of an intended course of action despite expecting negative consequences from that delay (Klingsieck, 2013). Although often examined in academic settings, procrastination is not limited to student populations and may also affect professional functioning, well-being, and performance in occupational contexts (Metin et al., 2018; Sirois, 2023; Steinert et al., 2021). In work settings, procrastination has been associated with lower productivity, greater stress, and poorer occupational outcomes, suggesting that it should be understood as a broader self-regulatory difficulty rather than as a context-specific academic habit (Grogan and Wipawayangkool, 2025; Steel et al., 2022). Complementary evidence from mental health research shows that psychological well-being, depression, and stress tend to co-occur and interact during periods of heightened contextual strain, further illustrating the complex interrelations among well-being-related variables (Ceri and Cicek, 2021).

This issue is particularly relevant in the teaching profession. Teachers are expected to manage instructional planning, assessment, classroom preparation, administrative duties, communication with parents, and a wide range of organizational responsibilities, often under substantial time pressure and emotional demand (Gonley et al., 1988; Stauffer and Mason, 2013; Tuxford and Bradley, 2015). Emerging evidence suggests that teachers do procrastinate on meaningful professional tasks, especially administrative work, evaluation-related activities, and lesson preparation, and that such delay is often accompanied by negative emotions and stress (Cao et al., 2025; Laybourn et al., 2019; Wang et al., 2023). Teacher procrastination is therefore not a trivial behavioral tendency; it may have implications for occupational functioning, teaching quality, and psychosocial well-being.

At a conceptual level, procrastination is increasingly understood as a multidetermined phenomenon involving motivational, emotional, cognitive, and contextual processes (Grund and Fries, 2018; Sirois, 2023). Contemporary models emphasize that procrastination is closely tied to self-regulatory failure, difficulty managing aversive tasks, maladaptive emotion regulation, and temporal disorganization rather than to simple laziness or poor intention alone (Klingsieck, 2013; Steel and Klingsieck, 2016). This perspective is especially relevant in teaching, where delayed task completion may arise from the interaction of personal dispositions, emotional pressures, decision-related difficulties, and work-context constraints (Steel et al., 2022; Steel and Klingsieck, 2016). Related research has highlighted how psychological mechanisms such as self-esteem and loneliness are interwoven with subjective and psychological

well-being, underscoring the importance of considering internal psychological resources when examining occupational functioning (Çiçek, 2022).

Several constructs appear particularly relevant for understanding professional procrastination among teachers. Personality traits, especially low conscientiousness and high neuroticism, are among the most consistent correlates of procrastination across contexts (Steel and Klingsieck, 2016). Perfectionism has also been repeatedly linked to procrastination, particularly when it is associated with self-criticism, overconcern about mistakes, and avoidance-oriented standards (Hill et al., 2025; Ocampo et al., 2020). Fear of failure may further intensify this pattern by increasing avoidance, indecision, and disengagement when professional demands are perceived as evaluative or threatening (Manuoglu, 2023; Mohandas et al., 2025). In parallel, decision-making difficulties and weak time structure may contribute to delay by reducing task initiation, planning, and follow-through, whereas supportive professional resources may buffer procrastination by facilitating control, clarity, and perceived coping capacity (Amir and Gati, 2006; Kulcsár et al., 2020; Mau, 2001).

Despite growing recognition of procrastination as a multidimensional and context-sensitive phenomenon, important limitations remain in the literature. First, most procrastination measures were developed for student, general adult, or non-specific populations, and therefore do not adequately capture the concrete task ecology of the teaching profession (Ferrari, 1992; Metin et al., 2016; Milgram et al., 1998; Svartdal et al., 2016). Existing evidence on teacher procrastination remains comparatively scarce, and much of it has relied on general procrastination scales rather than instruments tailored to teachers' professional responsibilities (Laybourn et al., 2019). Second, even when procrastination is studied in relation to occupational functioning, research often focuses on isolated antecedents rather than modelling how personality, perfectionism, fear of failure, decision processes, and work conditions may operate together. Third, culturally adapted instruments for assessing procrastination in Arabic-speaking professional populations remain limited, despite the growing need for psychometrically robust tools in non-Western contexts (Jahrami et al., 2025). Existing general procrastination instruments (e.g., the General Procrastination Scale, Ferrari, 1992; the Irrational Procrastination Scale, Svartdal et al., 2016), assess trait-level delay across unspecified life domains and were not designed to capture task-specific behaviors central to teaching, such as grading, lesson updating, or managing emotionally demanding classroom interactions. Occupational procrastination measures (e.g., Metin et al., 2016) address workplace delay generically but do not differentiate

instructional, self-regulatory, emotional, motivational, and consequential facets simultaneously within a single profession-specific framework. Accordingly, the TPPS was developed to capture a teacher-embedded pattern of delay that is both occupation-specific and multidimensional, rather than a broad trait of generalized procrastination.

These limitations point to a clear theoretical and methodological gap. A teacher-specific measure is needed because procrastination in professional teaching contexts may not be reduced to generic delay tendencies; rather, it likely reflects a structured pattern of instructional delay, self-regulatory difficulty, emotional avoidance, reduced professional motivation, and adverse psychological consequences (Laybourn et al., 2019). Recent research on teacher well-being and occupational self-regulation suggests that professional procrastination should be interpreted within a broader framework of emotional demands, workload pressure, and self-regulatory strain rather than as an isolated behavioral habit. In this framework, emotional avoidance and reduced motivation are conceptualized as proximal self-regulatory mechanisms through which professional procrastination manifests, while psychological consequences represent an integral severity marker of the construct rather than an independent outcome, consistent with instruments that incorporate impairment indicators within a unified syndrome (Grund and Fries, 2018; Sirois, 2023). This integrative conceptualization allows the TPPS to capture procrastination as a coherent occupational pattern rather than as an isolated behavioral tendency. At the same time, such a measure should be embedded within an integrative model capable of linking procrastination to broader dispositional, motivational, and contextual determinants. This is especially important in Arabic-speaking educational settings, where the availability of validated professional self-regulation measures remains comparatively restricted and where context-sensitive assessment may support both research and intervention (Rog, 2012).

Against this background, the present study aimed to develop and psychometrically validate the Arabic version of the Teacher Professional Procrastination Scale (TPPS). The scale was designed to assess five theoretically grounded dimensions of teacher professional procrastination: instructional procrastination, professional self-regulation, emotional avoidance, low professional motivation, and psychological consequences. Beyond scale development, the study also sought to test an integrative model in which teacher professional procrastination was examined in relation to personality traits, perfectionism, fear of failure, decision-making processes, professional resources, and time structure. In doing so, the study aimed to advance understanding of teacher procrastination not only as a measurable construct, but also as a multidimensional occupational phenomenon situated at the intersection of personal vulnerabilities and professional context.

Accordingly, the study pursued two complementary objectives. First, it examined the factorial structure, reliability, and validity of the Arabic TPPS. Second, it tested an integrative structural framework linking teacher professional procrastination with personality traits, perfectionism, fear of failure, decision-making processes, professional resources, and time structure. It was expected that the Arabic TPPS would show a stable multidimensional structure and satisfactory psychometric

properties, and that teacher professional procrastination would be positively associated with neuroticism, maladaptive perfectionism, fear of failure, and dysfunctional decision-making, but negatively associated with conscientiousness, professional resources, and time structure.

2 Materials and methods

2.1 Study design

This study used a cross-sectional psychometric design to develop and validate the Arabic version of the Teacher Professional Procrastination Scale (TPPS). The methodological strategy combined item development, cultural adaptation, exploratory and confirmatory factor analyses, reliability testing, validity assessment, and measurement invariance analyses in a large sample of teachers. Beyond psychometric validation, a structural equation modeling approach was used to test an integrative model linking teacher professional procrastination to personality, motivational, and contextual variables.

2.2 Participants

The study involved 1,375 middle- and high-school teachers from different teaching disciplines in Tunisia. The sample included 785 men (57.09%) and 590 women (42.91%), with a mean age of 44.84 years ($SD = 6.78$). Men had a mean age of 45.94 years ($SD = 6.85$), whereas women had a mean age of 43.38 years ($SD = 6.40$). Participants also reported a mean professional experience of 17.46 years ($SD = 9.75$).

A stratified convenience sampling procedure was used: schools were purposively selected to ensure variation in region, teaching discipline, and school type, and teachers within selected schools volunteered to participate, combining deliberate stratification with practical accessibility to strengthen sample representativeness. Because recruitment was non-probabilistic, the sample should be interpreted as a large and diverse convenience-based sample rather than as a fully representative national sample of Tunisian teachers. Inclusion criteria were: being professionally active as a teacher, residing and working in Tunisia, and providing informed consent. Cases with missing information or inconsistent response patterns were excluded from the final analyses ($n = 20$).

For the psychometric analyses, the total sample was randomly split into two independent subsamples: 688 participants for exploratory factor analysis (EFA) and 687 participants for confirmatory factor analysis (CFA).

2.3 Instrument development

The TPPS was developed as a profession-specific measure of procrastination in the teaching context, and the initial item pool was deliberately broad to ensure that the scale would cover the full range of teacher-relevant delay behaviors before later refinement. Item generation began with a systematic review of the procrastination, self-regulation, and occupational stress

literature, from which an initial pool of 34 items was drafted across five theoretically grounded domains: Instructional Procrastination, Professional Self-Regulation, Emotional Avoidance, Professional Motivation, and Psychological Consequences. Items were generated deductively from process-oriented models of procrastination (Klingsieck, 2013) and inductively from teachers' accounts of professional delay reported in prior qualitative research (Laybourn et al., 2019). A panel of 8 experts (4 in educational psychology, 2 in psychometrics, 2 experienced classroom teachers) reviewed the item pool for relevance, clarity, and representativeness through structured discussion, leading to the refinement or removal of items lacking conceptual clarity or showing content overlap. Feedback from a subsequent pilot test with 30 teachers further informed the simplification of 6 items and the removal of 12 items, yielding the final 22-item version.

2.4 Measures

2.4.1 Teacher professional procrastination scale

The main instrument examined in the present study was the Teacher Professional Procrastination Scale (TPPS). The TPPS was specifically designed to assess procrastination in relation to teachers' professional tasks rather than general or student-related delay tendencies. The Arabic version included 22 items rated on a 5-point Likert scale from 1 ("strongly disagree") to 5 ("strongly agree"). The scale was organized into five dimensions. Instructional Procrastination captures delays in core teaching tasks such as lesson preparation, grading, and updating instructional materials. Professional Self-Regulation reflects difficulties in organizing, planning, and following through on professional responsibilities. Emotional Avoidance assesses postponement of tasks perceived as stressful, emotionally draining, or anxiety provoking. Low Professional Motivation refers to disengagement, low interest, and reduced effort in completing teaching duties. Psychological Consequences captures the negative emotional and functional outcomes associated with chronic professional delay, such as stress, guilt, dissatisfaction, and perceived performance impairment.

2.4.2 Copenhagen psychosocial questionnaire

Psychosocial work characteristics were assessed using a shortened 24-item version of the Copenhagen Psychosocial Questionnaire (COPSOQ) (Kristensen et al., 2005). This instrument was used to assess job demands and professional resources within the school environment. The COPSOQ is conceptually aligned with occupational frameworks such as the Job Demands-Resources model and related approaches to psychosocial work conditions. Responses were collected on a 5-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree") (Kristensen et al., 2005).

In the present study, the COPSOQ was included to examine whether work-context factors contribute to professional procrastination among teachers. The present sample reported excellent reliability with Cronbach's $\alpha = .94$, and McDonald's $\omega = .95$.

2.4.3 Time structure questionnaire

Perceived time organization was assessed using the short form of the Time Structure Questionnaire (TSQ/TSQS) (Bond and Feather, 1988). In this study the short version of the questionnaire, including a 20-item form, has been used in empirical research to reduce response burden while preserving acceptable psychometric quality. This measure evaluates the extent to which individuals organize, structure, and assign purpose to their daily activities (Bond and Feather, 1988; Mudrack, 1997).

The scale was included because time structuring is conceptually relevant to procrastination and self-regulation. In the current sample, the time structure measure showed satisfactory reliability, with Cronbach's $\alpha = .89$ and McDonald's $\omega = .90$.

2.4.4 Melbourne decision making questionnaire

Decision-making tendencies were measured using a shortened form of the Melbourne Decision Making Questionnaire (MDMQ) (Mann et al., 1997). The original instrument includes 22 items, although shorter forms have been recommended in multidimensional research contexts to reduce participant burden while retaining acceptable psychometric performance. The MDMQ was used in this study to capture decision-related processes that may contribute to delay, avoidance, and poor action initiation (Mann et al., 1997).

The inclusion of the MDMQ was theoretically relevant because the proposed integrative model assumes that dysfunctional decision-making may mediate associations between dispositional variables and teacher procrastination. In the current sample, the decision-making measure showed satisfactory reliability, with Cronbach's $\alpha = .88$ and McDonald's $\omega = .89$.

2.4.5 Multidimensional perfectionism scale

Perfectionism was assessed using a brief 10-item version derived from the Multidimensional Perfectionism Scale (MPS) (Hewitt and Flett, 1991). This shortened version was selected to capture the essential dimensions of perfectionism while limiting fatigue within a broader multivariate assessment protocol (Hewitt and Flett, 1991). Perfectionism was included because the conceptual model underlying the study assumes that rigid standards, self-criticism, and concern over mistakes may contribute to task delay and avoidance. In the current sample, the perfectionism measure showed excellent reliability, with Cronbach's $\alpha = .92$ and McDonald's $\omega = .93$.

2.4.6 Performance failure appraisal inventory

Fear of failure was measured using a shortened version of the Performance Failure Appraisal Inventory (PFAI) (Conroy, 2001). The original version includes 25 items organized across multiple dimensions, whereas shorter forms have been proposed for use in broader multivariate research. The PFAI was used to assess maladaptive beliefs regarding the negative consequences of failure in evaluative and performance-related situations (Conroy, 2001).

This construct was particularly relevant because fear of failure may contribute to procrastination through avoidance, emotional

distress, and withdrawal from demanding professional tasks. In the current sample, the fear of failure measure showed excellent reliability, with Cronbach's $\alpha = .90$ and McDonald's $\omega = .91$.

2.4.7 Big five inventory-10

Basic personality traits were assessed using the Big Five Inventory-10 (BFI-10) (Rammstedt and John, 2007). This short form was selected to reduce response burden while allowing the inclusion of key dispositional indicators within the integrative model. Attention was given to neuroticism and conscientiousness, given their central relevance in the procrastination literature (Rammstedt and John, 2007). The sample reports strong reliability values for the personality constructs included in the final model. Neuroticism showed Cronbach's $\alpha = .91$ and McDonald's $\omega = .92$ whereas conscientiousness showed Cronbach's $\alpha = .93$ and McDonald's $\omega = .94$.

2.5 Translation and cultural adaptation

The Arabic adaptation of the Teacher Professional Procrastination Scale (TPPS) was conducted according to established principles of cross-cultural psychometric development to ensure semantic equivalence, conceptual fidelity, and contextual relevance (Hambleton and Lee, 2013; Vallerand, 1989). The procedure was based on international recommendations for scale adaptation and explicitly followed translation-back-translation principles commonly used in intercultural validation studies (Boussayala et al., 2025; Henchiri et al., 2025; Tannoubi et al., 2022).

The process began with a conceptual review of the literature to define the theoretical content of teacher professional procrastination and to identify the dimensions that should be represented in the initial item pool. This stage led to the formulation of items covering five key domains: instructional procrastination, professional self-regulation, emotional avoidance, professional motivation, and psychological consequences. Attention was given to ensuring that the items reflected the reality of teachers' professional responsibilities, including lesson preparation, task organization, emotional coping, and work-related delay.

The preliminary Arabic version was then submitted to expert review by a panel of approximately 6–10 specialists. The experts evaluated the relevance, clarity, representativeness, and appropriateness of each item and contributed to the refinement of wording through a content-validity procedure. This stage helped improve the precision of the items and reduced the risk of conceptual overlap, linguistic ambiguity, or culturally inappropriate formulations.

Next, a qualitative pre-test was conducted with 30 teachers to assess the comprehensibility and acceptability of the adapted items in the target population. This pilot step allowed the identification of problematic wording, the simplification of certain expressions, and the adjustment of item formulations to better match the linguistic habits and professional experiences of Arabic-speaking teachers. The final version was retained only after this iterative refinement process.

The adequacy of Arabic adaptation was subsequently examined through large-sample psychometric analyses. The

emergence of a coherent five-factor structure, together with strong reliability and validity indicators, provided empirical support for the cultural appropriateness and measurement quality of the Arabic TPPS.

2.6 Procedure

Data collection was conducted in participating educational institutions in the South-West region of Tunisia. Teachers were informed about the aims of the study, the voluntary nature of participation, and the confidentiality of their responses before completing the survey battery. After giving informed consent, participants completed the TPPS and the additional psychosocial, dispositional, and motivational measures.

2.7 Statistical analysis

Data analysis was conducted in several stages using SPSS 28.0 and AMOS 28.0. First, descriptive statistics were computed for all items and study variables, including means, standard deviations, skewness, and kurtosis. Univariate normality was evaluated using skewness ($<|2|$) and kurtosis ($<|7|$) thresholds (Groeneveld and Meeden, 1984), while multivariate normality was examined using Mardia's coefficient (Enomoto et al., 2020).

Second, the dimensional structure of the Arabic TPPS was examined using exploratory factor analysis (EFA). Sampling adequacy was assessed with the Kaiser-Meyer-Olkin (KMO) index ($>.80$) and Bartlett's test of sphericity (Bartlett, 1951; Kaiser and Rice, 1974). Factor extraction was performed using principal factor extraction. Varimax rotation was applied for interpretive clarity and comparability with prior procrastination scale validations; a supplementary Promax rotation was also conducted to confirm the stability of the factor structure under a correlated-factors assumption.

Third, confirmatory factor analysis (CFA) was conducted on an independent subsample to test the adequacy of the proposed five-factor model. Model fit was evaluated using multiple indices with the following thresholds: $\chi^2/df < 3$, GFI (Goodness-of-Fit Index) $>.90$, SRMR (Standardized Root Mean Square Residual) $<.08$, RMSEA (Root Mean Square Error of Approximation) $<.06$, CFI (Comparative Fit Index) $>.95$, TLI (Tucker-Lewis Index) $>.95$, IFI (Incremental Fit Index) $>.95$, NFI (Normed Fit Index) $>.90$, PNFI (Parsimony Normed Fit Index) $>.50$, and PCFI (Parsimony Comparative Fit Index) $>.50$ (Hu and Bentler, 1999; Kline, 2023).

Fourth, internal consistency reliability was assessed using Cronbach's α ($>.70$) and McDonald's ω ($>.70$) (Hayes and Coutts, 2020). Convergent validity was examined through standardized factor loadings ($>.50$), composite reliability (CR; $>.70$), and average variance extracted (AVE; $>.50$). Discriminant validity was tested using the Fornell-Larcker criterion (square root of AVE $>$ inter-factor correlations) and heterotrait-monotrait (HTMT) ratio ($<.85$) (Fornell and Larcker, 1981; Henseler et al., 2015).

Finally, measurement invariance was tested across sex and profession using sequential configural, metric, and scalar models, with $\Delta CFI < .01$ and $\Delta RMSEA < .015$ as criteria for invariance (Cheung and Rensvold, 2002). Temporal stability was examined using test-retest intraclass correlation coefficients

(ICC; >.70) over a 2- to 4-week interval. Because all constructs were assessed through self-report at a single time point, common method bias was evaluated using Harman's single-factor test, in which all study items were entered into an unrotated exploratory factor analysis to determine whether a single latent factor accounted for the majority of the total variance.

2.8 Ethical considerations

Participation was voluntary, and informed consent was obtained from all participants before data collection. Confidentiality and anonymity were maintained throughout the study. Ethical approval for the study was obtained from the local ethics committee affiliated with the High Institute of Sport and Physical Education of Kef, University of Jendouba, Tunisia, under reference number (ISSEPK-0015/2026), dated 15 February 2026. In addition, the study protocols complied with the latest ethical standards set out in the Declaration of Helsinki (Association, 2025).

3 Results

3.1 Preliminary analyses

The final sample consisted of 1,375 middle- and high-school Tunisian teachers, including 785 men (57.09%) and 590 women (42.91%). Participants ranged in age from 28 to 59 years, with a mean age of 44.84 years ($SD = 6.78$) and a mean professional experience of 17.46 years ($SD = 9.75$). Additional sociodemographic characteristics, including civil status, profession, parental responsibilities, school transportation arrangements, number of children, and extracurricular activities, are presented in Table 1. Overall, the sample was large and diverse enough to support robust psychometric analyses.

Preliminary screening indicated acceptable distributional properties. Skewness and kurtosis values were within recommended limits, and the age distribution showed low skewness (0.048) and moderate kurtosis (-0.78), indicating an approximately symmetric distribution. Multivariate normality was also considered acceptable based on Mardia's coefficients ($b1p = 0.96$, $b2p = 22.85$). Taken together, these findings suggest that the data were suitable for factor analysis and structural equation modeling.

Common method bias was evaluated using Harman's single-factor test. An unrotated single-factor solution accounted for 34.6% of the total variance across all study items, below the 50% threshold conventionally used to flag problematic common method variance, indicating that shared-method artifacts were unlikely to substantially distort the observed associations.

3.2 Exploratory factor analysis

The suitability of the A-TPPS item set for exploratory factor analysis was examined using the Kaiser-Meyer-Olkin measure and Bartlett's test of sphericity. The KMO value was .915, and Bartlett's test was significant, $\chi^2(231) = 11,847.11847.154$, $p < .001$, indicating excellent sampling adequacy and a factorable correlation matrix.

Exploratory factor analysis supported a clear five-factor solution for the 22 A-TPPS items. The five retained factors explained 83.76% of the total variance, distributed as follows: 37.81% for Factor 1, 14.25% for Factor 2, 12.42% for Factor 3, 11.01% for Factor 4, and 8.27% for Factor 5. The scree plot also supported the retention of five factors (Figure 1). This pattern indicates that the TPPS captures a well-defined multidimensional construct with substantial explanatory power.

A supplementary Promax rotation reproduced the same five-factor structure, with loadings ranging from .79 to .91 and inter-factor correlations ranging from .38 to .61, confirming that the five dimensions are meaningfully distinct while showing the correlated pattern theoretically expected among facets of a single construct.

As shown in Table 2, item loadings were high and theoretically coherent across the five dimensions. Items 11–15 loaded on Emotional Avoidance (Factor 1), Items 6–10 on Professional Self-Regulation (Factor 2), Items 1–5 on Instructional Procrastination (Factor 3), Items 19–22 on Psychological Consequences (Factor 4), and Items 16–18 on Professional Motivation (Factor 5). Loadings ranged from .831 to .920, with low uniqueness values overall. These findings indicate that each item contributed strongly to its intended latent domain and that the factor structure was conceptually stable.

The five-factor model identified in the exploratory phase was then tested using confirmatory factor analysis in an independent subsample. As reported in Table 3, the model showed excellent fit to the data: $\chi^2(199) = 775.64$, $\chi^2/df = 1.88$, GFI = .959, SRMR = .019, RMSEA = .033, CFI = .987, TLI = .985, IFI = .987, NFI = .973, PNFI = .838, and PCFI = .850 (Figure 2). These indices indicate that the proposed five-factor model reproduced the observed covariance structure very well.

Standardized factor loadings for the confirmatory model ranged from .80 to .89 for Instructional Procrastination, .83 to .87 for Professional Self-Regulation, .83 to .89 for Emotional Avoidance, .86 to .89 for Professional Motivation, and .80 to .84 for Psychological Consequences, all significant at $p < .001$, confirming strong item-factor associations (Table 3).

3.3 Reliability and convergent validity

The A-TPPS demonstrated excellent internal consistency and convergent validity. As shown in Table 4, the total A-TPPS score yielded Cronbach's $\alpha = .95$, McDonald's $\omega = .96$, composite reliability (CR) = .94, and average variance extracted (AVE) = .76. These values indicate excellent internal coherence and strong shared variance among the items.

At the dimensional level, reliability and convergent validity were also strong. Instructional Procrastination showed $M = 2.933$, $SD = 1.093$, $\alpha = .915$, $\omega = .937$, CR = .915, and AVE = .747; Professional Self-Regulation showed $M = 2.973$, $SD = 1.108$, $\alpha = .925$, $\omega = .944$, CR = .925, and AVE = .771; Emotional Avoidance showed $M = 2.971$, $SD = 1.100$, $\alpha = .919$, $\omega = .939$, CR = .919, and AVE = .755; Low Professional Motivation showed $M = 2.943$, $SD = 1.129$, $\alpha = .873$, $\omega = .922$, CR = .873, and AVE = .797; and Psychological Consequences showed $M = 2.981$, $SD = 1.091$, $\alpha = .917$, $\omega = .942$, CR = .917,

TABLE 1 Characteristics of the total sample by sex.

Characteristic	Category	Men (<i>n</i> = 785) Frequency	%	Women (<i>n</i> = 590) Frequency	%	Total (<i>N</i> = 1375) Frequency	%
Sex	–	785	57.1	590	42.9	1375	100.0
Age (years)	Mean ± SD	45.94 ± 6.848	–	43.38 ± 6.398	–	44.84 ± 6.775	–
Civil status	Single	229	16.7	171	12.4	400	29.1
	Married	477	34.7	350	25.5	827	60.2
	Divorced	59	4.3	51	3.7	110	8.0
	Widowed	20	1.5	18	1.3	38	2.8
Teaching subjects	Complementary educational disciplines	33	2.4	37	2.7	70	5.1
	Business and Economics	18	1.3	18	1.3	36	2.6
	Physical Education and Sports	371	27.0	253	18.4	624	45.4
	Computer Science	39	2.8	37	2.7	76	5.5
	Science	189	13.7	134	9.7	323	23.5
	Humanities	114	8.3	92	6.7	206	15.0
	Technology	21	1.5	19	1.4	40	2.9
School transportation for children	Friend/neighbor	93	6.8	55	4.0	148	10.8
	Educators	74	5.4	56	4.1	130	9.5
	Family (brother, sister, etc.)	69	5.0	55	4.0	124	9.0
	One of the parents	249	18.1	188	13.7	437	31.8
	Yourself	300	21.8	236	17.2	536	39.0
Children	No children	161	11.7	114	8.4	275	20.0
	1–2 children	464	33.7	347	25.2	811	59.0
	3–4 children	140	10.2	109	7.9	249	18.1
	More than 4 children	20	1.5	20	1.5	40	2.9
After-work activities	Agriculture	119	8.7	81	5.9	200	14.5
	Community service	105	7.6	84	6.1	189	13.7
	Business	109	7.9	83	6.0	192	14.0
	Tutoring	120	8.7	99	7.2	219	15.9
	Coaching	100	7.3	84	6.1	184	13.4
	Politics	123	8.9	76	5.5	199	14.5
	Sports club	109	7.9	83	6.0	192	14.0

Note. Values are presented as frequencies and percentages unless otherwise indicated. Age is reported as mean and standard deviation for each sex and for the total sample. Percentages may not total 100 exactly because of rounding. The total sample comprised 1,375 teachers, including 785 men and 590 women.

and AVE = .803. All factor-level skewness and kurtosis values were also acceptable (Table 4). These results indicate that the five A-TPPS dimensions are both reliable and internally coherent.

The external constructs included in the broader integrative model also demonstrated satisfactory to excellent psychometric properties (Table 4). These findings support the psychometric adequacy of the ancillary constructs used in the structural model.

Temporal stability was assessed in a subsample of 150 teachers who completed the TPPS twice over a 3-week interval. A two-way mixed-effects, single-measure intraclass correlation coefficient indicated excellent stability, ICC = .88, 95% CI [.84, .91].

3.4 Discriminant validity

Discriminant validity was examined using the heterotrait-monotrait ratio (HTMT). As presented in Table 5, the associations among constructs remained below problematic thresholds and supported satisfactory distinction between A-TPPS and the related dispositional, emotional, cognitive, and contextual variables.

For example, A-TPPS showed HTMT values of .58 with neuroticism, .62 with conscientiousness, .55 with perfectionism, .57 with fear of failure, .50 with decision-making, .60 with psychological resources, and .53 with time structure. These coefficients indicate meaningful conceptual associations without excessive overlap. Therefore, the TPPS appears to assess a

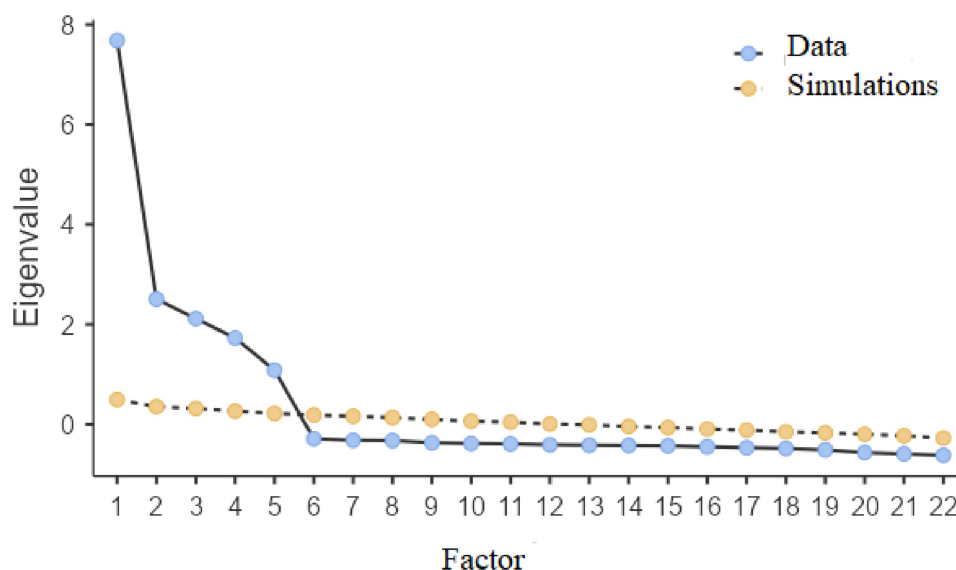


FIGURE 1
Scree plot of the arabic teachers' professional procrastination scale (A-TPPS).

distinct construct within the broader nomological network proposed in the study.

3.5 Measurement invariance

Measurement invariance of the A-TPPS was tested across sex and profession using configural, metric, and scalar models. As shown in Table 6, the model fit remained strong across all levels of invariance for both grouping variables.

Across sex, the configural, metric, and scalar models yielded CFI values of .989, .987, and .984, respectively, with RMSEA values of .030, .031, and .033. Across profession, the corresponding CFI values were .987, .985, and .982, with RMSEA values of .032, .033, and .035. These findings support configural, metric, and scalar invariance across both sex and professional groups. Specifically, the change from the configural to the metric model was $\Delta\text{CFI} = .002$ and $\Delta\text{RMSEA} = .001$ for both sex and profession; the change from the metric to the scalar model was $\Delta\text{CFI} = .003$ and $\Delta\text{RMSEA} = .002$ for both grouping variables, comfortably within the recommended thresholds of $\Delta\text{CFI} < .01$ and $\Delta\text{RMSEA} < .015$. In practical terms, this suggests that the A-TPPS measures the same latent construct in a comparable way across these subgroups, allowing for meaningful group comparisons.

3.6 Structural model

The broader structural model examined the associations between teacher professional procrastination and the proposed dispositional, emotional, cognitive, and contextual predictors. As shown in Table 7, teacher professional procrastination was positively associated with neuroticism ($\beta = .31$, 95% CI [.27, .35]), perfectionism ($\beta = .29$, 95% CI [.24, .33]), fear of failure ($\beta = .27$, 95% CI [.22, .31]), and dysfunctional decision-making ($\beta = .21$, 95% CI [.17, .25]). In contrast, it was

negatively associated with conscientiousness ($\beta = -.36$, 95% CI [-.41, -.30]), COPSOQ ($\beta = -.30$, 95% CI [-.35, -.26]), and time structure ($\beta = -.19$, 95% CI [-.23, -.14]). Collectively, the predictor set explained approximately 44% of the variance in teacher professional procrastination ($R^2 = .44$), reflecting a substantial and theoretically meaningful proportion of explained variance for a multidetermined occupational construct.

As shown in Table 7; Figure 3, these results indicate that teacher professional procrastination is embedded in a broader network of personal vulnerabilities and contextual resources. This pattern supports the interpretation of teacher professional procrastination as a multidimensional occupational phenomenon shaped by both intrapersonal and work-context processes.

3.7 Sensitivity analysis: factor loadings and short-form structure

Standardized loadings exceeding .85 (Table 2) reflect strong item homogeneity within tightly defined dimensions rather than problematic redundancy: inter-item correlations within each factor remained below .80. A 15-item short-form version (the three highest-loading items per factor) retained excellent fit (CFI = .98, RMSEA = .04) and reliability ($\omega > .90$), demonstrating that the TPPS structure is both psychometrically strong and adaptable to shorter administration formats.

4 Discussion

The present study sought to develop and validate the Arabic Teacher Professional Procrastination Scale and to examine teacher professional procrastination in relation to a broader set of dispositional and contextual variables. Overall, the findings provide solid support for both aims. The Arabic TPPS demonstrated a clear five-factor structure, strong internal

TABLE 2 Exploratory Factor Loadings for the Arabic Teachers' Professional Procrastination Scale (A-TPPS)

Item No.	Item (English/Arabic)	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Uniqueness
1	I delay preparing my teaching materials until the last minute أؤجل إعداد المواد التعليمية حتى اللحظة الأخيرة			0.883			0.186
2	I postpone lesson planning even when I have enough time أؤجل التخطيط للدروس حتى عندما يكون لديّ ما يكفي من الوقت			0.867			0.268
3	I often rush to complete teaching tasks just before deadlines غالبًا ما أستعجل في إنجاز المهام التعليمية قبل الموعد النهائي مباشرة			0.888			0.159
4	I delay grading students' work longer than I should أؤخر تصحيح أعمال الطلاب لفترة أطول مما ينبغي			0.837			0.293
5	I put off updating my instructional content regularly أؤجل تحديث المحتوى التعليمي بانتظام			0.868			0.233
6	I have difficulty organizing my professional tasks efficiently أجد صعوبة في تنظيم مهامي المهنية بكفاءة		0.903				0.157
7	I struggle to manage my time during the workday أواجه صعوبة في إدارة وقتي خلال يوم العمل		0.876				0.195
8	I fail to follow through on planned teaching activities لا أتمكن من متابعة الأنشطة التعليمية المخطط لها		0.904				0.138
9	I get easily distracted when working on professional duties يتشتت انتباهي بسهولة أثناء أداء مهامي المهنية		0.868				0.260
10	I lack discipline in maintaining my teaching schedule أفتقر إلى الانضباط في الالتزام بجدولي التدريس		0.857				0.256
11	I avoid difficult teaching tasks because they stress me. أتجنب المهام التعليمية الصعبة لأنها تسبب لي التوتر	0.899					0.168
12	I delay tasks that I find emotionally draining. أؤجل المهام التي أجدّها مرهقة نفسيًا	0.855					0.220
13	I put off dealing with challenging students أؤجل التعامل مع الطلاب المشاغبين والمزعجين	0.918					0.098
14	I avoid responsibilities that create anxiety أتجنب المسؤوليات التي تسبب لي القلق	0.917					0.138
15	I delay tasks when I feel overwhelmed أؤجل المهام عندما أشعر بالإرهاق	0.887					0.218
16	I feel unmotivated to complete my teaching duties أشعر بعدم الحماس لأداء واجباتي التدريسية					0.893	0.172
17	I delay work because I lack interest in my job أؤجل العمل بسبب قلة اهتمامي بمهنتي					0.904	0.149
18	I find it hard to engage fully in teaching activities أجد صعوبة في الانخراط بشكل كامل في الأنشطة التدريسية					0.920	0.137
19	My procrastination causes me stress at work يسبب لي التسويف ضغطًا نفسيًا في العمل				0.831		0.348
20	I feel guilty after delaying professional tasks أشعر بالذنب بعد تأجيل المهام المهنية				0.867		0.264
21	My procrastination negatively affects my performance يؤثر التسويف سلبًا على أدائي المهني				0.849		0.273

(Continued)

TABLE 2 Continued

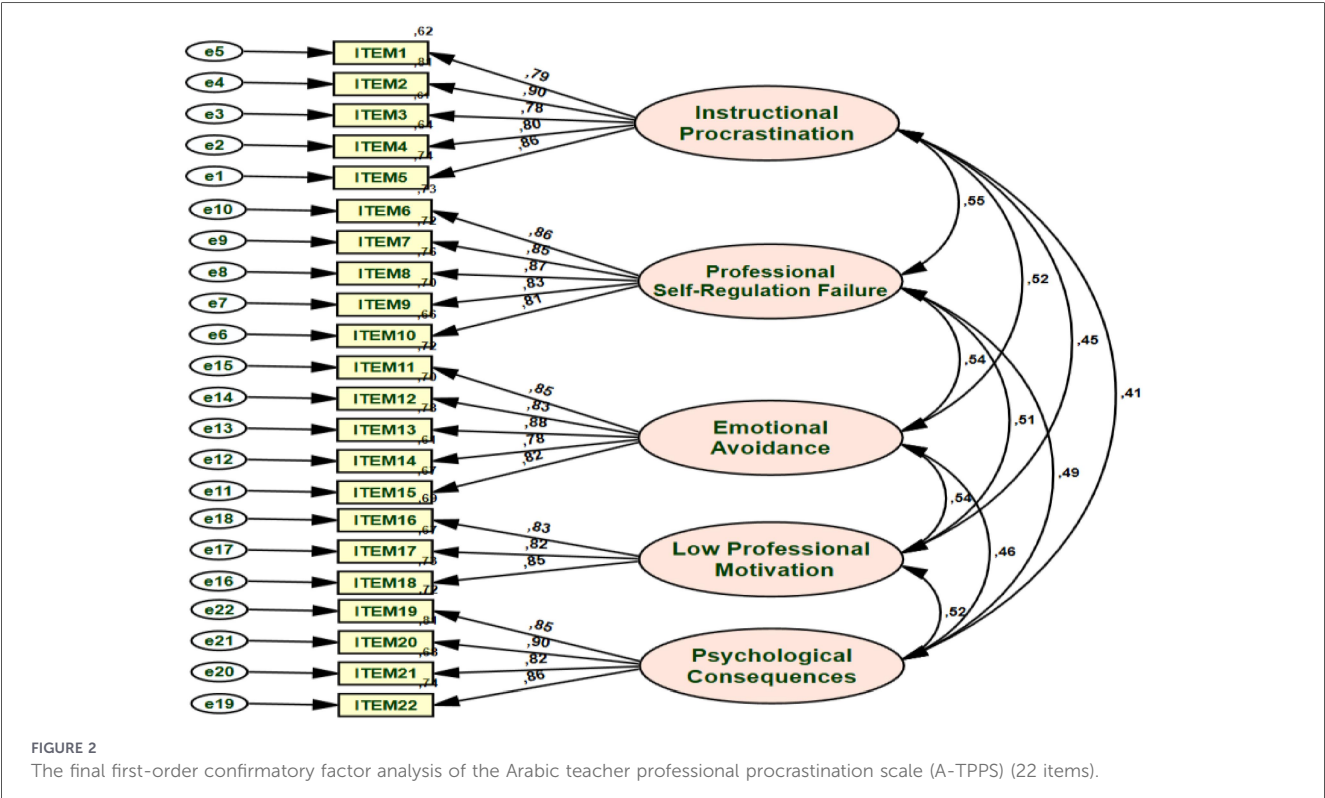
Item No.	Item (English/Arabic)	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Uniqueness
22	I feel dissatisfied with my productivity at work				0.864		0.265
	لدي شعور بعدم الرضا عن مستوى أدائي المهني						

Note. EFA results for the 22-item Arabic Teacher Professional Procrastination Scale (A-TPPS) based on the exploratory subsample ($n = 688$). Factor 1 = Emotional Avoidance, Factor 2 = Professional Self-Regulation, Factor 3 = Instructional Procrastination, Factor 4 = Psychological Consequences, and Factor 5 = Professional Motivation. Uniqueness represents the proportion of item variance not explained by the retained factors.

TABLE 3 Confirmatory factor analysis of the arabic teachers' professional procrastination scale (A-TPPS).

Absolute Fit Indices							Incremental Fit Indices			Parsimony Fit Indices		
Indices	χ^2	df	χ^2/df	GFI	SRMR	RMSEA	CFI	TLI	IFI	NFI	PNFI	PCFI
Model	775.64	199	1.88	.959	0.019	0.033	0.987	0.985	0.987	0.973	0.838	0.850

$N = 687$, χ^2 , Chi-Square; df, degree of freedom; GFI, goodness of fit index; SRMR, standardized root mean square residual; RMSEA, root mean square error of approximation; CFI, comparative fit index; TLI, Tucker–Lewis index; IFI, incremental fit index; NFI, normed fit index; PNFI, parsimony normed fit index; PCFI, parsimony comparative fit index.



consistency, satisfactory temporal stability, and evidence of convergent, discriminant, and measurement invariance validity. In parallel, the structural findings indicate that teacher professional procrastination is meaningfully associated with personality traits, perfectionism, fear of failure, decision-making difficulties, professional resources, and time structure. A central finding of the study is that teacher professional procrastination was not captured as a single, undifferentiated form of delay. Rather, the results supported a multidimensional

structure composed of instructional procrastination, professional self-regulation, emotional avoidance, professional motivation, and psychological consequences. This pattern is conceptually consistent with perspectives that define procrastination as a complex self-regulatory phenomenon rather than a simple failure of discipline or effort (Grund and Fries, 2018; Klingsieck, 2013; Sirois, 2023). More specifically, it aligns with theoretical accounts suggesting that procrastination reflects a combination of self-regulatory difficulty, emotional discomfort, and task

TABLE 4 Reliability and convergent validity of the Arabic teacher professional procrastination scale (A-TPPS).

Factor	α (Cronbach)	ω (McDonald)	CR	AVE
Neuroticism	0.91	0.92	0.90	0.69
Conscientiousness	0.93	0.94	0.92	0.72
Perfectionism	0.92	0.93	0.91	0.70
Fear of failure	0.90	0.91	0.89	0.68
Decision	0.88	0.89	0.87	0.63
Psychological Resources	0.94	0.95	0.93	0.74
Time Structure	0.89	0.90	0.88	0.65
Procrastination	0.95	0.96	0.94	0.76

Reliability and convergent validity indices are reported for the main study constructs. α , Cronbach's alpha; ω , McDonald's omega; CR, composite reliability; AVE, average variance extracted. Values of α , ω , and CR of .70 or higher and AVE values of .50 or higher are generally considered acceptable indicators of internal consistency and convergent validity.

TABLE 5 Discriminant validity of the Arabic teacher professional procrastination scale (A-TPPS).

Factor	N	C	P	F	D	R	TSQ	TPPS
N	—							
C	0.42	—						
P	0.48	0.45	—					
F	0.51	0.39	0.52	—				
D	0.44	0.41	0.46	0.49	—			
R	0.39	0.52	0.43	0.45	0.47	—		
TSQ	0.36	0.49	0.40	0.42	0.44	0.51	—	
TPPS	0.58	0.62	0.55	0.57	0.50	0.60	0.53	—

Values represent heterotrait-monotrait ratios (HTMT) used to assess discriminant validity among the study constructs. Lower HTMT values indicate stronger discriminant validity; values below .85 are typically considered acceptable. N, neuroticism; C, conscientiousness; P, perfectionism; F, fear of failure; D, decision-making difficulties; R, psychological resources; TSQ, time structure questionnaire; TPPS, teacher professional procrastination.

aversiveness rather than mere unwillingness to act (Klingsieck, 2013; Steel and Klingsieck, 2016).

The present findings also extend prior work by showing that, in the teaching profession, procrastination is embedded in the specific ecology of professional duties. Teachers are required to manage lesson preparation, grading, classroom organization, emotionally demanding interactions, and administrative responsibilities under ongoing time pressure (Gonley et al., 1988; Stauffer and Mason, 2013; Tuxford and Bradley, 2015). In this respect, the five-dimensional structure identified in the present study reflects the complexity of teacher work and is consistent with previous evidence suggesting that teacher procrastination often emerges around stressful, aversive, and emotionally charged professional tasks (Cao et al., 2025; Laybourn et al., 2019; Wang et al., 2023).

The psychometric performance of the Arabic TPPS further strengthens the argument for its usefulness. The convergence of EFA and CFA findings, together with high reliability coefficients and satisfactory test-retest stability, suggests that the scale captures a coherent and relatively stable occupational construct. This is particularly important because much of the previous literature has relied on general procrastination measures developed for students or broad adult populations, which may not adequately reflect the professional task ecology of teaching (Ferrari, 1992; Metin et al., 2016; Milgram et al., 1998; Svartdal

et al., 2016). Thus, the present study contributes to literature by offering a profession-specific instrument adapted to the realities of Arabic-speaking teachers.

The structural model also provides important theoretical insight. Teacher professional procrastination was positively associated with neuroticism, perfectionism, fear of failure, and dysfunctional decision-making, and negatively associated with conscientiousness, professional resources, and time structure. Taken together, these findings support the view that procrastination is shaped by an interplay of dispositional vulnerability, emotional regulation, and contextual support (Grund and Fries, 2018; Sirois, 2023; Steel and Klingsieck, 2016). They are also in line with occupational evidence suggesting that procrastination in teachers' work settings is linked to reduced performance and difficulties in managing deadlines and self-regulation demands (Grogan and Wipawayangkool, 2025; Metin et al., 2018; Steel et al., 2022).

The associations with neuroticism and conscientiousness are especially consistent with the established procrastination literature. Low conscientiousness has repeatedly been identified as one of the strongest correlates of procrastination, whereas neuroticism is typically associated with greater emotional instability, stress sensitivity, and avoidance tendencies (Steel and Klingsieck, 2016). Within the teaching profession, this pattern is particularly meaningful because teachers must regulate multiple

TABLE 6 Multi-group invariance of the arabic teacher professional procrastination scale (A-TPPS).

Indicators	Sex			Profession		
	Configural	Metric	Scalar	Configural	Metric	Scalar
Model test user model						
Test statistic (χ^2)	402.18	419.76	444.53	428.64	452.90	479.21
Degrees of freedom	164	178	196	164	178	196
P-value (Chi-square)	<.001	<.001	<.001	<.001	<.001	<.001
Model test baseline model						
Test statistic	6882.25	6882.25	6882.25	6882.25	6882.25	6882.25
Degrees of freedom	132	132	132	132	132	132
P-value (Chi-square)	<.001	<.001	<.001	<.001	<.001	<.001
User model vs. baseline model						
CFI	0.989	0.987	0.984	0.987	0.985	0.982
TLI	0.987	0.985	0.983	0.986	0.984	0.982
RMSEA	0.030	0.031	0.033	0.032	0.033	0.035
RMSEA CI (LL, UL)	0.024–0.036	0.025–0.037	0.027–0.039	0.026–0.038	0.027–0.039	0.029–0.041
SRMR	0.028	0.030	0.032	0.029	0.031	0.033
Loglikelihood user model	−6900.16	−6902.41	−6910.85	−6951.88	−6956.30	−6965.92

Multi-group measurement invariance was tested sequentially across sex and profession using configural, metric, and scalar models. Evidence of invariance is generally supported when changes in fit indices remain small across increasingly constrained models, particularly $\Delta CFI < .01$ and $\Delta RMSEA < .015$. CFI, comparative fit index; TLI, Tucker–Lewis index; RMSEA, root mean square error of approximation; SRMR, standardized root mean square residual; LL, lower limit; UL, upper limit.

simultaneous responsibilities while remaining emotionally available and professionally responsive. The present findings therefore suggest that professional procrastination is closely tied to how teachers regulate both their work habits and their emotional responses to professional demands.

The positive associations with perfectionism and fear of failure also deserve careful attention. Previous research has shown that maladaptive perfectionism is associated with self-criticism, overconcern about mistakes, and avoidance-oriented standards, all of which can foster delay when tasks are experienced as evaluative or difficult (Hill et al., 2025; Ocampo et al., 2020). Similarly, fear of failure may intensify procrastination by increasing apprehension, indecision, and withdrawal when individuals anticipate negative consequences or judgment (Manuoglu, 2023; Mohandas et al., 2025). In the teaching context, where professional performance is often visible and socially evaluated, these dynamics may be especially pronounced. From this perspective, procrastination may sometimes function less as a sign of low investment than as a form of avoidance-based coping in the face of internal pressure and evaluative threat.

The role of dysfunctional decision-making further enriches this interpretation. Teaching requires constant prioritization, judgment, and follow-through across instructional, organizational, and interpersonal demands. When decision processes become hesitant, avoidant, or poorly regulated, delay may become more likely even when intentions are positive. This interpretation is consistent with prior work showing that ineffective decision-making can interfere with action initiation and task completion, especially when demands are complex or psychologically taxing (Amir and Gati, 2006; Kulcsár et al.,

TABLE 7 Structural equation modeling of the Arabic teacher professional procrastination scale (A-TPPS).

Relation	β	CI 95%	p-value
N → TPPS	0.31	[0.27; 0.35]	***
C → TPPS	−0.36	[−0.41; −0.30]	***
P → TPPS	0.29	[0.24; 0.33]	***
F → TPPS	0.27	[0.22; 0.31]	***
R → TPPS	−0.30	[−0.35; −0.26]	***
TSQ → TPPS	−0.19	[−0.23; −0.14]	**
D → TPPS	0.21	[0.17; 0.25]	***

Standardized path coefficients (β) and bootstrap 95% confidence intervals are reported for the structural model predicting teacher professional procrastination. Positive coefficients indicate a positive association with procrastination, whereas negative coefficients indicate a protective association. N, neuroticism; C, conscientiousness; P, perfectionism; F, fear of failure; D, decision-making difficulties; R, psychological resources; TSQ, time structure questionnaire; TPPS, teacher professional procrastination; CI, confidence interval. **Indicates $p < .01$. ***Indicates $p < .001$.

2020; Mau, 2001). The present findings therefore support the view that professional procrastination may reflect not only motivational strain, but also difficulty translating intention into timely action.

The negative associations with professional resources and time structure add an important contextual dimension to the findings. These results suggest that procrastination should not be interpreted solely as an individual weakness, but rather as a phenomenon shaped partly by the professional environment in which teachers work. Teachers who perceive stronger professional resources and who organize their time more

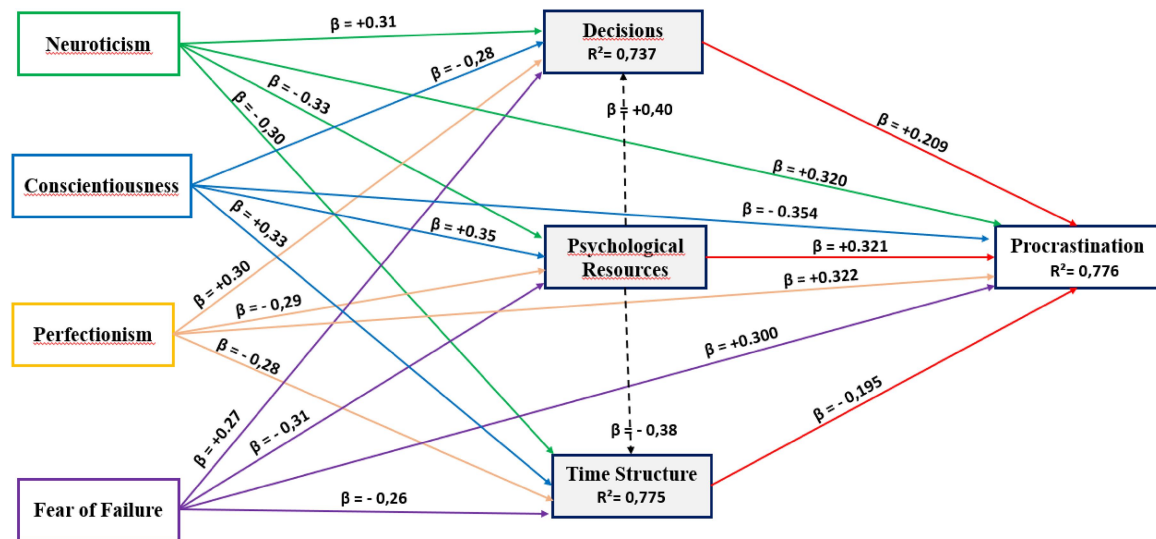


FIGURE 3

An integrative structural model of teacher professional procrastination: the role of personality traits, psychological resources, decisions, and temporal structure.

TABLE 8 Standardized factor loadings and latent factor correlations for the confirmatory factor analysis of the A-TPPS.

Item	Factor	Standardized loading (λ)
1. I delay preparing my teaching materials until the last minute	Instructional procrastination	0.853
2. I postpone lesson planning even when I have enough time	Instructional procrastination	0.837
3. I often rush to complete teaching tasks just before deadlines	Instructional procrastination	0.858
4. I delay grading students' work longer than I should	Instructional procrastination	0.807
5. I put off updating my instructional content regularly	Instructional procrastination	0.838
6. I have difficulty organizing my professional tasks efficiently	Professional self-regulation	0.873
7. I struggle to manage my time during the workday	Professional self-regulation	0.846
8. I fail to follow through on planned teaching activities	Professional self-regulation	0.874
9. I get easily distracted when working on professional duties	Professional self-regulation	0.838
10. I lack discipline in maintaining my teaching schedule	Professional self-regulation	0.827
11. I avoid difficult teaching tasks because they stress me.	Emotional avoidance	0.869
12. I delay tasks that I find emotionally draining.	Emotional avoidance	0.825
13. I put off dealing with challenging students	Emotional avoidance	0.888
14. I avoid responsibilities that create anxiety	Emotional avoidance	0.887
15. I delay tasks when I feel overwhelmed	Emotional avoidance	0.857
16. I feel unmotivated to complete my teaching duties	Professional motivation	0.863
17. I delay work because I lack interest in my job	Professional motivation	0.874
18. I find it hard to engage fully in teaching activities	Professional motivation	0.890
19. My procrastination causes me stress at work	Psychological consequences	0.801
20. I feel guilty after delaying professional tasks	Psychological consequences	0.837
21. My procrastination negatively affects my performance	Psychological consequences	0.819
22. I feel dissatisfied with my productivity at work	Psychological consequences	0.834

All loadings significant at $p < .001$ ($N = 687$). Latent factor correlations: Instructional Procrastination–Professional Self-Regulation = .58; Instructional Procrastination–Emotional Avoidance = .49; Instructional Procrastination–Professional Motivation = .52; Instructional Procrastination–Psychological Consequences = .61; Professional Self-Regulation–Emotional Avoidance = .55; Professional Self-Regulation–Professional Motivation = .47; Professional Self-Regulation–Psychological Consequences = .59; Emotional Avoidance–Professional Motivation = .53; Emotional Avoidance–Psychological Consequences = .64; Professional Motivation–Psychological Consequences = .50. Latent factor inter-correlations ranged from .47 to .64 (Table 8), indicating that the five dimensions, while conceptually distinct, are meaningfully related facets of a common underlying construct of teacher professional procrastination.

effectively appear less likely to delay important professional tasks. This interpretation is compatible with recent conceptual work emphasizing that procrastination is highly sensitive to stress context, resource depletion, and situational constraints (Sirois, 2023). It is also consistent with teacher-focused evidence indicating that procrastination is often intertwined with emotional strain and occupational stress (Laybourn et al., 2019).

Another strength of the study lies in the support for measurement invariance across sex and profession. This finding indicates that the TPPS functions in a comparable manner across these groups and supports its use in subgroup comparisons and future applied research. More broadly, it suggests that the multidimensional configuration identified here reflects a stable professional construct rather than a pattern limited to a specific subgroup of teachers.

Taken together, the findings support the view that teacher professional procrastination is a meaningful and multifaceted occupational construct. It involves delays in task execution, emotional avoidance, self-regulatory difficulty, reduced motivation, and adverse psychological consequences, while also reflecting the combined influence of personality, motivational vulnerability, decision-making, temporal organization, and professional context. The study therefore contributes both a psychometrically robust Arabic instrument and a stronger conceptual basis for future research on procrastination in educational work settings (Klingsieck, 2013; Laybourn et al., 2019; Sirois, 2023; Steel and Klingsieck, 2016).

4.1 Limitations

Several limitations should be considered when interpreting these findings. First, the study was cross-sectional design does not allow for causal interpretation of the observed associations; while the structural model is theoretically coherent, associations should be understood as reflecting meaningful co-occurrence rather than directional influence, and wording throughout the manuscript was adjusted accordingly. Second, constructs were assessed through self-report measures at a single time point, which is a common and accepted approach in psychometric validation research; to address possible common method variance, a Harman's single-factor test was conducted, and results indicated that a single factor did not account for the majority of variance, supporting the robustness of the observed associations. Third, while item development benefited from structured expert panel review and iterative pilot testing, a formal Content Validity Index was not computed at this stage; incorporating this quantitative step in future refinements could further strengthen the documentation of content validity already supported by the panel and pilot procedures. Fourth, the sample was recruited from middle- and high-school teachers in one region of Tunisia through a stratified convenience sampling procedure; although this yielded a large and sociodemographically diverse sample, extending validation to additional regions and educational levels would further support the generalizability of the TPPS. Finally, this study establishes strong initial evidence for convergent, discriminant, and construct validity; extending this work to criterion-related validity, by linking TPPS scores to occupational outcomes such as burnout or engagement, represents a valuable

next step and does not diminish the robustness of the psychometric evidence already presented here. Future studies should examine whether TPPS scores predict occupational outcomes such as burnout, work engagement, absenteeism, or perceived teaching effectiveness.

4.2 Practical implications

The present findings have several implications for educational research and practice. First, the Arabic TPPS provides a profession-specific instrument for assessing teacher professional procrastination in a manner that reflects the realities of educational work. By distinguishing instructional procrastination, self-regulatory difficulties, emotional avoidance, motivational challenges, and psychological consequences, the scale offers a more nuanced understanding of factors that may influence teachers' occupational functioning and well-being.

Second, the findings suggest that professional procrastination should be considered not only a performance-related issue but also a potential indicator of reduced well-being and diminished resilience. The observed associations with fear of failure, perfectionism, emotional avoidance, and psychological resources indicate that procrastination may reflect broader challenges in coping with occupational demands. Consequently, interventions should extend beyond time-management training to include strategies that strengthen self-regulation, emotional regulation, adaptive coping, and resilience.

Third, educational institutions may play a key role in reducing professional procrastination by fostering supportive working environments. Enhancing psychological resources, promoting effective workload management, encouraging collegial support, and providing opportunities for professional development may help teachers better manage work-related demands and maintain psychological well-being. Schools could use the TPPS as a screening tool to identify teachers who may benefit from support in workload management, emotional regulation, or self-regulation coaching. These considerations underscore that professional procrastination may not solely reflect individual dispositions, but may also be shaped by organizational contributors such as workload intensity, administrative burden, and school climate, which merit attention alongside individual-level interventions.

Finally, the demonstrated invariance of the TPPS across groups supports its use in screening, program evaluation, and research aimed at identifying factors associated with educator well-being, resilience, burnout prevention, and long-term professional sustainability. Teacher education and professional development programs could also use aggregated TPPS findings to design workshops on deadline management, coping with evaluative stress, and preventing chronic delay in instructional tasks. As such, the TPPS may serve as a valuable tool for informing evidence-based initiatives designed to support teachers' health, effectiveness, and retention within educational systems.

5 Conclusions

This study provides robust evidence for the reliability, validity, and multidimensional structure of the Arabic Teacher

Professional Procrastination Scale (TPPS). The findings support the conceptualization of teacher professional procrastination as a multifaceted construct encompassing instructional procrastination, professional self-regulation, emotional avoidance, professional motivation, and psychological consequences.

Beyond scale validation, the study contributes to a growing body of research suggesting that professional procrastination represents a meaningful occupational phenomenon situated at the intersection of self-regulation, emotional functioning, and work-related adaptation. The observed associations with personality traits, fear of failure, perfectionism, decision-making difficulties, psychological resources, and time structure indicate that professional procrastination is embedded within a broader network of individual and contextual factors relevant to educators' professional experiences. Although developed in Tunisia, the Arabic TPPS may be relevant for use in other Arabic-speaking educational contexts; however, further cross-cultural validation is recommended before broader regional application, particularly to test whether item wording and factor structure remain equivalent across dialects, school systems, and teaching levels.

By providing a culturally adapted and psychometrically sound instrument for Arabic-speaking educational settings, this study offers a foundation for advancing research on teacher functioning and occupational well-being. Future investigations should examine the longitudinal and predictive significance of professional procrastination and explore its relationships with key outcomes such as burnout, work engagement, job satisfaction, resilience, and teacher retention across diverse educational contexts.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical approval for the study was obtained from the local ethics committee affiliated with the High Institute of Sport and Physical Education of Kef, University of Jendouba, Tunisia, under reference number (ISSEPK-0015/2026), dated 15 February 2026. In addition, the study protocols complied with the latest ethical standards set out in the Declaration of Helsinki (2025). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

References

- Amir, T., and Gati, I. (2006). Facets of career decision-making difficulties. *Br. J. Guid. Coun.* 34 (4), 483–503. doi: 10.1080/03069880600942608
- Association, W. M. (2025). World medical association declaration of helsinki. *JAMA* 333 (1), 71–74. doi: 10.1001/jama.2024.21972
- Bartlett, M. S. (1951). The effect of standardization on a χ^2 approximation in factor analysis. *Biometrika* 38 (3/4), 337–344. doi: 10.1093/biomet/38.3-4.337
- Bond, M. J., and Feather, N. T. (1988). Some correlates of structure and purpose in the use of time. *J. Pers. Soc. Psychol.* 55 (2), 321–329. doi: 10.1037/0022-3514.55.2.321
- Boussayala, G., Tannoubi, A., Hagan, J. E., Amoadu, M., Srem-Sai, M., Bonsaksen, T., et al. (2025). Is it time to address burnout in the military? Initial psychometric validation of the maslach burnout inventory among Tunisian military personnel (A-MBI-MP). *Behav. Sci.* 15 (3), 385. doi: 10.3390/bs15030385

Author contributions

TC: Writing – original draft. AT: Writing – review & editing. TB: Writing – review & editing. VG: Writing – review & editing. AA: Writing – review & editing. AW: Writing – review & editing. FA: Supervision, Writing – review & editing.

Funding

The author(s) declared that financial support was received for this work and/or its publication. The authors sincerely thank King Saud University, Riyadh, Saudi Arabia for providing financial support through the Institutional Open Access Publication Fund for the article processing charge (APC). Ongoing Research Funding program (ORF-2026–1388).

Acknowledgments

All the teachers who participated in the study are appreciated by the authors.

Conflict of interest

The author(s) declared that this work was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declared that generative AI was not used in the creation of this manuscript.

Any alternative text (alt text) provided alongside figures in this article has been generated by Frontiers with the support of artificial intelligence and reasonable efforts have been made to ensure accuracy, including review by the authors wherever possible. If you identify any issues, please contact us.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

- Cao, C., Chen, D., and Zhou, Y. (2025). Perceived stress and academic procrastination among higher vocational nursing students: the mediating roles of positive and negative emotions. *BMC. Nurs.* 24 (1), 36. doi: 10.1186/s12912-024-02672-8
- Ceri, V., and Cicek, I. (2021). Psychological well-being, depression and stress during COVID-19 pandemic in Turkey: a comparative study of healthcare professionals and non-healthcare professionals. *Psychol. Health. Med.* 26 (1), 85–97. doi: 10.1080/13548506.2020.1859566
- Cheung, G. W., and Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Struct. Equ. Model. Multidiscip. J.* 9 (2), 233–255. doi: 10.1207/S15328007SEM0902_5
- Conroy, DE. (2001). Progress in the development of a multidimensional measure of fear of failure: the performance failure appraisal inventory (pfai). *Anxiety Stress Coping*, 14(4), 431–452. doi: 10.1080/10615800108248365
- Çiçek, İ (2022). Mediating role of self-esteem in the association between loneliness and psychological and subjective well-being in university students. *Int. J. Contemp. Educ. Res.* 8 (2), 83–97. doi: 10.33200/ijcer.817660
- Enomoto, R., Hanusz, Z., Hara, A., and Seo, T. (2020). Multivariate normality test using normalizing transformation for mardia's multivariate kurtosis. *Commun. Stat. Simul. Comput.* 49 (3), 684–698. doi: 10.1080/03610918.2019.1661476
- Ferrari, J. R. (1992). Psychometric validation of two procrastination inventories for adults: arousal and avoidance measures. *J. Psychopathol. Behav. Assess.* 14 (2), 97–110. doi: 10.1007/BF00965170
- Fornell, C., and Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *J. Mark. Res.* 18 (1), 39–50. doi: 10.2307/3151312
- Gonley, S. C., Schmidle, T., and Shedd, J. B. (1988). Teacher participation in the management of school systems. *Teach. Coll. Rec. Voice Sch. Educ.* 90 (2), 259–280. doi: 10.1177/016146818809000208
- Groeneveld, RA, and Meeden, G. (1984). Measuring skewness and kurtosis. *Statistician.*, 33(4), 391–399. doi: 10.2307/2987742
- Grogan, A., and Wipawayangkool, K. (2025). Not now, maybe later: the mediating influence of techno-overload on the relationship between academic self-efficacy and procrastination. *J. Comput. High. Educ.* 37 (3), 1285–1305. doi: 10.1007/s12528-024-09423-3
- Grund, A., and Fries, S. (2018). Understanding procrastination: a motivational approach. *Pers. Individ. Dif.* 121, 120–130. doi: 10.1016/j.paid.2017.09.035
- Hambleton, R. K., and Lee, M. K. Methods for translating and adapting tests to increase cross-language validity. In *The Oxford Handbook of Child Psychological Assessment* (pp. 172–181), eds. D. H. Saklofske, C. R. Reynolds, and V. L. Schwane, New York: Oxford University Press (2013).
- Hayes, A. F., and Coutts, J. J. (2020). Use Omega rather than cronbach's alpha for estimating reliability. But.... *Commun. Methods. Meas.* 14 (1), 1–24. doi: 10.1080/19312458.2020.1718629
- Henchiri, H., Tannoubi, A., Harrathi, C., Boussayala, G., Quansah, F., Hagan, J. E., et al. (2025). Validation of the Arabic version of the maslach burnout inventory-HSS among Tunisian medical residents (A-MBI-MR): factor structure, construct validity, reliability, and gender invariance. *Healthcare* 13 (2), 173. doi: 10.3390/healthcare13020173
- Henseler, J., Ringle, C. M., and Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *J. Acad. Mark. Sci.* 43 (1), 115–135. doi: 10.1007/s11747-014-0403-8
- Hewitt, P. L., and Flett, G. L. (1991). Perfectionism in the self and social contexts: conceptualization, assessment, and association with psychopathology. *J. Pers. Soc. Psychol.* 60 (3), 456–470. doi: 10.1037//0022-3514.60.3.456
- Hill, A. P., Kim, H., Ashdown-Franks, G., and Pratt, V. B. (2025). An umbrella review of a decade of meta-analyses examining the correlates of multidimensional perfectionism. *Canad. Psychol.* doi: 10.1037/cap0000450
- Hu, L., and Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Struct. Equ. Model. Multidiscip. J.* 6 (1), 1–55. doi: 10.1080/10705519909540118
- Jahrami, H., Husain, W., Ghazzawi, H., Saif, Z., Ammar, A., and Trabelsi, K. (2025). The translation and validation of the procrastination and precrastination traits scale in the modern Arabic language. *Sci. Rep.* 15 (1), 36968. doi: 10.1038/s41598-025-20963-1
- Kaiser, H. F., and Rice, J. (1974). Little jiffy, mark iv. *Educ. Psychol. Meas.* 34 (1), 111–117. doi: 10.1177/001316447403400115
- Kline, R. B. *Principles and Practice of Structural Equation Modeling* (5th ed.). New York: The Guilford Press (2023).
- Klingsieck, K. B. (2013). *Procrastination: When Good Things Don't Come to Those who Wait* (Vol. 18). Göttingen: Hogrefe Publishing. doi: 10.1027/1016-9040/a000138
- Kristensen, T. S., Hannerz, H., Høgh, A., and Borg, V. (2005). The Copenhagen psychosocial questionnaire-a tool for the assessment and improvement of the psychosocial work environment. *Scand. J. Work. Environ. Health.* 31 (6), 438–449. doi: 10.5271/sjweh.948
- Kulcsár, V., Doborean, A., and Gati, I. (2020). Challenges and difficulties in career decision making: their causes, and their effects on the process and the decision. *J. Vocat. Behav.* 116, 103346. doi: 10.1016/j.jvb.2019.103346
- Laybourn, S., Frenzel, AC, and Fenzl, T. (2019). Teacher procrastination, emotions, and stress: a qualitative study. *Front. Psychol.*, 10, 2019. doi: 10.3389/fpsyg.2019.02325
- Mann, L., Burnett, P., Radford, M., and Ford, S. (1997). The Melbourne decision making questionnaire: an instrument for measuring patterns for coping with decisional conflict. *J. Behav. Decis. Mak.* 10 (1), 1–19. doi: 10.1002/(SICI)1099-0771(199703)10:1<1::AID-BDM242>3.0.CO;2-X
- Manuoglu, E. (2023). The role of perceived autonomy support and fear of failure: a weekly diary study on work-related rumination. *PLoS One* 18 (10), e0291312. doi: 10.1371/journal.pone.0291312
- Mau, W.-C. (2001). Assessing career decision-making difficulties: a cross-cultural study. *J. Career. Assess.* 9 (4), 353–364. doi: 10.1177/106907270100900403
- Metin, U. B., Peeters, M. C. W., and Taris, T. W. (2018). Correlates of procrastination and performance at work: the role of having “good fit”. *J. Prev. Interv. Community.* 46 (3), 228–244. doi: 10.1080/10852352.2018.1470187
- Metin, U. B., Taris, T. W., and Peeters, M. C. W. (2016). Measuring procrastination at work and its associated workplace aspects. *Pers. Individ. Dif.* 101, 254–263. doi: 10.1016/j.paid.2016.06.006
- Milgram, N., Mey-Tal, G., and Levison, Y. (1998). Procrastination, generalized or specific, in college students and their parents. *Pers. Individ. Dif.* 25 (2), 297–316. doi: 10.1016/S0191-8869(98)00044-0
- Mohandas, N. P., Verma, G. G., Tesi, A., RadhaKrishnan, B., Krishna Das, P., Guru Venkatesh, R., et al. (2025). Unveiling workplace deviance: the interplay of self-critical perfectionism, anxiety and fear of failure. *S. Asian J. Hum. Res. Manag.* 23220937251381877. doi: 10.1177/23220937251381877
- Mudrack, P. E. (1997). The structure of perceptions of time. *Educ. Psychol. Meas.* 57 (2), 222–240. doi: 10.1177/0013164497057002003
- Ocampo, A. C. G., Wang, L., Kiazad, K., Restubog, S. L. D., and Ashkanasy, N. M. (2020). The relentless pursuit of perfectionism: a review of perfectionism in the workplace and an agenda for future research. *J. Organ. Behav.* 41 (2), 144–168. doi: 10.1002/job.2400
- Rammstedt, B., and John, O. P. (2007). Measuring personality in one minute or less: a 10-item short version of the big five inventory in English and German. *J. Res. Pers.* 41 (1), 203–212. doi: 10.1016/j.jrp.2006.02.001
- Rog, D. J. (2012). When background becomes foreground: toward context-sensitive evaluation practice. *New Direct. Eval.* 2012 (135), 25–40. doi: 10.1002/ev.20025
- Sirois, F. M. (2023). Procrastination and stress: a conceptual review of why context matters. *Int. J. Environ. Res. Public Health.* 20 (6), 5031. doi: 10.3390/ijerph20065031
- Stauffer, S. D., and Mason, E. C. M. (2013). Addressing elementary school teachers' professional stressors. *Educ. Adm. Q.* 49 (5), 809–837. doi: 10.1177/0013161X13482578
- Steel, P., and Klingsieck, K. B. (2016). Academic procrastination: psychological antecedents revisited. *Aust. Psychol.* 51 (1), 36–46. doi: 10.1111/ap.12173
- Steel, P., Taras, D., Ponak, A., and Kammeyer-Mueller, J. (2022). Self-regulation of slippery deadlines: the role of procrastination in work performance. *Front. Psychol.* 12, 2021. doi: 10.3389/fpsyg.2021.783789
- Steinert, C., Heim, N., and Leichsenring, F. (2021). Procrastination, perfectionism, and other work-related mental problems: prevalence, types, assessment, and treatment—a scoping review. *Front. Psychiatry.* 12, 2021. doi: 10.3389/fpsyg.2021.736776
- Svartdal, F., Pfuhl, G., Nordby, K., Foschi, G., Klingsieck, K. B., Rozental, A., et al. (2016). On the measurement of procrastination: comparing two scales in six European countries. *Front. Psychol.* 7, 2016. doi: 10.3389/fpsyg.2016.01307
- Tannoubi, A., Guelmami, N., Bonsaksen, T., Chalhaf, N., Azaiez, F., and Bragazzi, N. L. (2022). Development and preliminary validation of the physical education-study process questionnaire: insights for physical education university students. *Front. Public Health.* 10, 856167. doi: 10.3389/fpubh.2022.856167
- Tuxford, L. M., and Bradley, G. L. (2015). Emotional job demands and emotional exhaustion in teachers. *Educ. Psychol. (Lond)* 35 (8), 1006–1024. doi: 10.1080/01443410.2014.912260
- Vallerand, R. J. (1989). Vers une méthodologie de validation trans-culturelle de questionnaires psychologiques: implications pour la recherche en langue française. *Canad. Psychol.* 30 (4), 662.
- Wang, J., Zhou, C., Song, Q., and Xu, F. (2023). The relationship between teacher support and positive emotions in Chinese higher vocational students: multiple mediating effects of procrastination behavior and interpersonal assistance. *Front. Psychol.* 14, 2023. doi: 10.3389/fpsyg.2023.1201864