science, engineering and health studies

Research Article

Science, Engineering and Health Studies
https://lio1.tci-thaijo.org/index.php/sehs
ISSN (Online): 2630-0087

Exploratory factor analysis of workplace bullying and depression among teachers in Thailand, and their relationship

Thanawat Hongsa[1], Surawit Nantaporn[2], Kewarin Nitikorn[3], Kanokon Jaroenpol[4], Porntipa Kraitap[5], and Chan Pattama Polyong[6]*

[1] Department of Human Resource Management, Anuban Chonburi School, Chonburi 20000, Thailand
[2] Faculty of Public and Environmental Health, Huachiew Chalermprakiet University, Samut Prakan 10540, Thailand
[3] Faculty of Public Health, Ramkhamhaeng University, Bangkok 10240, Thailand
[4] Faculty of Public Health, Burapha University, Chonburi 20131, Thailand
[5] Public Health Program, Bansomdejchaopraya Rajabhat University, Bangkok 10600, Thailand
[6] Occupational Health and Safety Program, Faculty of Science and Technology, Bansomdejchaopraya Rajabhat University, Bangkok 10600, Thailand

***Corresponding author**: Chan Pattama Polyong chan.bsru@gmail.com*

***Received**: 9 July 2025*
***Revised**: 17 October 2025*
***Accepted**: 7 November 2025*
***Published**: 21 October 2026*

***Citation**: Hongsa, T., Nantaporn, S., Nitikorn, K., Jaroenpol, K., Kraitap, P., & Polyong, C. P. (2026). Exploratory factor analysis of workplace bullying and depression among teachers in Thailand, and their relationship. Science, Engineering and Health Studies, 20, 26050020.*

ABSTRACT

This study aimed to explore the factor structure of workplace bullying (WB) and depression (DS) and their relationship among 300 teachers in the Eastern Economic Corridor of Thailand. The sampling was conducted using a multi-stage sampling method. A questionnaire was used to collect data. Data were analyzed using exploratory factor analysis (EFA), the principal component method, the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO-MSA), and Pearson's correlation. Three experts evaluated the results of the 22-item WB and 11-item DS questionnaires. The index of item-objective congruence scores ranged between 0.67 and 1.00. The EFA results indicated that the 22-item WB questionnaire could be classified into four components. The KMO-MSA value was 0.8895, and Bartlett's test of sphericity was statistically significant. The 11-item DS questionnaire could be classified into two components. The KMO-MSA value was 0.918, and Bartlett's test of sphericity was statistically significant. Cronbach's alpha coefficients for both the both 22-item WB and 11-item DS questionnaires were 0.904 and 0.918, respectively. In addition, WB and DS had a statistically significant positive relationship (r = 0.475, p < 0.001). This study concludes that the 22-item WB and 11-item DS questionnaires meet the quality criteria and can be used as measurements for teachers. However, the complete questionnaire should be re-evaluated or adapted to fit the organizational culture, and its reliability should be tested again.

Keywords: workplace bullying; depression; questionnaire; principal component analysis, teacher

1. INTRODUCTION

Over the past two decades, there has been an increase in research on the relationship between workplace bullying (WB) and mental health, which is not surprising given that WB is a severe stressor and a deeply traumatic experience (Conway et al., 2021). WB is still a relatively recent issue in occupational health research (Feijó et al., 2019).

WB is an act involving aggressive, hateful, socially isolating, or disrespectful behaviors. These acts often occur in front of others (Center for Workplace Mental Health, 2025). WB is largely influenced by environmental factors in workplaces (Tuckey et al., 2022), such as the nature of the job, leadership, and psychosocial safety climate (Feijó et al., 2019). A previous study found that 8.3% and 2.9% of teachers experienced occasional and severe WB, respectively. Twenty-five percent of teachers experienced psychological distress, and almost half (47.4%) were stressed by work (Bernotaite & Malinauskiene, 2017). In particular, unfair management support was the most important factor that led to dissatisfaction, which in turn led to WB (Scheeler et al., 2022).

The post-COVID-19 pandemic situation has led to an increase in WB. According to a report from Japan, WB is related to the COVID-19 pandemic, and blue-collar workers are more likely to be victims of WB (Iida et al., 2021). This may be because, during the COVID-19 pandemic, there were rapid changes in the use of technology, and blue-collar workers had to adapt accordingly. Those who adapt slowly or are in the working class may struggle to find and excel in their jobs for stability, which may lead to conflicts within the workforce. The World Health Organization recommends the socio-ecological model (Centers for Disease Control and Prevention, 2021; Wu et al., 2022) for preventing occupational violence; this includes the organizational level (e.g., policies and support), the societal level (e.g., social norms and the role of the media), the individual level (e.g., awareness and capabilities), and the relationship level (e.g., interpersonal relationships and communication) (Kim & Lee, 2024). Since then, this model has been widely used to understand WB and develop preventive strategies (Somani et al., 2022; Kim & Lee, 2024). In assessing WB, the social context of the workplace is also taken into account.

WB in schools is a national issue that has received significant attention. Many countries, such as the United States (Namie, 2024) and Italy (Lo Presti et al., 2019), have organizations for reporting bullying complaints. WB occurs in many professions, affecting health professionals (Somani et al., 2022) and private employees (Török et al., 2016). However, WB among teachers is a little-known but equally damaging problem (Scheeler et al., 2022). The most common perpetrators of bullying were found to be those in the same workplace, accounting for 60.3% (Török et al., 2016). In a study of teachers subjected to WB in South Africa, findings indicated that bullying was mostly perpetrated by principals, who often used colleagues as accomplices. A qualitative study also found that teachers reported WB contributes to various physical, mental, and social health problems, such as depression (DS) and, in some cases, panic attacks, which significantly affect the teaching and learning process (De Vos & Kirsten, 2015).

Historically, there has been little data on WB in Thailand. It is possible that the issue of WB is still a sensitive issue in Thai society. However, in recent years, academic articles on WB in the nursing profession have been published in Thailand (Phaktoop & Apiruknapanond, 2024). Researchers from China studied the relationship between bullying among medical personnel in Thailand during the recent COVID-19 pandemic and found that bullying is a factor in predicting emotional exhaustion and stress (Ul Haq & Huo, 2024). For the teaching profession, a literature review of the components of a toxic society among teachers has been conducted, but the validity of the measurement components has not been evaluated (Hongsa & Polyong, 2025). Therefore, this study aims to develop a guideline for assessing WB in teachers and conducts a pilot study in Thailand.

Currently, it is necessary to identify the key issues in WB in order to assess its impact and develop occupational health policies. This may guide the construction of a theoretical model of WB (Feijó et al., 2019). In the past, the Negative Acts Questionnaire-Revised (NAQ-R), a popular instrument, was studied (Einarsen et al., 1994). However, the NAQ-R still has some limitations in the scale. Therefore, it was refined and proposed as a 22-item questionnaire that is freely available for use in non-commercial research projects (Einarsen & Hoel, 2001; Einarsen et al., 2009; Makarem et al., 2018). The NAQ-R has been translated and tested for validity in many languages, such as Arabic (Makarem et al., 2018). However, it is important to adapt it to different social, professional, and organizational cultures. In this study, the NAQ-R was adapted for the teaching profession, and the survey components were examined to measure the appropriateness and reliability of the instrument used in the research, which was still rare in previous factor analysis research.

Studies of DS resulting from WB have shown that WB is associated with mental health complaints (Verkuil et al., 2015). Duru et al. (2018) found that the level of WB perception increased with scores of anxiety, DS, negative self, physical feelings, and hostility ($p < 0.001$). The most commonly used DS assessment tool is the major depression inventory (MDI), developed by Bech et al. (2001). This study adapted the depression test tool of the Department of Mental Health of Thailand (2020), for the teaching profession and then tested the reliability of the questionnaire.

In 2025, the workplace landscape is changing, with the Baby Boomer generation retiring and the new generation who grew up with technology, including generation Z (known as the iGeneration), entering the workforce. While the iGeneration was studying to be teachers, the COVID-19 pandemic caused this group to have less interaction with other groups, which led to conflicts. Therefore, this research is interested in studying the WB and DS component factors among teachers, who represent a large professional group in the country. In addition, teachers are an important force in transferring knowledge to the future national workforce. Therefore, the mental well-being of teachers affects many people. This study assesses the WB and DS measurement tools for use in Thailand or nearby regions. In addition, correlation analyses are provided to offer guidelines for executives to create policies that are conducive to preventing negative behaviors in the organization and creating a healthy organizational culture, which will increase work efficiency.

2. MATERIALS AND METHODS

2.1 Participants and setting

The population of the Eastern Economic Corridor (EEC) provinces of Thailand, consisting of Chonburi, Rayong, and Chachoengsao provinces, has 16,489, 7,759, and 6,780

teachers and educational personnel, respectively, totaling 31,028 people (Ministry of Education, 2025). The sample size was obtained by calculating the prevalence of bullying and related factors based on Awai et al. (2021), with a prevalence value (*P*) of 23%, an α value of 0.05, a confidence interval (1-α) of 0.95, and a *Z* value of 1.96. Substituting these values in the formula resulted in 273 people. The researcher collected an additional 10% to prevent data loss, resulting in a total sample size of 300 teachers.

The sampling process used a multi-stage method, allocating a quota of 100 teachers per province. After that, simple random sampling was used based on the list of schools—three schools per province located in urban, semi-urban, and rural areas. The number of participants was divided equally, with approximately 33 or 34 teachers per area. For the sample group of teachers, we promoted voluntary participation by selecting individuals who registered first. If the required number was not met at a specific school, we proceeded to select from a nearby school. The inclusion criteria were having been a teacher for at least 6 months and being willing to participate in the project voluntarily. The exclusion criterion was being absent from work on the day the data were collected. This study was reviewed by the Human Research Committee of Bansomdejchaopraya Rajabhat University (Approval No. REC-BSRU COA No. 680101) on January 14, 2025, before data collection.

2.2 Tools

This research examines the quality of the instruments used to measure WB, adapted from past research (Einarsen & Hoel, 2001; Einarsen et al., 1994, 2009; Makarem et al., 2018), which are not yet available in Thailand. It also assesses the DS measurement questionnaire (Besse et al., 2015; Agyapong et al., 2022; Department of Mental Health of Thailand, 2020). The details are as follows:

1) The workplace bullying questionnaire (WBQ) consists of 22 items. It includes events that happen directly to the person, such as being assigned work during rush hour or experiencing rudeness, such as being spoken to loudly and unhappily. These events must have occurred within the past year. The choices are yes or no, and the scores are 1 and 0, respectively. The total scores range between 0 and 22 points.

2) The depression questionnaire (DSQ) consists of 11 items, covering experiences such as feeling uneasy, difficulty sleeping, loss of appetite, poor concentration, trouble speaking, and thoughts of harming oneself. These experiences must have occurred within the past 2 weeks. The Likert scale is divided into 4 levels: none, some days, often, and every day, corresponding to scores of 0, 1, 2, and 3, respectively. The item scores were interpreted using the mean values according to the Best (1997) criteria, namely 0–1.00, 1.01–2.00, and 2.01–3.00. The depression scores were interpreted as low, modulate, and high, respectively.

2.3 Quality of tools

1) The validity of the WBQ and DSQ was assessed by three experts who were university lecturers with doctoral degrees in related fields (specifically, educational psychology, public health, and occupational health and safety) and with teaching experience of not less than 1 year. They independently assessed the appropriateness of the questions regarding their objectives, structure, content, and language using by using the index of item-objective congruence (IOC) method. The resulting IOC values ranged between 0.67 and 1.00, falling within the standard criteria (Rovinelli & Hambleton, 1976).

2) Exploratory factor analysis (EFA) of the WBQ and DSQ examined both forms of assessment to evaluate the components of the whole questionnaire. This involved setting the eigenvalue greater than 1.00, performing a varimax rotation, setting the rotation value according to the number of samples (n = 300), setting the rotated component matrix greater than 0.25, analyzing the factor analysis using the principal component method, and setting the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO-MSA) greater than 0.5 (Dziuban & Shirkey, 1974).

3) The reliability of the WBQ and DSQ was tested using Cronbach's alpha, requiring a value of more than 0.7, and the corrected item-total correlation analysis, requiring a value of more than 0.2 (Garrett, 1979).

2.4 Data collection

The researcher explained the research project and obtained permission from the school director to present its objectives to the teachers in the sample group. The data collection process used QR codes for the sample group who voluntarily answered the questions. The period for completing the questionnaires via QR code was set for after school that day.

2.5 Data analysis

WB and DS scores were analyzed for normal distribution using the Kolmogorov-Smirnov test. Then, the data analysis for interpretation was divided into three parts: (1) quality of the tools, including the IOC, EFA using the principal component method, reliability using Cronbach's alpha, and corrected item-total correlation analysis; (2) descriptive statistics using frequencies and percentages; and (3) inferential statistics, specifically the relationship between WB and DS, and the relationship between sub-components, using Pearson's correlation to coefficient value, with a statistical significance level set at $p < 0.05$.

3. RESULTS

3.1 22-item WB questionnaire and results of the survey

Three experts approved the 22-item WB questionnaire. The IOC scores ranged between 0.67 and 1.00. The survey, conducted with a sample of 300 teachers, found that the top three forms of WB experienced by teachers were being gossiped about or having negative rumors spread (item 10), being assigned a task with a high target but having to complete it in a short period of time (item 4), and giving an opinion that was often ignored (item 3), reported by 40.7%, 38.5%, and 35.7%, of respondents, respectively, as shown in Table 1.

Table 1. WB questions and survey results (n = 300)

Items	Questions	Yes	No
1	Someone in the school has been keeping your data, which has affected your low work efficiency.	76 (25.3%)	224 (74.4%)
2	Have you ever been ordered to work at a level below your ability?	52 (17.3%)	248 (82.7%)
3	You have given your opinion, but your opinion is often ignored.	107 (35.7%)	193 (64.3%)
4	Have you ever been given a task with a high goal or a tight deadline that was unreasonable or impossible to complete?	115 (38.3%)	185 (61.7%)
5	Your work is often scrutinized and examined more than that of others.	74 (24.7%)	226 (75.3%)
6	There is pressure to claim that you are not allowed to access information or use the area, such as "You are not allowed to use this area" or "If you can't do it, you can move somewhere else."	19 (6.3%)	281 (93.7%)
7	You are given so many tasks that you cannot prioritize them.	83 (27.7%)	217 (72.3%)
8	The work you do is sometimes despised or ridiculed.	39 (13.0%)	261 (87.0%)
9	You are intervened and assigned unimportant or unpleasant tasks, or tasks that others avoid, instead of your main work.	58 (19.3%)	242 (80.7%)
10	You have been gossiped about or had rumors spread about you.	122 (40.7%)	178 (59.3%)
11	Have you ever been ignored or excluded from a group?	64 (21.3%)	236 (78.7%)
12	Have you ever received insults or derogatory remarks about yourself (e.g., background, personal life)?	49 (16.3%)	251 (83.7%)
13	Have you ever been advised to "quit your job"?	15 (5.5%)	285 (95.0%)
14	Have you been repeatedly reminded of your mistakes?	38 (12.7%)	261 (87.0%)
15	Have you ever been ignored or faced resistance when you approached someone?	49 (16.3%)	249 (83.0%)
16	There have been continuous criticisms of your work and efforts.	54 (18.0%)	246 (82.0%)
17	Do other people find you funny or find you amusing?	60 (20.0%)	239 (79.7%)
18	Have you ever been accused at work?	68 (22.7%)	232 (77.3%)
19	You have been the target of too much ridicule.	27 (9.0%)	273 (91.0%)
20	Other people yell at you, or you unintentionally become the target of someone else's anger.	32 (10.7%)	268 (89.3%)
21	Has someone at work ever behaved threateningly toward you, such as by pointing a finger, invading your personal space, or pushing or blocking you?	11 (3.7%)	289 (96.3%)
22	Have you ever been threatened with violence or physically harmed?	2 (0.7%)	298 (99.3%)

3.2 EFA of WB questionnaire

The EFA results indicated that the 22 questions could be classified into four components: WB1 (organizational climate), WB2 (workload), WB3 (clown), and WB4 (threat). The overall KMO-MSA value was 0.8895, with individual item KMO-MSA values ranging between 0.762 and 0.946. Bartlett's test of sphericity was statistically significant, with an approximate chi-square value of 2523.53 ($p < 0.001$), as shown in Table 2.

3.3 Reliability of WB questionnaire

The 22-item WB questionnaire was tested for reliability with teachers. The Cronbach's alpha for the overall questionnaire was 0.904, which indicates a high level of reliability. The corrected item-total correlation ranged between 0.319 and 0.673. The results indicate that all values assessed for the quality of reliability are all within the standard range, as shown in Table 3.

3.4 11-item DS question and results of the survey

Three experts approved the 11-item DS questionnaire. The IOC scores ranged between 0.67 and 1.00 for all questions. The survey sample revealed that teachers often experienced DS symptoms, including having difficulty falling asleep or waking up or sleeping too much (item 3), feeling tired easily or having little energy (item 4), and having no appetite or eating too much (item 5), reported by 22.7%, 19.0%, and 18.0%, of respondents, respectively. Overall, for each item, the teachers reported a low level of DS, as shown in Table 4.

3.5 EFA of the DS questionnaire

The EFA results indicated that the 11 questions could be divided into two components: DS1 (emotion and concentration) and DS2 (behavioral expression). The overall KMO-MSA value was 0.918, with individual item values falling between 0.762 and 0.946. Bartlett's test of sphericity was statistically significant. The approximate chi-square test was 1707.13 ($p < 0.001$), as shown in Table 5.

3.6 Reliability of the DS questionnaire

The 11-item DS questionnaire was tested for reliability with teachers. The Cronbach's alpha value was 0.908, which falls in the high-reliability range. The corrected item-total correlation ranged between 0.335 and 0.767. The results indicate that all values assessing the reliability quality are in the standard range, as shown in Table 6.

Table 2. Test values of the EFA of the WB questionnaire

Items	Anti-image correlation	Communality	Rotated component matrix			
			1	2	3	4
5	0.946	0.535	0.497			
8	0.911	0.493	0.535			
10	0.905	0.641	0.675			
11	0.925	0.554	0.636			
12	0.911	0.527	0.547			
15	0.862	0.623	0.629			
18	0.912	0.552	0.666			
1	0.907	0.390		0.573		
2	0.863	0.630		0.696		
3	0.891	0.553		0.685		
4	0.876	0.552		0.687		
7	0.865	0.507		0.633		
9	0.912	0.384		0.486		
13	0.880	0.527			0.555	
16	0.920	0.615			0.688	
17	0.929	0.619			0.726	
19	0.896	0.598			0.608	
6	0.904	0.501				0.627
14	0.863	0.452				0.481
20	0.903	0.459				0.482
21	0.762	0.577				0.740
22	0.818	0.576				0.678

Table 3. Reliability of the WB questionnaire

Workplace bullying (items)	Number of items	Cronbach's alpha	Corrected item-total correlation
Overall questionnaire (1–22)	22	0.904	0.319–0.673
Organizational climate (5, 8, 10, 11, 12, 15, 18)	7	0.859	0.578–0.707
Workload (1–4, 7, 9)	6	0.771	0.446–0.571
Clown (13, 16–17, 19)	4	0.736	0.476–0.594
Threaten (6, 14, 20–22)	5	0.710	0.389–0.509

Table 4. DS questions and survey results (n = 300)

Items	Your feelings	Every day	Often (>7 days)	Some days (1–7 days)	None	Mean	Interpretation
1	You feel bored and not interested in doing anything.	12 (4.0%)	31 (10.3%)	156 (52.0%)	101 (33.7%)	0.85	Low
2	You feel uncomfortable, depressed, and discouraged.	9 (3.0%)	24 (8.0%)	131 (43.7%)	136 (45.3%)	0.69	Low
3	Do you have difficulty falling asleep, having trouble sleeping, or sleeping too much?	17 (5.7%)	51 (17.0%)	111 (37.0%)	121 (40.3%)	0.88	Low
4	You feel tired easily or have little energy.	17 (5.7%)	40 (13.3%)	133 (44.3%)	108 (36.0%)	0.89	Low
5	You have a poor appetite or eat too much.	8 (2.7%)	46 (15.3%)	124 (41.3%)	120 (40.0%)	0.81	Low
6	You feel bad about yourself, think you have failed, or have let yourself or your family down.	10 (3.3%)	11 (3.7%)	70 (23.3%)	209 (69.7%)	0.41	Low
7	You have poor concentration when doing things like watching TV, listening to the radio, or doing tasks that require concentration.	12 (4.0%)	24 (8.0%)	106 (35.3%)	158 (52.7%)	0.63	Low
8	You speak and act more slowly, to the point where other people notice, or you become restless and unable to stay still as you used to.	4 (1.3%)	12 (4.0%)	77 (25.7%)	206 (68.7%)	0.38	Low

Table 4. DS questions and survey results (n = 300) (continued)

Items	Your feelings	Every day	Often (>7 days)	Some days (1–7 days)	None	Mean	Interpretation
9	Do you think about harming yourself or think that it would be better if we were not there?	1 (0.3%)	2 (0.7%)	25 (8.3%)	272 (90.7%)	0.11	Low
10	You don't feel like meeting anyone; you want to be alone and keep to yourself.	12 (4.0%)	21 (7.0%)	75 (25.0%)	192 (64.0%)	0.51	Low
11	Do you feel like crying or cry for no reason?	2 (0.7%)	11 (3.7%)	65 (21.7%)	222 (74.0%)	0.31	Low

Notes: The criteria are 0–1.00, 1.01-2.00, and 2.01–3.00, which can be interpreted as low, modulate, and high, respectively.

Table 5. Test values of the EFA of the DS questionnaire

Items	Anti-image correlation	Communality	Component matrix	
			1	2
1	0.944	0.663	0.798	
2	0.906	0.685	0.821	
4	0.919	0.702	0.792	
6	0.934	0.614	0.764	
7	0.918	0.599	0.773	
8	0.930	0.560	0.744	
10	0.926	0.523	0.690	
3	0.897	0.665		0.365
5	0.938	0.703		0.330
9	0.820	0.668		0.713
11	0.889	0.604		0.429

Table 6. Reliability of the DS questionnaire

Depression questionnaire	No.	Cronbach's alpha	Corrected item-total correlation
Overall questionnaire (1–11)	11	0.908	0.335–0.767
Mood and concentration (1–2, 4, 6–8, 10)	7	0.892	0.614–0.741
Expressive behavior (3, 5, 9, 11)	4	0.691	0.281–0.584

3.7 The relationship between WB and DS

The analysis of the relationship between WB and DS revealed that WB had a statistically significant positive relationship with DS at a moderate level ($r = 0.475, p < 0.001$). The four components of WB (WB1, WB2, WB3, and WB4) had a statistically significant, high-level relationship with the total WB score, and the two components of DS, (DS1 and DS2), had a statistically significant, high-level relationship with the total DS score. When analyzing the pairwise relationship between the WB (1–4) and DS (1–2) components, statistically significant relationship were found ($p < 0.05$), as shown in Figure 1.

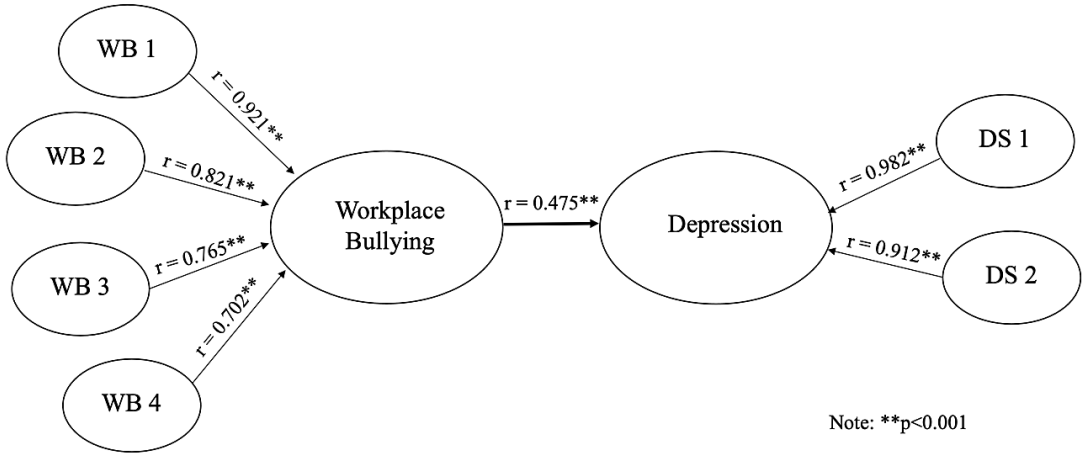


Figure 1. Coefficient of WB and DS

4. DISCUSSION

This study assessed the quality and exploratory factor of the WB questionnaire based on a review of previous research (Einarsen & Hoel, 2001; Einarsen et al., 1994, 2009; Makarem et al., 2018). WB occurs worldwide, especially in Asia (Ciby & Raya, 2015), but it is also commonly found in America, Europe, and Australia (Makarem et al., 2018). Therefore, this study was conducted in Thailand, a Southeast Asian countries, to facilitate the questionnaire's use by adapting it to the local teaching culture. In addition, this research studied the health outcomes of DS, a common mental health problem in today's multi-generational working society. The results of the study are discussed as follows:

The WB questionnaire quality test met the measurement standards, with a KMO-MSA value of 0.8895. Bartlett's test of sphericity was statistically significant, the approximate chi-square value was 2,523.53, and Cronbach's alpha was 0.904. The WB questionnaire could be classified into four components (organizational climate, workload, clown, and threats). Previous research in Norway studied 27 items, separating them into five components: challenge, organizational climate, leadership, work control, and workload (Einarsen et al., 1994). Although the issues tend to be similar, the current study is not specific to organizational leadership. If a leader is ineffective, all subordinates are affected, making it an easily observable or assessable behavior. This is considered a more toxic work environment than bullying (Rasool et al., 2021). In addition, the current study focuses on the WB experience that the individual directly received. For these reasons, the components were categorized into four.

The 22-item WB research instrument was used to survey teachers, revealing that the top three forms of WB experienced by teachers were being gossiped about or having negative rumors spread (40.7%), being assigned tasks with high goals and unreasonably short deadlines, as if being bullied (38.5%), and having their opinions often ignored (35.7%). This is consistent with educational institutions in Pakistan, where it was found that 33.0% of teachers experienced high levels of gossip and rumor-spreading (Bukhari & Akhter, 2022). The prevalence of bullying among teachers varies from country to country. For example, it was reported that 90.8% of South African teachers, 25.6% of Lithuanian teachers, and 22.4% of Croatian teachers were bullied in one way or another (Jacobs & de Wet, 2018). In America, the prevalence was found to be 34.0% in females and 24.7% in males (Rouse et al., 2016). Feijó et al. (2019) mentioned that WB can be caused by causal factors such as inflexible work, role conflict, repetitive or rotating tasks, high demands on the quantity and quality of work, and work pressure. A qualitative study among teachers found that teachers are often bullied by their supervisors, with colleagues acting as accomplices (De Vos & Kirsten, 2015). Being assigned tasks that are not in their scope or beyond their abilities means they require longer to complete them while simultaneously receiving demands to work faster. This aligns with the current study regarding the organizational climate and workload components, which demonstrated high factor loadings.

The DS questionnaire was developed from the widely used major depression inventory (MDI) (Besse et al., 2015; Agyapong et al., 2022) by psychologists Bech et al. (2001). However, in the current study, it was adapted alongside the screening form of the Department of Mental Health of Thailand (2020). The quality assessment revealed that it met the measurement standards. The KMO-MSA was 0.918, Bartlett's test of sphericity was statistically significant, the approximate chi-square value was 1707.13, and Cronbach's alpha was 0.908. It can be classified into two components: mood and concentration, and expressive behavior. A previous study testing the sensitivity (which varied between 0.86 and 0.92) and its specificity (which varied between 0.82 and 0.86) of the MDI for major depression (Bech et al., 2001), did not separate the survey components. This DS questionnaire is suitable for screening for acute depression by asking about the frequency of symptoms over the past 2 weeks to assess the risk or tendency for depression. Therefore, this assessment does not capture depression in the chronic phase. It has been reported that chronic depression has a prognosis of major depressive disorder that can last from 6 to 12 months (Bains & Abdijadid, 2023). Therefore, this study does not cover the duration of chronic symptoms. The goal of this study is to facilitate prevention during the early phase or screening period.

The widely used MDI has some differences from this questionnaire, such as increased and decreased appetite. The MDI has separate questions for these, but in this study, they are combined into a single question. The abnormal appetite, whether it is an increase or decrease in food intake, represents the same core construction. It has been reported that the most closely related symptoms of depression are appetite and weight changes, reflecting metabolic changes that cause an increase or decrease from the baseline (Simmons et al., 2020). In addition, this questionnaire adds items regarding crying without cause and self-harm, aligning with the guidelines of the Department of Mental Health of Thailand (2020). This is supported by a large population study in the United Kingdom showing that depression is related to self-harm, which often occurs during adolescence. Depressive symptoms increase at approximately the age of 13 and continue into adulthood (Irish et al., 2019). Depression and self-harm are major causes of health problems in Thailand (Kongsuk et al., 2017). Therefore, adding questions on crying and self-harm is a crucial step in mental health screening that is appropriate for the context of Thailand.

The results of the 11-item DS questionnaire found that teachers frequently and regularly experienced DS symptoms, including difficulty falling asleep, feeling tired easily or having little energy, and having no appetite or eating too much (reported by 22.7%, 19.0%, and 18.0% of respondents, respectively). This is similar to a study in Egypt that found a prevalence of 23.2% and noted that stress was associated with DS (Desouky & Allam, 2017). In addition, a study on teachers found that up to 42.5% of teachers experienced insomnia because they thought about schoolwork, and this was a factor that caused stress and burnout at work (Hongsa & Polyong, 2024). Most of the symptoms that occurred were behavioral symptoms captured by the second component of the questionnaire. Impaired sleep has been reported to be both a risk factor and a symptom of depression. Characteristic sleep-electroencephalogram changes in patients with depression include disinhibition of rapid eye movement (REM) sleep, changes in sleep continuity, and impaired non-REM sleep (Steiger & Pawlowski, 2019). DS can cause changes in

estrogen hormones, leading to sleep disturbances (Morssinkhof et al., 2020), as well as disruptions in endocrine hormones, leading to changes in appetite and fatigue (Simmons et al., 2020).

The analysis of the relationship between WB and DS revealed that WB had a statistically significant positive relationship with DS, which is consistent with the stress theory. Many studies have documented that exposure to WB is a major cause of work-related distress, resulting in subsequent health problems and decreased well-being in both the short and long term (Hoobler et al., 2010). In particular, WB has been associated with decreased job satisfaction and engagement (Rodríguez-Muñoz et al., 2009), reduced commitment and turnover (Berthelsen et al., 2011), as well as increased absenteeism due to illness (Ortega et al., 2011), psychophysiological symptoms, and various mental health problems (Einarsen & Nielsen, 2015).

Previous studies on WB and DS have been conducted in various occupational groups, such as nurses in Taiwan (Ko et al., 2020) and junior hospital physicians in Germany (Loerbroks et al., 2015). In addition, a literature reviews have shown a trend in the relationship between WB and DS. However, most of these studies were conducted in America, Europe, and Australia (Verkuil et al., 2015). It can be seen that this study has different contexts from past research, including: (1) focusing on the teaching profession, whereas most previous research focused on medical personnel or was conducted in high-income countries; and (2) differing religions and traditions. Thailand has Buddhism as the national religion, while the previous reports primarily originated from majority-Christian countries. Religious differences are one factor that can cause bullying, work performance, and emotional exhaustion to differ (Jalali et al., 2020). Finally, regarding (3) DS in teachers, many past studies assessed other mental health conditions, such as anxiety (Woudstra et al., 2018), stress (Hongsa & Polyong, 2024), and burnout (Bernotaite & Malinauskiene, 2017; Hongsa & Polyong, 2024). Therefore, the current study is an extension of the knowledge regarding middle-income educational personnel and examines the specific issues of WB and DS. This study noted that WB is a moderately contributory factor to depression, and it is also a primary etiological factor. However, while this study examined pairwise relationships to understand psychological outcomes, future studies should explore other predictive factors, including potentially covariates such as non-work factors (debt burden, underlying illnesses, or family relationships). Incorporating these covariates will likely lead to higher predictive accuracy.

5. CONCLUSION

This study tested the quality of WB and DS tools specifically designed for teachers and adapted to the cultural context of the research area in Southeast Asia, which can be further adapted, retested, and applied in neighboring countries. The study found a statistically significant relationship between WB and DS. For suggestions on solutions, administrators should address WB in their organizations by planning work within the scope of each task, setting the duration of each task, and allocating tasks appropriately based on teachers' abilities. In the future, studies should examine different generations of workers. Each generation has a different work culture. For example, the iGeneration group, who studied at universities during the COVID-19 pandemic, mostly had high technological skills but less interaction with others. Therefore, the culture of each group should be studied as well to identify the goals for organizing activities that are in line with each generation.

AUTHOR CONTRIBUTIONS

C.P.P. and T.H. conceived and designed the study. C.P.P., S.N., and K.J. developed the research methodology, while C.P.P. and T.H. conducted the investigation and fieldwork. C.P.P. and T.H. curated the data. C.P.P., K.N., and S.N. performed the formal statistical analyses, and C.P.P., K.N., and P.K. interpreted the results. C.P.P. prepared the original draft of the manuscript. S.N., K.J., K.N., and P.K. critically reviewed and edited the manuscript for important intellectual content. C.P.P. supervised the study and managed overall project administration. All authors discussed the results and approved the final version of the manuscript.

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