



OPEN ACCESS

EDITED BY

María-Mercedes Yeomans-Cabrera,
Universidad de las Américas, Chile

REVIEWED BY

Sandesh Dhakal,
Tribhuvan University, Nepal
Enrique H. Riquelme,
Temuco Catholic University, Chile
Carla Calisto-Alegria,
International University of La Rioja, Spain

*CORRESPONDENCE

José Francisco López-Gil
✉ josefranciscolopezgil@gmail.com

RECEIVED 15 February 2025

ACCEPTED 05 May 2025

PUBLISHED 21 May 2025

CITATION

Peris-Ramos HC, David-Fernandez S,
Beltrán-Velasco AI, Yáñez-Sepúlveda R,
López-Gil JF and Clemente-Suárez VJ (2025)
Stress and wellness paradigms among
educators in diverse academic contexts in
Spain, Colombia and Chile.
Front. Educ. 10:1577481.
doi: 10.3389/feduc.2025.1577481

COPYRIGHT

© 2025 Peris-Ramos, David-Fernandez,
Beltrán-Velasco, Yáñez-Sepúlveda, López-Gil
and Clemente-Suárez. This is an open-access
article distributed under the terms of the
[Creative Commons Attribution License
\(CC BY\)](https://creativecommons.org/licenses/by/4.0/). 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.

Stress and wellness paradigms among educators in diverse academic contexts in Spain, Colombia and Chile

Helia Carmen Peris-Ramos¹, Susana David-Fernandez¹,
Ana Isabel Beltrán-Velasco², Rodrigo Yáñez-Sepúlveda³,
José Francisco López-Gil^{4,5*} and
Vicente Javier Clemente-Suárez⁶

¹Department of Clinical Odontology, Faculty of Biomedical and Health Sciences, Universidad Europea de Madrid, Madrid, Spain, ²Department of Psychology, Faculty of Life and Natural Sciences, Nebrija University, Madrid, Spain, ³Faculty Education and Social Sciences, Universidad Andres Bello, Viña del Mar, Chile, ⁴School of Medicine, Universidad Espíritu Santo, Samborombón, Ecuador, ⁵Vicerrectoría de Investigación y Postgrado, Universidad de Los Lagos, Osorno, Chile, ⁶Faculty of Medicine, Health and Sports, Universidad Europea de Madrid, Madrid, Spain

Objective: This study analyze the relationship between stress and wellness among educators, analyzing data from 1,037 active teachers across various academic settings. This study has a dual objective: firstly, to analyze the psychological differences among teachers to identify the impact of stress determinants that are prevalent across various academic disciplines; and secondly, to examine the correlation between the psychological profiles of these professionals and their respective teaching domains.

Methods: To achieve our research objectives, we conducted a study with a unique combination of methodologies, incorporating cross-sectional and retrospective approaches. Initially, we collected data through an online survey distributed through Google Docs for 4 months in the 2020–2021 school year, targeting a representative population of in-service teachers aged between 20 and 70 years (mean age \pm standard deviation: 41 ± 9.2 years). Subsequently, different predefined variables were evaluated that studied current conditions such as retrospective evaluations of past data. The research assesses key variables such as teaching experience, teacher satisfaction, loneliness, perceived stress, and various psychological dimensions. SPSS 24.0 was used to analyze the data using descriptive statistics, normality tests, ANOVA with Tukey's *post hoc* and Pearson's correlation, with a significance level of $p \leq 0.05$ to ensure a thorough and rigorous approach in the analysis.

Results: The sample consisted of 40.1% men and 59.9% women, with a mean age of 41.0 ± 9.2 years in Spain, Colombia and Chile and a mean teaching experience of 12 years (12.1 ± 8.9 years). In particular, significant differences in stress indicators were observed, particularly among health sciences and engineering/architecture educators compared to their counterparts in the biological and physical sciences; Engineering/architecture teachers demonstrated higher levels of depersonalization and loneliness compared to biological and physical science teachers. On the other hand, health sciences teachers stand out for higher levels of perceived stress, loneliness and conscientiousness. No significant differences were found between the educational branches in aspects such as teacher satisfaction, work stress, emotional exhaustion, personal fulfillment or traits such as extraversion and openness.

Conclusion: The study analyzes the determinants of stress in different academic disciplines, highlighting the significant influence of teaching fields on teachers' levels of stress, depersonalization, and loneliness. In addition, the interaction between psychological profiles and academic domains is highlighted, as well as the psychosocial risks associated with certain disciplines. The findings suggest the need to implement adapted mental health frameworks in educational institutions and advocate for personalized and multidimensional interventions with specific strategies with the aim of improving teachers' well-being and, consequently, the quality and sustainability of education.

KEYWORDS

teacher burnout, stress management, academic resilience, wellness promotion, interdisciplinary stress analysis, academic mental health

1 Introduction

Stress is an adaptive response designed to maintain or restore biological homeostasis, activated by both intrinsic and extrinsic factors including environmental context and social or psychological circumstances (Chrousos, 2009; Ketchesin et al., 2017; Mifsud and Reul, 2018). However, regulatory dysfunction of this response can disturb biological balance and is linked to the pathophysiology of various diseases, including gastrointestinal, metabolic, endocrine, and immune disorders (Tsigos et al., 2000; World Health Organization, 2020; Clemente-Suárez, 2020; Tornero-Aguilera et al., 2017; Tsigos and Chrousos, 1994). While stress is a natural reaction to received stimuli, it can become pathological if the stimuli are prolonged (Chrousos, 1992; Hou et al., 2020; Seo et al., 2017), leading to significant impacts on daily functioning and emotional stability. This can increase the risk of developing psychological conditions such as depression and anxiety (Papastylianou et al., 2009; Seo et al., 2017). Teachers, due to their high occupational involvement and psychosocial demands, are particularly vulnerable to chronic job-related stress, which can lead to isolation, mental fatigue, excessive anxiety, depression, and ultimately burnout syndrome—a prevalent psychopathological condition among (Maslach, 1986; Kyriacou, 2001; Spagnolo et al., 2020).

Burnout syndrome, defined as a job-related stress with three distinct dimensions—depersonalization, emotional exhaustion, and reduced personal accomplishment—is critical in assessing job stress levels (Zhu et al., 2022). These dimensions can be evaluated using questionnaires to detect the presence of burnout and the personality traits that may precipitate it (Galasso et al., 2020). The psychological well-being of teachers, who operate under high demands and challenges, is especially crucial as it indirectly impacts the mental and social health of their students (Agyapong et al., 2022; Belinchón-Demiguel and Clemente-Suárez, 2019; Clemente-Suárez, 2020; Gao et al., 2020; Odriozola-González et al., 2020; Sharkey et al., 2020). Similar to other care-focused professions like nursing or social services, high levels of burnout have been observed in teaching due to intense psychological demands (Dutheil et al., 2019; Yang et al., 2022). Gender differences in burnout rates have also been documented, with women generally scoring higher on burnout scales across various professions (Purvanova and Muros, 2010; Redondo-Flórez et al., 2020a,b). A key aspect of burnout, depersonalization, involves a sense of detachment from one's self and coworkers, leading to feelings of alienation and distress (Cruzado et al., 2014; Semmer et al., 2004).

Gender differences in depersonalization have been noted, with men exhibiting higher levels, possibly due to traditional gender roles and difficulties in expressing emotions, which may lead men to more readily disconnect under stress (Pari and Victor, 2017; Carolina and Beltrán, 2006; Yoshimasu et al., 2006; Eagly, 2013; Bye et al., 2022; Maslach and Leiter, 2008; Purvanova and Muros, 2010; Sulsky and Smith, 2007). Addressing these issues is imperative for enhancing the quality of life and ensuring safe working conditions, which significantly contribute to overall well-being.

The study of teacher job satisfaction is crucial as it directly impacts many aspects of teaching, including student academic performance. Research indicates that teacher satisfaction is positively associated with student performance (Wang et al., 2022) whereas low satisfaction correlates negatively with student outcomes (Sargent and Hannum, 2005). The relationship between job satisfaction and teaching experience is complex, with some studies reporting higher satisfaction among less experienced teachers (Sargent and Hannum, 2005; Zhang Z. et al., 2023), while others find increased satisfaction with greater experience and personal fulfillment (Klassen and Chiu, 2010). Gender differences in job satisfaction also present varied findings; some studies suggest that female teachers are more satisfied (Manzano et al., 2023), though other research shows no significant correlation between satisfaction and gender, with some reports indicating higher stress and lower satisfaction among female teachers (Antonioni et al., 2006; Klassen and Chiu, 2010; Liu and Ramsey, 2008; Sargent and Hannum, 2005). These mixed results underscore the importance of conducting context-specific research to better understand the dynamics of teacher satisfaction. Teacher commitment is another vital element influencing school effectiveness and academic achievement. Commitment reflects a teacher's dedication to their work, impacting their emotional engagement and long-term commitment (Price, 2012). Committed educators are more likely to introduce effective teaching techniques and foster student success (Altun, 2017). They also play a crucial role in motivating students towards educational excellence, implying a broader commitment to the school community, student learning, and professional development (Choi and Tang, 2009). The development of such commitment likely involves dynamic interactions among various psychological and relational factors within the school environment (Human-Vogel, 2013).

Evidence suggests that loneliness is closely linked to psychological inflexibility or resilience, affecting individuals' ability to cope with contextual stresses and potentially leading to anxiety and depressive disorders through engagement in avoidance activities (Martín et al.,

2021; Ortega-Jiménez et al., 2021). Among various professional groups, nurses exhibit notably high levels of psychological inflexibility and loneliness, indicating that professions demanding high personal commitment may experience increased psychological inflexibility (Yang et al., 2022). This pattern is echoed in studies on adolescent students, highlighting a lack of belonging in academic settings (Martín et al., 2021). Furthermore, the relationship between psychological inflexibility, negative emotions, and loneliness contributes to anxiety and depression (Taha and Elhay, 2022). Personality is defined as the distinct psychological traits influencing an individual's behavior, thoughts, and feelings across different contexts and over time (Roberts and DelVecchio, 2000; Roberts and Jackson, 2008). Various personality frameworks with differing reliability and validity levels have been proposed. The connection between personality traits and burnout has been extensively studied in various professions through meta-analytic methods (Alarcon et al., 2009; Swider and Zimmerman, 2010; Mengist et al., 2021). Although no specific meta-analysis has addressed the link between personality and burnout within the teaching profession, the topic of reducing teacher burnout remains a focus of scholarly discussions. Drawing on meta-analytic findings from other fields and existing studies on teachers, hypotheses can be formulated about how the Big Five personality traits (neuroticism, extraversion, conscientiousness, agreeableness, and openness) might relate to teacher burnout (Ramón and Martínez, 2015).

Wellness encompasses specific actions and decisions targeting a healthier, balanced life across mental, physical, and emotional dimensions, aiming to achieve overall well-being. Adopting wellness as a lifestyle can enhance work efficiency, energy levels, and stress management. Regular physical activity tailored to individual needs significantly lowers perceived stress levels, thereby improving both physical and mental health (Bond et al., 2011; Russell, 1996; Zung, 1965). This activity stimulates the release of chemicals like dopamine, serotonin, and endorphins, which help regulate the autonomic nervous system and promote homeostasis (Pine et al., 2005; Sandín et al., 2020). Practices such as yoga effectively reduce stress responses and can be beneficial when incorporated into daily routines (Bischoff et al., 2019). Nutrition also plays a crucial role in modulating stress response, with unhealthy diets rich in carbohydrates, sugars, and fats correlating with higher anxiety, depression, and stress levels among university students (García-Martínez et al., 2021; Baker and Wardle, 2003; Clemente-Suárez et al., 2022; Zhang Y. et al., 2023). A diet that includes physical activity may have anti-inflammatory effects and prevent symptoms of depression and anxiety (Mendoza-Castejón and Clemente-Suárez, 2020). There is a noted link between diet and psychological disorders due to physiological changes that regulate autonomic responses (Błaszczuk-Bębenek et al., 2020; Mikołajczyk et al., 2009; Shivappa et al., 2016). Additionally, oral health status is associated with stress levels, with high-stress individuals showing poorer dental hygiene and periodontal issues (Deinzer et al., 2005; Deinzer et al., 2001), and those with oral or phonetic problems experiencing increased isolation and stress (Kim et al., 2017).

The stress levels among teachers differ significantly across academic levels, impacting both their well-being and the learning and attention spans of students (Lensen et al., 2021; Whiting et al., 2021). Additionally, these stress variations are influenced by various teaching environment factors including socioeconomic challenges, class sizes, and administrative support, which contribute to significant emotional exhaustion and depersonalization in educators (Alsallhe et al., 2021).

These observations underscore the necessity for a nuanced approach in understanding and addressing the myriad factors influencing teacher stress, which is crucial for formulating effective strategies to reduce stress impacts, thereby improving teacher well-being and enhancing student learning experiences. The nuanced impact of stress-related factors among teachers across different academic fields remains underexplored. This study has a dual objective: firstly, to analyze the psychological differences among teachers to identify the impact of stress determinants that are prevalent across various academic disciplines; and secondly, to examine the correlation between the psychological profiles of these professionals and their respective teaching domains. The initial hypothesis was that stress-related factors significantly vary among teachers, directly influenced by the disciplinary context of their academic field. This variation is anticipated to reveal distinct stress profiles, underlining the critical interplay between academic discipline and stress determinants.

Recent study has yielded pertinent findings that should be taken into account, particularly after experiencing a worldwide pandemic. Specifically, in Spain, outcomes showed that teachers have symptoms of stress, anxiety and depression (Ozamiz et al., 2021). Additionally, it should be noted that the COVID-19 pandemic has resulted in substantial physiological, social, psychological, economic, and educational impacts worldwide. Since the beginning of the pandemic, the closure of schools and colleges has been one of the most extensively implemented measures to help preserve social distance and restrict the spread of the virus (Ozamiz et al., 2021). Consequently, there have been documented unfavorable effects of the employment of online teaching methods on teacher stress and teaching effectiveness. Teachers, in other words, have been abruptly forced to acquire new skills in complex technology, leading to tension and concern. In addition, during the pandemic, teachers who returned to the classroom feared contracting the disease. The age-based vaccine rollout strategy left many teachers unprotected despite working in schools, leading to fear and additional stress for teachers (Minihan et al., 2022).

The justification for conducting this study lies in the imperative to achieve a more comprehensive understanding of the determinants of stress among educators, including factors such as burnout, perceived stress, psychological inflexibility, loneliness, and the Big Five personality traits. These determinants constitute the central focus of examination to uncover potential interactions or mediating factors influencing the psychological constructs of teachers within their professional domains. The correlation between educators' psychological profiles, as defined by their disciplinary contexts, and stress determinants is expected to reveal distinct stress profiles and their dynamics across various teaching disciplines.

2 Materials and methods

2.1 Participants

During the 2020–2021 academic year, a study was carried out with an online sample from February to May, both inclusive. During these 4 months, a sample of 1,037 active teachers from Spain, Colombia and Chile was obtained. The sample consisted of 415 males and 620 females, with ages ranging from 20 to 70 years (mean age \pm standard deviation: 41 ± 9.2 years). Of the total sample size, 19.7% of surveyed

teachers worked in primary education, 13.6% in secondary education, 11.9% in vocational/technical education, and 56.8% in higher education institutions. In terms of teaching experience, the participants had an average of 12 years (12.1 ± 8.9 years). They taught various subjects, with 30.5% in social and legal sciences, 37.8% in health sciences, 14.5% in arts and humanities, 6.4% in engineering and architecture, and 10.9% in biological and physical sciences.

All selected subjects are active teachers and participated voluntarily by receiving an online survey. The inclusion criteria were subjects of legal age with university teaching studies, Spanish-speaking teachers, active teachers from primary education to university education, subjects who are available to complete the questionnaire with access to the network through Google Docs, and teachers predisposed to objective participation. The exclusion criteria focused on teachers who were not diagnosed with any psychological impairment, teachers who are under treatment or conditions that may bias the results such as psychological, nutritional or physical therapy or treatment and incomplete questionnaires due to dropping out of the study for logistical or personal reasons. Participants were provided with prior information about the study and provided written informed consent, were informed of their rights, and that the study complied with the Declaration of Helsinki and GDPR, the informed consent guaranteed anonymity and confidentiality in accordance with the Organic Law on Data Protection (BOE-A-2018-166673). The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the European University Ethics Committee (CI-PI/18/074). Furthermore, all procedures adhered to the Helsinki Declaration (revised in Brazil in 2013). In the selection of participants for this study, we utilized a hybrid approach that incorporates both purposive and convenience sampling methods. Invitations were extended to active educators across various educational levels in Spain, Colombia, and Chile through an online survey. The criteria for participation included a willingness to participate and the ability to provide informed consent. This strategy was designed to ensure a comprehensive representation of educators from primary through to higher education institutions, facilitating a broad exploration of stress and wellness paradigms within diverse academic settings, while adhering to ethical standards and data protection regulations.

2.2 Design and procedure

To achieve our research objectives, we conducted a study with a unique blend of methodologies, incorporating both cross-sectional and retrospective approaches. Initially, we collected current data through an online survey distributed via Google Docs, targeting a representative population and assessing various predefined variables. This survey utilized a mix of multiple-choice questions derived from standardized questionnaires and those used in prior research. To integrate the retrospective aspect, we also analyzed historical data from the same participants, allowing us to observe and analyze trends over time. This dual approach enabled us to comprehensively examine the impact of various factors on our study's outcomes. The survey presents a total of 65 questions for the psychological analysis of the respondents, which are divided as follows: 11 questions focused on demographic, anthropometric and teaching experience information. 1 question to indicate the degree of job satisfaction. 23 items aimed at the study of burnout syndrome by measuring

emotional exhaustion, depersonalization and personal fulfillment. 10 questions aimed at the study of the subject's current perceived stress. 7 questions focused on the study of psychological inflexibility that is studied through the psychological flexibility questionnaire of acceptance and action. 3 questions aimed at the study of loneliness using the UCLA Loneliness Scale. and finally, 10 questions aimed at studying the subject's personality using the validated NEO five-factor personality test (NEO FFI). The survey included multiple-choice response options following standardized questionnaires and questions used in previous studies.

- *Teaching Experience*: Analysing the number of years of professional teaching experience in one item.
- *Teacher Satisfaction*: Measured on a Likert scale one item ranging from 0 (not satisfied at all) to 10 (completely satisfied), assessing teachers' self-perceived satisfaction with their current teaching activities.
- *Teacher Stress*: Self-perceived one item current stress assessed on a Likert scale from 0 (no stress) to 10 (severe stress).
- *Emotional Exhaustion*: The Spanish version of the Maslach Burnout Inventory Test (MBI) was used to measure emotional exhaustion, depersonalization, and personal accomplishment, the three emotional components used to evaluate the existence of burnout syndrome in the workplace (Lee and Ashforth, 1990; Maslach et al., 2015). The test consists of 22 items, each rated on a Likert scale from 0 to 6. Cronbach's alpha coefficients for internal consistency reliability were 0.76 for depersonalization, 0.76 for emotional exhaustion, and 0.90 for personal accomplishment. Example items include: "I have become more insensitive to my students"; "I worry that this job is emotionally hardening me"; "I feel frustrated with my work."
- *Perceived Stress (PSS)*: This test involves self-assessment of current perceived stress using 14 items on a Likert scale where 0 indicates "never" and 4 indicates "very often." Higher scores indicate higher perceived stress and a loss of control (Cohen et al., 1983). Example items include: "I have lost control of important things in my life"; "In the past month, I have often felt upset by unexpected events." The PSS-14 reported a Cronbach's alpha of 0.830, indicating high reliability.
- *Psychological Inflexibility*: The Acceptance and Action Psychological Flexibility Questionnaire (AAQ-II) in Spanish measures the ability to handle unpleasant internal emotions or situations through 7 items on a 7-point Likert scale ranging from 1 (never) to 7 (always) (Wang et al., 2024; Hayes et al., 2004). Scores range from 7 to 49, with higher scores indicating greater ability to control aversive thoughts or feelings. Cronbach's alpha coefficients for internal consistency reliability were 0.93 for males and 0.95 for females. Example items include: "Painful memories prevent me from having a satisfying life"; "Worries get in the way of my success."
- *Loneliness*: The Spanish version of the UCLA Loneliness Scale assesses self-concept of loneliness and the feeling of being excluded or receiving less social support than desired (Hughes et al., 2004). It is rated on a three-point scale, with 1 indicating "almost never," 2 indicating "sometimes," and 3 indicating "frequently." Scores range from 0 to 9, with lower scores indicating greater feelings of loneliness or lack of social support. Cronbach's alpha coefficients for internal consistency reliability

were 0.76 for males and 0.84 for females. Example items include: “I feel excluded”; “I feel isolated from others.”

- *NEO Five-Factor Personality Test (NEO FFI)*: The Spanish version of the NEO Five-Factor Inventory assesses five personality factors (neuroticism, extraversion, agreeableness, conscientiousness, and openness to experience) through 10 items selected from the original 44-item questionnaire (Costa and McCrae, 1992; Manga et al., 2004). Each factor is rated on a 0 to 5 Likert scale, with 1 indicating “completely disagree” and 5 indicating “completely agree.” Cronbach’s alpha coefficient for internal consistency reliability was 0.75. Example items include: “I usually find fault with others”; “I am reserved”; “I consider myself a sociable person”; “I consider myself persevering”; “I consider myself a person with a vivid imagination.”

The standardized instruments employed in this study demonstrated acceptable to excellent internal consistency based on Cronbach’s alpha coefficients reported in previous validation studies. Specifically, the Maslach Burnout Inventory showed reliability values ranging from $\alpha = 0.76$ for depersonalization and emotional exhaustion to $\alpha = 0.90$ for personal accomplishment (Iwanicki and Schwab, 1981). The Perceived Stress Scale (PSS-14) exhibited high internal consistency with $\alpha = 0.82$ (Andreou et al., 2011). The Acceptance and Action Questionnaire-II (AAQ-II), used to assess psychological inflexibility, demonstrated excellent reliability with $\alpha = 0.91$ (Ruiz et al., 2016). The UCLA Loneliness Scale, version 3, reported alpha values between $\alpha = 0.89$ and $\alpha = 0.94$, indicating high internal consistency (Russell, 1996). Finally, the NEO Five-Factor Inventory (NEO-FFI) showed variable but generally acceptable reliability across the five domains: neuroticism ($\alpha = 0.83$), conscientiousness ($\alpha = 0.80$), agreeableness ($\alpha = 0.60$), extraversion ($\alpha = 0.58$), and openness to experience ($\alpha = 0.39$), according to the Spanish adaptation (Aluja et al., 2005). These coefficients confirm the psychometric robustness of the tools used to assess the psychological constructs examined in this study.

2.3 Statistical analysis

Statistical analyses were conducted using SPSS version 24.0. Descriptive statistics calculated for each variable were complemented by assessing normality via the Kolmogorov–Smirnov test. Upon confirming data normality, we employed ANOVA with Tukey *post hoc* analysis for group comparisons. Notably, our analysis was expanded to include adjustments for a comprehensive set of variables (demographic, occupational, and psychological) to ensure a nuanced understanding of their impacts. Pearson’s correlation was utilized to explore variable relationships, maintaining a significance level at $p \leq 0.05$, reflecting a meticulous approach to data integrity and analysis complexity.

3 Results

The sample consisted of 40.1% males and 59.9% females, with a mean age of 41.0 ± 9.2 years in Spain, Colombia, and Chile. The sample consisted of 415 males and 620 females, with ages ranging from 20 to 70 years (mean age \pm standard deviation: 41 ± 9.2 years).

Of the total sample size, 19.7% of surveyed teachers worked in primary education, 13.6% in secondary education, 11.9% in vocational/technical education, and 56.8% in higher education institutions. In terms of teaching experience, the participants had an average of 12 years (12.1 ± 8.9 years). The sample working in the following teaching areas: social and legal sciences (30.5%), health sciences (37.8%), arts and humanities (14.5%), engineering and architecture (6.4%), and biological and physical sciences (10.9%) (Table 1). Teachers working in the field of engineering and architecture exhibited significantly higher levels of depersonalization than those in biological and physical sciences ($p = 0.008$). Additionally, teachers in the field of engineering and architecture had higher levels of loneliness than those in biological and physical sciences ($p = 0.011$). On the other hand, teachers in health sciences demonstrated higher levels of perceived stress compared to those in biological and physical sciences ($p = 0.008$). Furthermore, health sciences teachers reported higher loneliness scores than those in biological and physical sciences ($p = 0.014$). Similarly, higher levels of conscientiousness were found in individuals teaching in health sciences compared to those teaching in biological and physical sciences ($p = 0.008$).

No statistically significant differences were found in teacher satisfaction, teacher stress, emotional exhaustion, personal accomplishment, psychological inflexibility, extraversion, agreeableness, neuroticism, and openness to experience among the different branches of education. It is important to note that teachers in the fields of engineering and architecture showed higher values of depersonalization and loneliness, while teachers in health sciences exhibited higher levels of perceived stress, loneliness, and conscientiousness.

Finally, the correlation analysis revealed significant relationships between various variables. For instance, Teacher Stress and Emotional Exhaustion showed a strong positive correlation ($r = 0.612$, $p < 0.000$), indicating that higher levels of teacher stress are associated with greater emotional exhaustion. Conversely, Teacher Satisfaction was negatively correlated with Teacher Stress ($r = -0.250$, $p < 0.000$) and Emotional Exhaustion ($r = -0.480$, $p < 0.000$), suggesting that higher satisfaction levels are linked with lower stress and exhaustion. Personal Accomplishment was positively correlated with Teacher Satisfaction ($r = 0.447$, $p < 0.000$) but negatively with Teacher Stress ($r = -0.208$, $p < 0.000$) and Emotional Exhaustion ($r = -0.409$, $p < 0.000$), highlighting the inverse relationship between these factors and suggesting that increased personal accomplishment feelings are associated with lower stress and exhaustion among teachers.

4 Discussion

The main objectives of this study were to assess the determining factors of stress in different academic areas of teachers and analyze the relationship between the psychological profile of these professionals and the field in which they teach. The initial hypothesis was partially fulfilled, as we observed significantly higher values of depersonalization and loneliness in teachers who teach in the field of engineering and architecture. Additionally, we found significantly higher levels of perceived stress, loneliness, and conscientiousness in teachers of health sciences. Conversely, no statistically significant differences were found in the other parameters studied among the groups from various academic disciplines.

TABLE 1 Mean differences and standard deviations in teaching activity and psychological variables among groups.

Variables	Social and Legal sciences (1)	Health sciences (2)	Arts and humanities (3)	Biological and physical sciences (4)	Engineering and architecture (5)	F	Group differences
Teacher Satisfaction (0–10)	8.3 ± 1.3	8.3 ± 1.3	8.2 ± 1.3	8.4 ± 1.4	8.4 ± 1.4	0.354	
Teacher stress (0–10)	6.5 ± 2.3	6.6 ± 2.4	6.3 ± 2.7	6.2 ± 2.2	6.6 ± 1.7	0.643	
Emotional exhaustion (MBI)	19.3 ± 10.5	18.5 ± 9.7	18.7 ± 10.3	18.1 ± 10.1	19.6 ± 9.1	0.499	
Depersonalization (MBI)	4.0 ± 4.2	4.2 ± 3.8	3.8 ± 4.3	3.2 ± 3.3	5.3 ± 4.6	3.141	5 > 4 (p:0.008)
Personal accomplishment (MBI)	37.2 ± 6.0	36.9 ± 5.8	37.6 ± 5.8	38.4 ± 5.7	35.8 ± 6.4	2.510	
Perceived stress (PSS)	20.9 ± 4.7	21.6 ± 4.4	21.2 ± 4.2	20.1 ± 4.0	20.7 ± 4.1	3.318	2 > 4 (p:0.008)
Psychological Inflexibility (AAQ-II)	16.2 ± 9.2	15.8 ± 8.3	16.1 ± 8.5	13.9 ± 7.8	17.4 ± 8.7	2.119	
Loneliness (UCLA)	3.7 ± 1.3	4.0 ± 1.5	4.0 ± 1.4	3.6 ± 1.3	4.3 ± 1.4	5.087	5 > 4; (p:0.011) 2 > 4 (p:0.014)
Extraversión (Big Five)	3.9 ± 1.4	4.8 ± 1.8	4.7 ± 1.8	5.2 ± 2.0	5.1 ± 2.0	1.375	
Agreeableness (Big Five)	7.3 ± 1.5	7.3 ± 1.6	7.1 ± 1.6	7.1 ± 1.6	7.3 ± 1.4	0.407	
Conscientiousness (Big Five)	8.0 ± 1.6	8.4 ± 1.4	8.0 ± 1.6	7.7 ± 1.8	8.4 ± 1.4	3.870	2 > 4 (p:0.008)
Neuroticism (Big Five)	5.3 ± 2.1	5.2 ± 2.2	5.2 ± 1.9	5.1 ± 2.0	5.6 ± 1.8	0.390	
Openness to experience (Big Five)	7.9 ± 1.8	7.9 ± 1.6	8.1 ± 1.8	7.7 ± 1.7	7.9 ± 1.7	0.570	

We observed that regardless of the teachers' area of expertise, the levels of teacher satisfaction (8 out of 10) and stress (6 out of 10) were high. This may imply a high level of commitment on the part of the teaching staff (Anastasiou and Garametsi, 2021; Clemente-Suárez et al., 2024). Findings suggest that stress and satisfaction are independent variables, both crucial for psychological well-being (Lau et al., 2022). These two independent values indicate that, while teaching is challenging, it is also one of the most engaging and rewarding professions. The correlation between occupational commitment and stress appears to be multifaceted, given that experiencing stress can influence one's level of commitment and satisfaction towards their profession. It is plausible to consider that individuals with a strong commitment to their occupation, such as teachers, may handle stress more effectively due to their belief in the significance of their role, despite encountering stressors and challenges (Kobasa, 1982). Consequently, another pertinent aspect to consider is how the level of occupational commitment may serve as a mediator or moderator in the perception of stress, given that achievement striving, defined as the 'tendency to exert effort in achieving goals' (Spector and O'Connell, 1994; Redondo-Flórez and Clemente-Suárez, 2023), could play a role. Burns and Bluen (1992) observed a positive correlation between commitment to a profession and achievement striving. Despite this, the relationship between occupational

commitment and stress has often been overlooked in occupational research, although some scholars have speculated on the potential link between commitment to a profession and job-related stressors (Burns and Bluen, 1992; Jepson and Forrest., 2006). Thus, several factors correlate stress with anxiety and depression among teachers, as a study reported that Canadian teachers experience twice the level of psychological distress (40%) compared to the general population sample (20%) (Biron et al., 2008; Anbesaw et al., 2023). This could be attributed to participation in decision-making and peer interactions, which were reported as high risks to employees' health. Workload was one of the most common sources of stress. Meanwhile, a cross-sectional study showed that two-thirds of teachers perceived job stress at least 50% of the time (Blix et al., 1994). This observation may be due to the gratification that teaching brings (Agyapong et al., 2022).

Regarding the burnout results, the data revealed that the levels of depersonalization in teachers who taught engineering and architecture were higher than in others, with statistically significant differences compared to those teaching biological and physical sciences. This can be explained by the relationship between burnout and depersonalization in its onset (Schaufeli et al., 2009; Schaufeli and Salanova, 2007; Schaufeli and Taris, 2005) and the influence of individual determinants related to the occurrence of burnout in

teachers (Mijakoski et al., 2022). The onset of burnout, among many other factors, may be influenced by years of teaching experience. Some articles reported no significant correlation with experience (Jin-yan, 2013), while others found no correlation between professional title and the onset of burnout (Hai-yan, 2010; Liu and Harbin Institute of Technology, 2014). However, various studies indicate that teaching experience does moderate exhaustion, increasing emotional exhaustion and fatigue (Fernández-Puig et al., 2015; Zhang, 2014) while enhancing satisfaction and personal accomplishment (Ishibashi et al., 2022). In relation to these data, the results showed high levels of burnout similar to other caregiving professions such as nursing, medicine, or social services due to the strong psychological demands generated by these professions (García et al., 2016; Lin et al., 2022). Teachers are one of the caregiving groups with the highest rates of burnout and occupational stress. This can lead to psychopathologies such as depression and anxiety, making it interesting to investigate the differences between various values that may be related to the onset of stress symptoms along with a high rate of absenteeism (Agyapong et al., 2022; Levante et al., 2023). Additional negative effects include increased alcohol and drug consumption along with the onset of chronic stress. It is noteworthy that the percentage of teachers experiencing severe stress is twice that of a general population sample (Anbesaw et al., 2023; Biron et al., 2008). It is important to note that the COVID-19 pandemic has had significant global physiological, educational, sociological, and psychological effects due to the social distancing measures implemented since the beginning of the pandemic (Rodríguez-Besteiro et al., 2021; Ozamiz et al., 2021). As a result, negative effects have been observed due to the adaptation to teaching techniques and effectiveness, with teachers experiencing increased anxiety and stress as a result of this new situation (Minihan et al., 2022). These data may explain the difference in our study, where we observed that the perceived stress among teachers of health sciences is statistically significantly higher compared to those teaching biological and physical sciences.

The significant correlations found between various psychological variables offer a deeper understanding of the intricate dynamics influencing teacher well-being. The positive correlation between Teacher Stress and Emotional Exhaustion underscores the intertwined nature of these experiences, highlighting how increased stress levels are directly associated with heightened emotional exhaustion among educators. Conversely, Teacher Satisfaction negatively correlates with both Teacher Stress and Emotional Exhaustion, illustrating that higher satisfaction levels can act as a buffer against the adverse effects of stress and prevent burnout. Additionally, the relationship between Personal Accomplishment and Teacher Satisfaction, and its inverse relationship with Teacher Stress and Emotional Exhaustion, suggests that feelings of accomplishment can foster satisfaction and mitigate stress-related challenges. These findings elucidate the complex relationships between satisfaction, stress, and exhaustion, indicating that enhancing personal accomplishment and satisfaction among teachers could be pivotal in reducing stress and preventing burnout, thereby promoting a healthier educational environment.

Regarding the results on loneliness, it was observed that teachers in Engineering, Architecture, and Health Sciences exhibited statistically significantly higher levels compared to teachers in Biological and Physical Sciences. Loneliness in educators is related to stress and anxiety, due to the pivotal role of social connections and interactions in well-being, which fundamentally influence mental and

physical health (Lieberman, 2013; Mann et al., 2017; Neufeld et al., 2015; Steptoe et al., 2013). In the teaching environment, controlling and managing emotions are crucial for executing excellent academic work, due to the inherent commitment of the profession (Marín, 2011). Teachers differ from other professions due to the specific demands and resources they require (Iancu et al., 2018; McCarthy et al., 2016), leading to high levels of personal demand driven by the need for innovation and the demands of the current teaching role, thereby increasing perceptions of loneliness, anxiety, and depression (Sánchez and Margoth, 2018; Ramos, 2004). Social withdrawal and a sense of belonging, which exhibit similar values among students, teachers, and caregivers, act as moderating variables in loneliness due to the challenge of managing the required work and are also considered protective factors against burnout in these professions (Baskin et al., 2010; Erzen and Çikrikci, 2018; Waytz et al., 2015; Zhang et al., 2021). When comparing loneliness across different collectives, we observed that the nursing profession also shows high loneliness levels, leading us to deduce that professions with a high level of personal commitment are those that raise such levels (Niskala et al., 2020; Yang et al., 2022). Our results are consistent as similar values are found where a positive and significant relationship between loneliness and perceived stress is evidenced in a study conducted with 1,110 teachers (Dussault et al., 1999), as we obtain similarly significantly high data in Health Sciences teachers. Contrary to other data, in which a negative relationship between loneliness and job satisfaction is observed (De Andrade, 2018), in our sample, despite having significantly high loneliness data, teachers show high satisfaction scores. These differences may be due to the varied personal and professional characteristics of teachers in each academic area. Higher education is characterized by a degree of complexity as, in addition to addressing specific teaching and research topics, it impacts social, intellectual, psychological, and pedagogical aspects according to the complexity of the profession being prepared (Carlotto and Cámara, 2017). We see in studies that loneliness is related to individuals with resilience and conscientiousness (Maselli and Regina, 2020; Melillo et al., 2008). This data concurs with our study, where significantly higher values of loneliness and conscientiousness are observed in Health Sciences teachers.

Upon analyzing our personality data, the results revealed that teachers in the health science areas exhibit higher levels of conscientiousness compared to their counterparts, presenting significant values in comparison with those teaching in the areas of biological and physical sciences. This data may be attributed to the implications inherent to health professions, which are characterized by self-discipline, prudence, organization, and meticulousness (Chisholm-Burns et al., 2021). Conscientiousness refers to individual characteristics that predispose a person to be orderly, hard-working, responsible, and respectful of rules (Roberts et al., 2014). The way of linking it with professional vocations suggests that contexts that are orderly, safe, and provide clear social norms lead to such professions, in such a way that conscientiousness is considered the most influential non-cognitive construct for occupational performance (Wilmot and Ones, 2019). Healthcare pro-files are the most studied populations in these factors and are associated with significantly high-performance results in profiles with higher values of scrupulousness, conscientiousness, and determination (Chisholm-Burns et al., 2021). Moreover, these profiles face growing challenges, such as curricula, time management, and high expectations (Stoffel and Cain, 2018).

Comparing our sample with other professions, such as medicine, we observe that personality remains a determining factor for adequately confronting and managing the demanding demands of such professions (Leigh, 2011; Sier et al., 2023), finding high values of conscientiousness in more perfectionist professions (Bexelius et al., 2016; Clarke et al., 1994; Kluger et al., 1999; Mullola et al., 2018; Wal Raymond et al., 2022). On the other hand, we observe that conscientiousness can also be present in students with low efficacy and performance since it is related to individual achievement and can manifest as inefficiency in situations of role conflict and higher workloads (Hudek-Knežević et al., 2011; Rosenthal et al., 2013; Han et al., 2022). We conclude considering that conscientiousness is a non-cognitive factor that teachers convey to their students, increasing their responsibility and work performance, and it also stands out as the best predictor of academic success (Flores and Roberto, 2012; Judge and Ilies, 2002).

4.1 Study limitations and future research lines

This study exhibits certain limitations. Firstly, participants hail from various Spanish-speaking institutions, in addition, there is an information bias due to the fact that the information of the region of the country of each respondent was not included, which could limit the generalizability of the findings. More research is imperative to determine whether the findings are applicable across diverse cultural contexts and samples. Secondly, being a single-point self-assessment study, participants' perceptions are portrayed as static, necessitating longitudinal studies to affirm our data over time. Thirdly, participants may have underestimated or overestimated variables and their interrelations. A more thorough examination of all variables could offer a more nuanced understanding of burnout, perceived stress, inflexibility, loneliness, and the Big Five personality traits. Fourthly, the lack of a longitudinal design prevents tracking of the teachers' variables and their formative and personal processes over time. Future re-search projects should employ longitudinal designs to establish causal relationships among variables. Lastly, this study relied solely on questionnaires to gather data, which might limit the depth of understanding regarding the complex nature of the studied phenomena. Incorporating qualitative methods or objective measures in future research could provide a more comprehensive insight into the variables of interest.

Future research could benefit from including participants from a more diverse range of institutions to enhance the external validity of the findings. Additionally, to provide a more comprehensive understanding of burnout, perceived stress, inflexibility, loneliness, and the Big Five personality traits, future studies should aim to thoroughly examine all variables involved. This could involve conducting in-depth analyses to uncover potential interactions or mediating factors that contribute to these psychological constructs, thus offering a more nuanced understanding of their relationships. Longitudinal research designs would allow for the examination of changes in variables over time, offering valuable insights into the developmental trajectories of burnout, perceived stress, inflexibility, loneliness, and personality traits. To conduct such a study, researchers would need to implement robust methodologies, including repeated measures and appropriate statistical analyses, to capture and analyze

the dynamic nature of these constructs over an extended period. Additionally, careful consideration should be given to factors such as attrition rates, sample size, and potential confounding variables to ensure the validity and reliability of the longitudinal findings.

Moreover, the study's reliance on self-report questionnaires, while supported by validated scales, may not fully capture the lived experience and contextual subtleties of stress and wellness. Future research could benefit from integrating qualitative methodologies such as semi-structured interviews or focus groups to triangulate findings and gain a richer understanding of teachers' psychological states and coping mechanisms. A mixed-method design would enhance the validity of the findings and allow for greater exploration of how institutional, cultural, and interpersonal factors interact with the measured constructs.

4.2 Practical applications

Previous literature extensively addresses the concept of teacher well-being as a constructive emotive condition that arises from the balance between individual demands and students' expectations regarding the school environment. In the field of education, the well-being of the teacher not only affects his or her own professional experience, but also the classroom environment and the performance of the students (Engels et al., 2004). Mercer et al. argue that teacher well-being is indispensable for the effective performance of students at different levels of education (Mercer et al., 2021). In addition, it has been observed that the emotional, social and qualified state has a significant influence on the quality of teaching and, consequently, on the well-being of students (Van Petegem et al., 2008). As such, teacher well-being is a vital area of research that deserves further exploration and consideration in educator education programs. Its impact on the quality of education and on the relationship with students is linked and its promotion should be a priority in the academic and professional spheres (Greenier et al., 2021).

The findings of this study provide a useful framework to facilitate the development of interventions aimed at teachers experiencing occupational stress, benefiting students, teachers, psychologists, and other health professionals in the process. The implementation of interventions should be multifaceted and personalized, considering variables such as experienced pressure, available social support, inflexibility, and teacher personality peculiarities to effectively address occupational stress.

5 Conclusion

This study provides a detailed analysis of stress determinants across different academic disciplines and the correlation between teachers' psychological profiles and their teaching domains. The findings indicate that stress levels among educators are significantly influenced by their respective academic fields, with teachers in health sciences and engineering/architecture experiencing higher levels of stress, depersonalization, and loneliness compared to their counterparts in biological and physical sciences. Notably, health sciences educators demonstrated higher levels of conscientiousness, which may contribute to their ability to manage occupational stress despite its prevalence. Moreover, the results underscore the complex

interplay between teachers' psychological profiles and their academic domains. The study highlights that personality traits, such as conscientiousness, play a crucial role in stress perception and resilience, particularly in fields with high cognitive and emotional demands. Additionally, the observed variations in depersonalization and loneliness suggest that certain disciplines pose greater psychosocial risks, necessitating targeted interventions. These findings emphasize the need for tailored mental health frameworks within educational institutions, fostering resilience and well-being among educators. Future research should explore longitudinal trends in teacher stress and coping mechanisms, contributing to the development of discipline-specific strategies to mitigate stress and enhance professional satisfaction.

Data availability statement

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

Ethics statement

The studies involving humans were approved by European University Ethics Committee (CI-PI/18/074). 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. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

HP-R: Data curation, Methodology, Writing – original draft, Conceptualization, Formal analysis, Investigation. SD-F: Conceptualization, Data curation, Formal analysis, Investigation,

Methodology, Writing – original draft. AB-V: Conceptualization, Data curation, Investigation, Methodology, Writing – original draft. RY-S: Data curation, Methodology, Writing – original draft, Validation, Writing – review & editing. JL-G: Supervision, Validation, Writing – review & editing. VC-S: Conceptualization, Formal analysis, Methodology, Project administration, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

Funding

The author(s) declare that no financial support was received for the research and/or publication of this article.

Conflict of interest

The authors declare that the research 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 authors declare that no Gen AI was used in the creation of this manuscript.

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.

References

- Agyapong, B., Obuobi-Donkor, G., Burback, L., and Wei, Y. (2022). Stress, burnout, anxiety and depression among teachers: a scoping review. *Int. J. Environ. Res. Public Health* 19:10706. doi: 10.3390/ijerph191710706
- Alarcon, G., Eschleman, K. J., and Bowling, N. A. (2009). Relationships between personality variables and burnout: a meta-analysis. *Work Stress* 23, 244–263. doi: 10.1080/02678370903282600
- Alsalleh, T. A., Chalhaf, N., Guelmami, N., Azaiez, F., and Bragazzi, N. L. (2021). Occupational burnout prevalence and its determinants among physical education teachers: a systematic review and Meta-analysis. *Front. Hum. Neurosci.* 15:553230. doi: 10.3389/fnhum.2021.553230
- Altun, M. (2017). The effects of teacher commitment on student achievement: a case study in Iraq. *Int. J. Acad. Res. Soc. Sci.* 7:475. doi: 10.6007/IJARBS/v7-i11/3475
- Aluja, A., García, O., and García, L. F. (2005). Comparison of the NEO-FFI, the NEO-FFI-R and an alternative short version of the NEO-PI-R (NEO-60) in Swiss and Spanish samples. *Personal. Individ. Differ.* 38, 591–604. doi: 10.1016/j.paid.2004.05.014
- Anastasiou, S., and Garametsi, V. (2021). Perceived leadership style and job satisfaction of teachers in public and private schools. *Int. J. Manag. Educ.* 15:58. doi: 10.1504/IJMIE.2021.111817
- Anbesaw, T., Zenebe, Y., Abebe, M., and Tegafaw, T. (2023). Burnout syndrome and associated factors among health care professionals working in Dessie comprehensive specialized hospital, Dessie, Ethiopia. *SAGE Open* 13:147. doi: 10.1177/21582440231215147
- Andreou, E., Alexopoulos, E. C., Lionis, C., Varvogli, L., Gnardellis, C., Chrousos, G. P., et al. (2011). Perceived stress scale: reliability and validity study in Greece. *Int. J. Environ. Res. Public Health* 8, 3287–3298. doi: 10.3390/ijerph8083287
- Antoniou, A.-S., Polychroni, F., and Vlachakis, A.-N. (2006). Gender and age differences in occupational stress and professional burnout between primary and high-school teachers in Greece. *J. Manag. Psychol.* 21, 682–690. doi: 10.1108/02683940610690213
- Baker, A. H., and Wardle, J. (2003). Sex differences in fruit and vegetable intake in older adults. *Appetite* 40, 269–275. doi: 10.1016/S0195-6663(03)00014-X
- Baskin, T. W., Wampold, B. E., Quintana, S. M., and Enright, R. D. (2010). Belongingness as a protective factor against loneliness and potential depression in a multicultural middle school. *Couns. Psychol.* 38, 626–651. doi: 10.1177/001100009358459
- Belinchón-Demiguel, P., and Clemente-Suárez, V. J. (2019). Nutrition, hydration and ergogenic aids strategies in Ultraendurance Mountain events. *J. Sports Med. Phys. Fitness* 59, 791–797. doi: 10.23736/S0022-4707.18.08920-X
- Bexelius, T. S., Olsson, C., Järnbert-Pettersson, H., Parmaskog, M., Ponzer, S., and Dahlin, M. (2016). Association between personality traits and future choice of specialisation among Swedish doctors: a cross-sectional study. *Postgrad. Med. J.* 92, 441–446. doi: 10.1136/postgradmedj-2015-133478
- Biron, C., Brun, J.-P., and Ivers, H. (2008). Extent and sources of occupational stress in university staff. *Work* 30, 511–522. doi: 10.3233/WOR-2008-00678

- Bischoff, L. L., Otto, A.-K., Hold, C., and Wollesen, B. (2019). The effect of physical activity interventions on occupational stress for health personnel: a systematic review. *Int. J. Nurs. Stud.* 97, 94–104. doi: 10.1016/j.ijnurstu.2019.06.002
- Błaszczuk-Bębenek, E., Jagielski, P., Boleśławska, I., Jagielska, A., Nitsch-Osuch, A., and Kawalec, P. (2020). Nutrition behaviors in polish adults before and during COVID-19 lockdown. *Nutrients* 12:3084. doi: 10.3390/nu12103084
- Blix, A. G., Cruise, R. J., Mitchell, B. M. B., and Blix, G. G. (1994). Occupational stress among university teachers. *Educ. Res.* 36, 157–169. doi: 10.1080/0013188940360205
- Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., et al. (2011). Preliminary psychometric properties of the acceptance and action questionnaire-II: a revised measure of psychological inflexibility and experiential avoidance. *Behav. Ther.* 42, 676–688. doi: 10.1016/j.beth.2011.03.007
- Burns, W., and Bluen, S. D. (1992). Assessing a multidimensional type a behaviour scale. *Personal. Individ. Differ.* 13, 977–986. doi: 10.1016/0191-8869(92)90131-8
- Bye, H. H., Solianik, V. V., Five, M., and Agai, M. S. (2022). Stereotypes of women and men across gender subgroups. *Front. Psychol.* 13:881418. doi: 10.3389/fpsyg.2022.881418
- Carlotto, M. S., and Cámara, S. G. (2017). Burnout syndrome profiles among teachers. *Escrit. Psicol.* 10, 159–166. doi: 10.5231/psy.writ.2017.2911
- Carolina, D., and Beltrán, A. (2006). Diferencias Por Sexo, Síndrome de Burnout y Manifestaciones Clínicas, En Los Médicos Familiares de Dos Instituciones de Salud, Guadalajara, México. Available online at: http://www.scielo.sa.cr/scielo.php?script=sci_arttext&pid=S1409-14292006000200002&lng=en&nrm=iso (Accessed May 12, 2025).
- Chisholm-Burns, M. A., Berg-Poppe, P., Spivey, C. A., Karges-Brown, J., and Pithan, A. (2021). Systematic review of noncognitive factors influence on health professions students. *Acad. Perform.* 26, 1373–1445. doi: 10.1007/s10459-021-10042-1
- Choi, P. L., and Tang, S. Y. F. (2009). Teacher commitment trends: cases of Hong Kong teachers from 1997 to 2007. *Teach. Teach. Educ.* 25, 767–777. doi: 10.1016/j.tate.2009.01.005
- Chrousos, G. P. (1992). Regulation and dysregulation of the hypothalamic-pituitary-adrenal Axis. The Corticotropin-releasing hormone perspective. *Endocrinol. Metab. Clin. N. Am.* 21, 833–858. doi: 10.1016/S0889-8529(18)30191-9
- Chrousos, G. P. (2009). Stress and disorders of the stress system. *Nat. Rev. Endocrinol.* 5, 374–381. doi: 10.1038/nrendo.2009.106
- Clarke, I. M. C., Morin, J. E., and Warnell, I. (1994). Personality factors and the practice of Anesthesia: a psychometric evaluation. *Can. J. Anaesth.* 41, 393–397. doi: 10.1007/BF03009861
- Clemente-Suárez, V. J. (2020). Multidisciplinary intervention in the treatment of mixed anxiety and depression disorder. *Physiol. Behav.* 219:112858. doi: 10.1016/j.physbeh.2020.112858
- Clemente-Suárez, V. J., Beltrán-Velasco, A. I., Mendoza-Castejón, D., Rodríguez-Besteiro, S., López-Varas, F., and Martín-Rodríguez, A. (2024). Comparative analysis of academic, behavioral, and psychophysiological variables in male and female vocational training students. *Children* 11:851. doi: 10.3390/children11070851
- Clemente-Suárez, V. J., Mielgo-Ayuso, J., Martín-Rodríguez, A., Ramos-Campo, D. J., Redondo-Flórez, L., and Tornero-Aguilera, J. F. (2022). The burden of carbohydrates in health and disease. *Nutrients* 14:3809. doi: 10.3390/nu14183809
- Cohen, S., Kamarck, T., and Mermelstein, R. (1983). A global measure of perceived stress. *J. Health Soc. Behav.* 24, 385–396. doi: 10.2307/2136404
- Costa, P. T., and McCrae, R. R. (1992). 3 in the public domain Normal personality assessment in clinical practice: the NEO personality inventory. *Psychol. Assess.* 4, 5–13. doi: 10.1037//1040-3590.4.1.5
- Cruzado, L., Núñez-Moscote, P., and Rojas-Rojas, G. (2014). Despersonalización: Más Que Síntoma, Un Síndrome. *Rev. Neuro Psiquiatría* 76:120. doi: 10.20453/rnp.2013.1194
- De Andrade, L. R. M., and Falcão, J. T. R. (2018). Trabalho Docente No Município de Natal: Perfil e Risco Psicossocial. *Educ. Soc.* 39, 704–720. doi: 10.1590/es0101-73302018180935
- Deinzer, R., Granrath, N., Spahl, M., Linz, S., Waschul, B., and Herforth, A. (2005). Stress, Oral health behaviour and clinical outcome. *Br. J. Health Psychol.* 10, 269–283. doi: 10.1348/135910705X26858
- Deinzer, R., Hilpert, D., Bach, K., Schawacht, M., and Herforth, A. (2001). Effects of academic stress on Oral hygiene – a potential link between stress and plaque-associated disease? *J. Clin. Periodontol.* 28, 459–464. doi: 10.1034/j.1600-051x.2001.028005459.x
- Dussault, M., Deaudein, C., Royer, N., and Loisele, J. (1999). Professional isolation and occupational stress in teachers. *Psychol. Rep.* 84, 943–946. doi: 10.2466/pr0.1999.84.3.943
- Dutheil, F., Aubert, C., Pereira, B., Dambrun, M., Moustafa, F., Mermillod, M., et al. (2019). Suicide among physicians and health-care workers: a systematic review and Meta-analysis. *PLoS One* 14:e0226361. doi: 10.1371/journal.pone.0226361
- Eagly, A. H. (2013). Sex differences in social behavior: A social-role interpretation (2nd ed.) Psychology Press.
- Engels, N., Aelterman, A., Van Petegem, K., and Schepens, A. (2004). Factors which influence the well-being of pupils in Flemish secondary schools. *Educ. Stud.* 30, 127–143. doi: 10.1080/0305569032000159787
- Erzen, E., and Çikrikci, Ö. (2018). The effect of loneliness on depression: a Meta-analysis. *Int. J. Soc. Psychiatry* 64, 427–435. doi: 10.1177/0020764018776349
- Fernández-Puig, V., Mayayo, J. L., Lusa, A. C., and Tejedor, C. V. (2015). Evaluando La Salud Laboral de Los Docentes de Centros Concertados: El Cuestionario de Salud Docente. *Rev. Psicol. Trabajo Las Organ.* 31, 175–185. doi: 10.1016/j.rpto.2015.07.001
- Flores, H., and Roberto, J. (2012). Efectos Que Un Ambiente de Trabajo Basado En Facetas de La Responsabilidad Produce Sobre La Mejora Continua: El Orden y El Cumplimiento de Estándares. Navarra, Spain: Universidad de Navarra.
- Galasso, V., Pons, V., Profeta, P., Becher, M., Brouard, S., and Foucault, M. (2020). Gender differences in COVID-19 attitudes and behavior: panel evidence from eight countries. *Proc. Natl. Acad. Sci.* 117, 27285–27291. doi: 10.1073/pnas.2012501117
- Gao, W., Ping, S., and Liu, X. (2020). Gender differences in depression, anxiety, and stress among college students: a longitudinal study from China. *J. Affect. Disord.* 263, 292–300. doi: 10.1016/j.jad.2019.11.121
- García, M. M., Iglesias, S., Saleta, M., and Romay, J. (2016). Riesgos Psicosociales En El Profesorado de Enseñanza Universitaria: Diagnóstico y Prevención. *Rev. Psicol. Del Trabajo Las Organ.* 32, 173–182. doi: 10.1016/j.rpto.2016.07.001
- García-Martínez, I., Pérez-Navío, E., Pérez-Ferra, M., and Quijano-López, R. (2021). Relationship between emotional intelligence, educational achievement and academic stress of pre-service teachers. *Behav. Sci.* 11:95. doi: 10.3390/bs11070095
- Greenier, V., Derakhshan, A., and Fathi, J. (2021). Emotion regulation and psychological well-being in teacher work engagement: a case of British and Iranian English language teachers. *System* 97:102446. doi: 10.1016/j.system.2020.102446
- Hai-yan, X. (2010). A study of university English teachers' professional weariness. Education and Modernization. Available online at: <https://api.semanticscholar.org/CorpusID:147904890> (Accessed May 12, 2025).
- Han, L., Wang, Y., Ao, Y., Ding, X., Li, M., and Wang, T. (2022). The built environment impacts on route choice from home to School for Rural Students: a stated preference experiment. *Front. Public Health* 10:1087467. doi: 10.3389/fpubh.2022.1087467
- Hayes, S. C., Strosahl, K., Wilson, K. G., Bissen, R. T., Pistorello, J., Toarmino, D., et al. (2004). Measuring experiential avoidance: a preliminary test of a working model. *Psychol. Rec.* 54, 553–578. doi: 10.1007/BF03395492
- Hou, F., Bi, F., Jiao, R., Luo, D., and Song, K. (2020). Gender differences of depression and anxiety among social media users during the COVID-19 outbreak in China: a cross-sectional study. *BMC Public Health* 20:1648. doi: 10.1186/s12889-020-09738-7
- Hudek-Knežević, J., Maglica, B. K., and Krapić, N. (2011). Personality, organizational stress, and attitudes toward work as prospective predictors of professional burnout in hospital nurses. *Croat. Med. J.* 52, 538–549. doi: 10.3325/cmj.2011.52.538
- Hughes, M. E., Waite, L. J., Hawkey, L. C., and Cacioppo, J. T. (2004). A short scale for measuring loneliness in large surveys: results from two population-based studies. *Res. Aging* 26, 655–672. doi: 10.1177/0164027504268574
- Human-Vogel, S. (2013). "A self-regulatory perspective on commitment in academic and interpersonal contexts" in *Well-Being Research in South Africa. Cross-Cultural Advancements in Positive Psychology*. ed. M. Wissing (Dordrecht: Springer).
- Iancu, A. E., Rusu, A., Măroiu, C., Păcurar, R., and Maricuțoiu, L. P. (2018). The effectiveness of interventions aimed at reducing teacher burnout: a Meta-analysis. *Educ. Psychol. Rev.* 30, 373–396. doi: 10.1007/s10648-017-9420-8
- Ishibashi, S., Tokunaga, A., Shirabe, S., Yoshida, Y., Imamura, A., Takahashi, K., et al. (2021). Burnout among kindergarten teachers and associated factors. *Medicine* 101:e30786. doi: 10.1097/MD.00000000000030786
- Iwanicki, E. F., and Schwab, R. L. (1981). A cross-validation study of the Maslach burnout inventory. *Educ. Psychol. Meas.* 41, 1167–1174. doi: 10.1177/001316448104100425
- Jepson, E., and Forrest, S. (2006). Individual contributory factors in teacher stress: the role of achievement striving and occupational commitment. *Br. J. Educ. Psychol.* 76, 183–197. doi: 10.1348/000709905X37299
- Jin-yan, X. (2013). An investigation on job burnout of college English teachers in higher vocational schools. *J. Beijing Youth Polit. College*. Available online at: <https://api.semanticscholar.org/CorpusID:147960131> (Accessed May 12, 2025).
- Judge, T. A., and Ilies, R. (2002). Relationship of personality to performance motivation: a Meta-analytic review. *J. Appl. Psychol.* 87, 797–807. doi: 10.1037/0021-9010.87.4.797
- Ketchesin, K. D., Stinnett, G. S., and Seasholtz, A. F. (2017). Corticotropin-releasing hormone-binding protein and stress: from invertebrates to humans. *Stress* 20, 449–464. doi: 10.1080/10253890.2017.1322575
- Kim, Y. S., Kim, H.-N., Lee, J.-H., Kim, S.-Y., Jun, E.-J., and Kim, J.-B. (2017). Association of Stress, depression, and suicidal ideation with subjective Oral health status and Oral functions in Korean adults aged 35 years or more. *BMC Oral Health* 17:101. doi: 10.1186/s12903-017-0391-4

- Klassen, R. M., and Chiu, M. M. (2010). Effects on teachers' self-efficacy and job satisfaction: teacher gender, years of experience, and job stress. *J. Educ. Psychol.* 102, 741–756. doi: 10.1037/a0019237
- Kluger, M. T., Laidlaw, T., and Khursandi, D. S. (1999). Personality profiles of Australian Anaesthetists. *Anaesth. Intensive Care* 27, 282–286. doi: 10.1177/0310057X9902700310
- Kobasa, S. C. (1982). Commitment and coping in stress resistance among lawyers. *J. Pers. Soc. Psychol.* 42, 707–717. doi: 10.1037/0022-3514.42.4.707
- Kyriacou, C. (2001). Teacher stress: directions for future research. *Educ. Rev.* 53, 27–35. doi: 10.1080/00131910120033628
- Lau, S., Shum, E., Man, J., Cheung, E., Amoah, P., Leung, A., et al. (2022). A cross-sectional study of the perceived stress, well-being and their relations with work-related Behaviours among Hong Kong school leaders during the COVID-19 pandemic. *Int. J. Environ. Res. Public Health* 19:15777. doi: 10.3390/ijerph192315777
- Lee, R. T., and Ashforth, B. E. (1990). On the meaning of Maslach's three dimensions of burnout. *J. Appl. Psychol.* 75, 743–747. doi: 10.1037/0021-9010.75.6.743
- Leigh, J. P. (2011). Annual work hours across physician specialties. *Arch. Intern. Med.* 171:1211. doi: 10.1001/archinternmed.2011.294
- Lensen, J. H., Stoltz, S. E. M. J., Kleinjan, M., Speckens, A. E. M., Kraiss, J. T., and Scholte, R. H. J. (2021). Mindfulness-based stress reduction intervention for elementary school teachers: a mixed method study. *Trials* 22:826. doi: 10.1186/s13063-021-05804-6
- Levante, A., Petrocchi, S., Bianco, F., Castelli, I., and Lecciso, F. (2023). Teachers during the COVID-19 era: the mediation role played by Mentalizing ability on the relationship between depressive symptoms, anxious trait, and job burnout. *Int. J. Environ. Res. Public Health* 20:859. doi: 10.3390/ijerph20010859
- Lieberman, M. D. (2013). Social: Why our brains are wired to connect. Social: Why our brains are wired to connect. New York, NY: Crown Publishers/Random House.
- Lin, C.-Y., Alimoradi, Z., Griffiths, M. D., and Pakpour, A. H. (2022). Psychometric properties of the Maslach burnout inventory for medical personnel (MBI-HSS-MP). *Heliyon* 8:e08868. doi: 10.1016/j.heliyon.2022.e08868
- Liu, L. Harbin Institute of Technology (2014). Analysis of college English Teacher's job burnout and career development path in information technology Environment. *Foreign Lang. Res.* 2014, 136–139.
- Liu, X. S., and Ramsey, J. (2008). Teachers' job satisfaction: analyses of the teacher follow-up survey in the United States for 2000–2001. *Teach. Teach. Educ.* 24, 1173–1184. doi: 10.1016/j.tate.2006.11.010
- Manga, D., Ramos, F., and Morán, C. (2004). The Spanish norms of the NEO Five-factor inventory: new data and analyses for its improvement. *Int. J. Psychol. Psychol. Ther.* 4, 639–648. Available at: http://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1130-52742009000200003&lng=es&tlng=es
- Mann, F., Bone, J. K., Lloyd-Evans, B., Frerichs, J., Pinfold, V., Ma, R., et al. (2017). A life less lonely: the state of the art in interventions to reduce loneliness in people with mental health problems. *Soc. Psychiatry Psychiatr. Epidemiol.* 52, 627–638. doi: 10.1007/s00127-017-1392-y
- Manzano, B., Alberto, S. F. M., and Caballero, J. M. G. (2023). Autonomy at work as a predictor of hardy personality and motivation in sport facilitators. *Cultura Ciencia Deporte* 18:1975. doi: 10.12800/ccd.v18i56.1975
- Marín, F. M. (2011). Aceptación y flexibilidad psicológica ante el contexto docente: un estudio piloto. Available online at: <https://api.semanticscholar.org/CorpusID:161714557> (Accessed May 12, 2025).
- Martín, A., Tórnero-Aguilera, J. F., Javier López-Pérez, P., and Clemente-Suárez, V. J. (2021). Gender differences in nutritional, Odontological and psychological patterns of adolescent students during Covid-19 pandemic. *Appl. Sci.* 11:499. doi: 10.3390/app11188499
- Maselli, A., and Regina, M. (2020). Resiliencia En La Enseñanza Del Diseño. *Cuadernos Del Centro Estudios Diseño Comunic.* 115:4263. doi: 10.18682/cdc.v115.4263
- Maslach, C. (1986). "Stress, burnout, and Workaholism" in Professionals in distress: Issues, syndromes, and solutions in psychology. eds. R. R. Kilburg, P. E. Nathan and R. W. Thoreson (Washington: American Psychological Association), 53–75.
- Maslach, C., Jackson, S. E., and Leiter, M. (2015). The Maslach burnout inventory manual. Available online at: <https://www.researchgate.net/publication/277816643> (Accessed May 12, 2025).
- Maslach, C., and Leiter, M. P. (2008). Early predictors of job burnout and engagement. *J. Appl. Psychol.* 93, 498–512. doi: 10.1037/0021-9010.93.3.498
- McCarthy, C. J., Lambert, R. G., Lineback, S., Fitchett, P., and Baddouh, P. G. (2016). Assessing teacher appraisals and stress in the classroom: review of the classroom appraisal of resources and demands. *Educ. Psychol. Rev.* 28, 577–603. doi: 10.1007/s10648-015-9322-6
- Melillo, A., Ojeda, E. N. S., De Paladini, M. A., and Grotberg, E. H. (2008). Resiliencia: Descubriendo Las Propias Fortalezas. Paidós.
- Mendoza-Castejón, D., and Clemente-Suárez, V. J. (2020). Autonomic profile, physical activity, body mass index and academic performance of school students. *Sustain. For.* 12:6718. doi: 10.3390/su12176718
- Mengist, B., Amha, H., Ayenew, T., Gedfew, M., Akalu, T. Y., Assemie, M. A., et al. (2021). Occupational stress and burnout among health Care Workers in Ethiopia: a systematic review and Meta-analysis. *Arch. Rehabil. Res. Clinic. Trans.* 3:100125. doi: 10.1016/j.arrrct.2021.100125
- Mercer, S., Gregersen, T., and Gabrys-Barker, D. (2021). Teacher Wellbeing. *Theory Pract. Sec. Lang. Acquisit.* 7, 143–147. doi: 10.31261/TAPSLA.9238
- Mifsud, K. R., and Reul, J. M. H. M. (2018). Mineralocorticoid and glucocorticoid receptor-mediated control of genomic responses to stress in the brain. *Stress* 21, 389–402. doi: 10.1080/10253890.2018.1456526
- Mijkoski, D., Chepte, D., Marca, S. C., Shoman, Y., Caglayan, C., Bugge, M. D., et al. (2022). Determinants of burnout among teachers: a systematic review of longitudinal studies. *Int. J. Environ. Res. Public Health* 19:5776. doi: 10.3390/ijerph19095776
- Mikolajczyk, R. T., El Ansari, W., and Maxwell, A. E. (2009). Food consumption frequency and perceived stress and depressive symptoms among students in three European countries. *Nutr. J.* 8:31. doi: 10.1186/1475-2891-8-31
- Minihan, E., Adamis, D., Dunleavy, M., Martin, A., Gavin, B., and McNicholas, F. (2022). COVID-19 related occupational stress in teachers in Ireland. *Int. J. Educ. Res. Open* 3:100114. doi: 10.1016/j.ijedro.2021.100114
- Mullola, S., Hakulinen, C., Presseau, J., Ruiz, D. G., de Porras, M., Jokela, T. H., et al. (2018). Personality traits and career choices among physicians in Finland: employment sector, clinical patient contact, specialty and change of specialty. *BMC Med. Educ.* 18:52. doi: 10.1186/s12909-018-1155-9
- Neufeld, E., Hirdes, J. P., Perlman, C. M., and Rabinowitz, T. (2015). Risk and protective factors associated with intentional self-harm among older community-residing home care clients in Ontario, Canada. *Int. J. Geriatr. Psychiatry* 30, 1032–1040. doi: 10.1002/gps.4259
- Niskala, J., Kanste, O., Tomietto, M., Miettinen, J., Tuomikoski, A.-M., Kyngäs, H., et al. (2020). Interventions to improve nurses' job satisfaction: a systematic review and Meta-analysis. *J. Adv. Nurs.* 76, 1498–1508. doi: 10.1111/jan.14342
- Ordizola-González, P., Planchuelo-Gómez, Á., Irurtia, M. J., and de Luis-García, R. (2020). Psychological effects of the COVID-19 outbreak and lockdown among students and Workers of a Spanish University. *Psychiatry Res.* 290:113108. doi: 10.1016/j.psychres.2020.113108
- Ortega-Jiménez, D., Ruisoto, P., Bretones, F. D., Ramírez, M. D. R., and Gallegos, S. V. (2021). Psychological (in)flexibility mediates the effect of loneliness on psychological stress. Evidence from a large sample of university professors. *Int. J. Environ. Res. Public Health* 18:2992. doi: 10.3390/ijerph18062992
- Ozamiz, N. E., Mondragon, N. I., Bueno-Notivol, J., Pérez-Moreno, M., and Santabárbara, J. (2021). Prevalence of anxiety, depression, and stress among teachers during the COVID-19 pandemic: a rapid systematic review with Meta-analysis. *Brain Sci.* 11:1172. doi: 10.3390/brainsci11091172
- Papastylionou, A., Kaila, M., and Polychronopoulos, M. (2009). Teachers' burnout, depression, role ambiguity and conflict. *Soc. Psychol. Educ.* 12, 295–314. doi: 10.1007/s11218-008-9086-7
- Pari, A., and Victor, W. (2017). Diferencia de Género Del Estrés Laboral En Docentes de La Institución Educativa Secundaria Gran Unidad Escolar San Juan Bosco de Puno 2017. Lima, Perú: Universidad Privada Telesup.
- Pine, D. S., Mogg, K., Bradley, B. P., Montgomery, L. A., Monk, C. S., McClure, E., et al. (2005). Attention Bias to threat in maltreated children: implications for vulnerability to stress-related psychopathology. *Am. J. Psychiatry* 162, 291–296. doi: 10.1176/appi.ajp.162.2.291
- Price, H. E. (2012). Principal-teacher interactions. *Educ. Adm. Q.* 48, 39–85. doi: 10.1177/0013161X11417126
- Purvanova, R. K., and Muros, J. P. (2010). Gender differences in burnout: a Meta-analysis. *J. Vocat. Behav.* 77, 168–185. doi: 10.1016/j.jvb.2010.04.006
- Ramón, J., and Martínez, P. (2015). Cómo Se Defiende El Profesorado de Secundaria Del Estrés: Burnout y Estrategias de Afrontamiento. *Rev. Psicol. Trabajo Organ.* 31, 1–9. doi: 10.1016/j.rpto.2015.02.001
- Ramos, Susana. (2004). "Rui Mota-Cardoso, Anabela Araújo, Rute Carreira Ramos, Marco Gonçalves e Marco Ramos. 2002. O Stress Nos Professores Portugueses: Estudo IPSSO 2000. Porto: Porto Editora." *Interações: Sociedade e as Novas Modernidades*. Available online at: <https://www.interacoes-ismt.com/index.php/revista/article/view/111> (Accessed May 12, 2025).
- Redondo-Flórez, L., and Clemente-Suárez, V. J. (2023). Psychophysiological stress response of novel students in chemical laboratory practices. *J. Psychophysiol.* 37, 125–133. doi: 10.1027/0269-8803/a000314
- Redondo-Flórez, L., Fernández-Lucas, J., and Clemente-Suárez, V. J. (2020a). Cultural differences in stress-related psychological, nutrition, physical activity and Oral health factors of professors. *Nutrients* 12, 1–13. doi: 10.3390/nu12123644
- Redondo-Flórez, L., Tórnero-Aguilera, J. F., and Clemente-Suárez, V. J. (2020b). Could academic experience modulate psychophysiological stress response of biomedical sciences students in laboratory? *Physiol. Behav.* 223:113017. doi: 10.1016/j.physbeh.2020.113017

- Roberts, B. W., and DelVecchio, W. F. (2000). The rank-order consistency of personality traits from childhood to old age: a quantitative review of longitudinal studies. *Psychol. Bull.* 126, 3–25. doi: 10.1037/0033-2909.126.1.3
- Roberts, B. W., and Jackson, J. J. (2008). Sociogenomic personality psychology. *J. Pers.* 76, 1523–1544. doi: 10.1111/j.1467-6494.2008.00530.x
- Roberts, B. W., Lejuez, C., Krueger, R. F., Richards, J. M., and Hill, P. L. (2014). What is conscientiousness and how can it be assessed? *Dev. Psychol.* 50, 1315–1330. doi: 10.1037/a0031109
- Rodríguez-Besteiro, S., Tornero-Aguilera, J. F., Fernández-Lucas, J., and Clemente-Suárez, V. J. (2021). Gender differences in the COVID-19 pandemic risk perception, psychology, and behaviors of Spanish university students. *Int. J. Environ. Res. Public Health* 18:3908. doi: 10.3390/ijerph18083908
- Rosenthal, R., Schäfer, J., Hoffmann, H., Vitz, M., Oertli, D., and Hahnloser, D. (2013). Personality traits and virtual reality performance. *Surg. Endosc.* 27, 222–230. doi: 10.1007/s00464-012-2424-z
- Ruiz, F. J., Suárez-Falcón, J. C., and Riaño-Hernández, D. (2016). Psychometric properties of the acceptance and action questionnaire-II in Colombia. *Psychologica* 59, 42–62. doi: 10.1007/s40732-016-0183-2
- Russell, D. W. (1996). UCLA loneliness scale (version 3): reliability, validity, and factor structure. *J. Pers. Assess.* 66, 20–40. doi: 10.1207/s15327752jpa6601_2
- Sánchez, C., and Margoth, M. (2018). Factores Psicosociales Asociados al Estrés En Docentes Universitarios. Loja, Ecuador: Universidad Católica de la Loja.
- Sandín, B., Valiente, R. M., García-Escalera, J., and Chorot, P. (2020). Impacto Psicológico de La Pandemia de COVID-19: Efectos Negativos y Positivos En Población Española Asociados al Periodo de Confinamiento Nacional. *Rev. Psicopatol. Psicol. Clín.* 25:1:27569. doi: 10.5944/rppc.27569
- Sargent, T., and Hannum, E. (2005). Keeping teachers happy: job satisfaction among primary school teachers in rural Northwest China. *Comp. Educ. Rev.* 49, 173–204. doi: 10.1086/428100
- Schaufeli, W. B., Bakker, A. B., and Van Rhenen, W. (2009). How changes in job demands and resources predict burnout, work engagement, and sickness absenteeism. *J. Organ. Behav.* 30, 893–917. doi: 10.1002/job.595
- Schaufeli, W. B., and Salanova, M. (2007). Efficacy or inefficacy, That's the question: burnout and work engagement, and their relationships with efficacy beliefs. *Anxiety Stress Coping* 20, 177–196. doi: 10.1080/10615800701217878
- Schaufeli, W. B., and Taris, T. W. (2005). The conceptualization and measurement of burnout: common ground and worlds apart the views expressed in *work & stress* commentaries are those of the author(s), and do not necessarily represent those of any other person or organization, or of the journal. *Work Stress* 19, 256–262. doi: 10.1080/02678370500385913
- Semmer, N. K., McGrath, J. E., and Beehr, T. A. (2004). Conceptual issues in research on stress and health. CRC Press, 1–43. doi: 10.1201/9781420039702.CH1
- Seo, J. S., Wei, J., Qin, L., Kim, Y., Yan, Z., and Greengard, P. (2017). Cellular and molecular basis for stress-induced depression. *Mol. Psychiatry* 22, 1440–1447. doi: 10.1038/mp.2016.118
- Sharkey, T., Whatnall, M. C., Hutchesson, M. J., Haslam, R. L., Bezzina, A., Collins, C. E., et al. (2020). Effectiveness of gender-targeted versus gender-neutral interventions aimed at improving dietary intake, physical activity and/or overweight/obesity in young adults (aged 17–35 years): a systematic review and Meta-analysis. *Nutr. J.* 19:78. doi: 10.1186/s12937-020-00594-0
- Shivappa, N., Schoenaker, D. A. J. M., Hebert, J. R., and Mishra, G. D. (2016). Association between inflammatory potential of diet and risk of depression in middle-aged women: the Australian longitudinal study on Women's health. *Br. J. Nutr.* 116, 1077–1086. doi: 10.1017/S0007114516002853
- Sier, V. Q., Schmitz, R. F., Schepers, A., and van der Vorst, J. R. (2023). Exploring the surgical personality. *The Surgeon: Journal of the Royal Colleges of Surgeons of Edinburgh and Ireland* 21, 1–7. doi: 10.1016/j.surge.2022.01.008
- Spagnolo, P. A., Manson, J. A. E., and Joffe, H. (2020). Sex and gender differences in health: what the COVID-19 pandemic can teach us. *Ann. Intern. Med.* 173, 385–386. doi: 10.7326/M20-1941
- Spector, P. E., and O'Connell, B. J. (1994). The contribution of personality traits, negative affectivity, locus of control and type a to the subsequent reports of job stressors and job strains. *J. Occup. Organ. Psychol.* 67, 1–12. doi: 10.1111/j.2044-8325.1994.tb00545.x
- Stepptoe, A., Shankar, A., Demakakos, P., and Wardle, J. (2013). Social isolation, loneliness, and all-cause mortality in older men and women. *Proc. Natl. Acad. Sci.* 110, 5797–5801. doi: 10.1073/pnas.1219686110
- Stoffel, J. M., and Cain, J. (2018). Review of grit and resilience literature within health professions education. *Am. J. Pharm. Educ.* 82:6150. doi: 10.5688/ajpe6150
- Sulsky, L., and Smith, C. (2007). "Work stress: macro-level work stressors" in *The Praeger handbook on stress and coping*. eds. A. Monat, R. S. Lazarus and G. Reeve (Westport, CT: Praeger Publishers/Greenwood Publishing Group), 53–86.
- Swider, B. W., and Zimmerman, R. D. (2010). Born to burnout: a Meta-analytic path model of personality, job burnout, and work outcomes. *J. Vocat. Behav.* 76, 487–506. doi: 10.1016/j.jvb.2010.01.003
- Taha, S., and Elhay, E. A. (2022). Psychological flexibility, mindfulness and perceived social support as predictors of psychological symptoms among nursing faculty students at Mansoura University. *Assiut Sci. Nurs. J.* 10, 10–20. doi: 10.21608/asnj.2022.112602.1287
- Tornero-Aguilera, J. F., Robles-Pérez, J. J., and Clemente-Suárez, V. J. (2017). Effect of combat stress in the psychophysiological response of elite and non-elite soldiers. *J. Med. Syst.* 41:100. doi: 10.1007/s10916-017-0748-x
- Tsigos, C., and Chrousos, G. P. (1994). Physiology of the hypothalamic-pituitary-adrenal Axis in health and dysregulation in psychiatric and autoimmune disorders. *Endocrinol. Metab. Clin. N. Am.* 23, 451–466. doi: 10.1016/S0889-8529(18)30078-1
- Tsigos, C., Kyrou, I., Kassi, E., and Chrousos, G. P. (2000). Stress: Endocrine physiology and pathophysiology. Endotext [Internet]. eds. K. R. Feingold, S. F. Ahmed, B. Anawalt, M. R. Blackman, A. Boyce, G. Chrousos, et al. South Dartmouth (MA): MDText.com, Inc.
- Van Petegem, K., Creemers, B., Aelterman, A., and Rosseel, Y. (2008). The importance of pre-measurements of wellbeing and achievement for students' current wellbeing. *S. Afr. J. Educ.* 28, 451–468. doi: 10.15700/saje.v28n4a131
- Wal Raymond, A. B., Der, V., Wallage, J., Scheffer, G. J., Prins, J. B., and Bijleveld, E. (2022). Personality in Anaesthesiologists, a systematic review of the literature. *Eur. J. Anaesthesiol.* 39, 378–387. doi: 10.1097/EJA.0000000000001650
- Wang, H., Cousineau, C., Wang, B., Zeng, L., Sun, A., Kohrman, E., et al. (2022). Exploring teacher job satisfaction in rural China: prevalence and correlates. *Int. J. Environ. Res. Public Health* 19:3537. doi: 10.3390/ijerph19063537
- Wang, Y., Tian, J., and Yang, Q. (2024). Experiential avoidance process model: a review of the mechanism for the generation and maintenance of avoidance behavior. *Psychiatry Clin. Psychopharmacol.* 34, 179–190. doi: 10.5152/pcp.2024.23777
- Waytz, A., Chou, E. Y., Magee, J. C., and Galinsky, A. D. (2015). Not so lonely at the top: the relationship between power and loneliness. *Organ. Behav. Hum. Decis. Process.* 130, 69–78. doi: 10.1016/j.obhdp.2015.06.002
- Whiting, S. B., Wass, S. V., Green, S., and Thomas, M. S. C. (2021). Stress and learning in pupils: neuroscience evidence and its relevance for teachers. *Mind Brain Educ.* 15, 177–188. doi: 10.1111/mbe.12282
- Wilmot, M. P., and Ones, D. S. (2019). A century of research on conscientiousness at work. *Proc. Natl. Acad. Sci. USA* 116, 23004–23010. doi: 10.1073/pnas.1908430116
- World Health Organization. (2020). Available at online: <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight> (Accessed May 13, 2025)
- Yang, Y., Ma, A., Wang, L., Chen, H., Xie, M., and Chan, H. (2022). Psychological flexibility and work engagement among Chinese nurses: Mediating role of self-compassion and negative emotions. doi: 10.21203/rs.3.rs-1605227/v1
- Yoshimasu, K., Sugahara, H., Tokunaga, S., Akamine, M., Kondo, T., Fujisawa, K., et al. (2006). Gender differences in psychiatric symptoms related to suicidal ideation in Japanese patients with depression. *Psychiatry Clin. Neurosci.* 60, 563–569. doi: 10.1111/j.1440-1819.2006.01559.x
- Zhang, C. C. (2014). A study of job burnout among college English teachers during the middle stage of teaching: Jiangnan University. Jiangnan University Press.
- Zhang, Z., Lee, J. C.-K., Yin, H., and Yang, X. (2023). Doubly latent multilevel analysis of the relationship among collective teacher efficacy, school support, and organizational commitment. *Front. Psychol.* 13:1042798. doi: 10.3389/fpsyg.2022.1042798
- Zhang, J.-Y., Shu, T., Xiang, M., and Feng, Z.-C. (2021). Learning burnout: evaluating the role of social support in medical students. *Front. Psychol.* 12:625506. doi: 10.3389/fpsyg.2021.625506
- Zhang, Y., Yitang Sun, J., Brenna, T., Shen, Y., and Ye, K. (2023). Higher ratio of plasma Omega-6/Omega-3 fatty acids is associated with greater risk of all-cause, Cancer, and cardiovascular mortality: A population-based cohort study in UK biobank. *Elife* 12:RP90132. doi: 10.7554/eLife.90132
- Zhu, H., Xie, S., Liu, X., Yang, X., and Zhou, J. (2022). Influencing factors of burnout and its dimensions among mental health workers during the COVID-19 pandemic. *Nurs. Open* 9, 2013–2023. doi: 10.1002/nop2.1211
- Zung, W. W. K. (1965). A self-rating depression scale. *Arch. Gen. Psychiatry* 12:63. doi: 10.1001/archpsyc.1965.01720310065008