Reduction of the depression caused by work stress for teachers: Subjective well-being as a mediator

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Abstract

The mental health of teachers had long been said to bring forth positive outcomes on students' schooling. In the current study, our purpose was to build up a mediation model that could explain how the depression caused by perceived work stress (PWS) would be reduced by lowering subjective well-being (SWB). A total random sample of 1214 teachers was recruited and measured by Subjective Well-Being Scale, Taiwan Depression Scale, and perceived work stress from students, parents, and peers. The whole data were analyzed by ANOVA, Pearson correlations, and structure equation modeling (SEM). Results showed that 1) PWS differed by positions of teachers. 2) PWS from students, parents, and peers had significantly caused Depression. 3) SWB successfully mediated the effects of the PWS and Depression. The current results further provided an empirical proof of how PWS lower teachers' well-being in psychology, social, and emotion of SWB. Our hypothesis of an existed mediation effect had been supported. The current study hoped that the findings would be able to help educational administrators, policy makers, and researchers in protecting teachers' mental health.

Keywords: work-stress; subjective well-being; depression; mediation

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1. Introduction

Mental health of teachers is very important because the teacher health may affect the learning environment and mental health of students. Not only long working hours is a kind of work stress but also many kinds of factors like working conditions, the changing education policies of the government, overloaded classes, pupil behavioral problems, lack of educational resources, and poor working conditions are, too (Eres & Atanasoska, 2011; Kyriacou & Chien, 2004; Zedan, 2012). However, the perceived work stress is the representative variable to exam teacher's subjective psychological stress. In Taiwan, our previous studies show that teachers with longer working hours have a higher risk of depression and subjective well-being mediated work hours and depression among high school teachers (Yu, Syu, & Chen, 2010). This study explored the relationship between perceived work stress (PWS) and depression (DEP) among high school, junior high school, and elementary school teachers and the mediating role of subjective well-being (SWB) was also examined. On the other hand, different positions may cause different working conditions and stress of teachers (Eres & Atanasoska, 2011). We also explore the relationship between positions of teachers and perceived work stress.

1.1 Work Stress and Depression

The concept of stress have some elements such as stressors, stress response, stress coping, and stress effects (DeSimon & Harris, 1998; Matheny & McCarthy, 2000). The following instructions are teachers' situation. Firstly, there were various stressors of teachers' work, like created curriculum plan and teaching, classroom management, the relationships, the development of professional knowledge, administrative work, and other work requirements. Secondly, when teachers perceived the work requirements over their loading of ability (Karaj & Rapti, 2013; Kokkinos, 2007; Kyriacou & Chien, 2004; Kyriacou & Sutcliffe, 1978; Litt & Turk, 1985) and induced the physical, cognitive and emotional reactions to stress experience. In addition, the general adaptation syndrome (GAS) described the stress response include alarm reaction, stage of resistance, and stage of exhaustion (Selye, 1951). Thirdly, stress coping is the behavior after stress experience to reduce the stress. Lazarus (1999) pointed out how individuals react to the stress, it called the transactional theory that stress, appraisal, and coping theories (Matthieu & Ivanoff, 2006). Finally, there were two kinds of results to face a high-strain job. When teachers had control in this job or found some effective coping strategies, the events do not turn into negative effect. Otherwise, if teachers' coping strategies failed or the job was out of control (Karasek, 1979; Van der Doef & Maes, 1999), they might have physical and psychological damage or even illness.

The teaching is a high-stress occupation (Kokkinos, 2007) and many studies have identified that the teachers work stress were related to many physical and psychological problems (Burke, Greenglass, & Schwarzer, 1996; Kyriacou, 1987, 2001; Kyriacou & Chien, 2004). The physical and psychological problem are job dissatisfaction, work strained, anxiety, heart rate, muscle tension, feeling threatened and other adverse conditions (Hopkins and Moss, 1997). Many studies have pointed out that work stress lead burnout (Ashforth & Lee, 1997; Cooper, Dewe, & O'Driscoll, 2001; Cordes, Dougherty, & Blum, 1997; Golembiewski, Boudreau, Goto, & Murai, 1993; Maslach, Schaufeli, & Leiter, 2001; Rossi, Perrewe, & Sauter, 2006) and it might progress depression. According to Tennant,

> While depression is the most likely adverse psychological outcome, the range of other possible "psychological" problems include "burnout," alcohol abuse, unexplained physical symptoms, "absenteeism," chronic fatigue and accidents, sick building syndrome and repetitive strain injury (Tennant, 2001, p. 697).

1.2 Subjective Well-Being

Well-being (WB) is a dynamic concept. In the early literature, subjective well-being (SWB) including happiness, life satisfaction, and positive affect (Diener, 1984). Further, subjective well-being should be the level of life satisfaction and felt positive and negative emotional intensity (Diener, Suh, Lucas, & Smith, 1999). Another point of view, Ryff (1989, 1995), Ryff and Keyes (1995) thought happiness is not just to be happy or positive feelings, but also including autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance which were called Psychological Well-Being (PsyWB). In addition, Keyes (2002, 2005) advanced the third concept that is Social Well-Being (ScoWB). Social well-being is defined as the optimal functioning of society. It is characterized by five dimensions, social integration, social contribution, social coherence, social actualization, social acceptance (Keyes, 1998).

Keyes (2002, 2005) and Keyes and Waterman (2003) pointed out the traditional subjective well-being will be regarded as emotional well-being, and they used the classical test theory to measure the mental health include emotional (hedonic approach), psychological, and social well-being (eudaimonic approach). In summary, we use the comprehensive definition to define the subjective well-being (SWB) that includes Emotional Well-Being (EmoWB), Psychological Well-Being (PsyWB), and Social Well-Being (SocWB) to investigate the happiness of teachers.

1.3 Work Stress, Depression and Subjective Well-Being

As mentioned above (in section 1.1) work stress related to burnout and depression. This phenomenon of burnout contains emotional exhaustion (lack of emotional resources), depersonalization (indifference to others), low personal accomplishment (negatively evaluate their own behavior and performance) (Maslach, Schaufeli, & Leiter, 2001). On the contrary, the subjective well-being includes positive feelings, positive relations with others, and autonomy. In additional, Bech et al. pointed out that decreased well-being is the first signal of stress (Bech et al., 2005). Subjective well-being may negatively be related to work stress, burnout, and depression. Past literature on theories of work stress have different definitions such as the work stress is a kind of source from working environment, workers in response to environmental stimuli, or the interaction between environment and workers (Ross & Altmaier, 1994). The interactional views can let us explore the relationship of workers, environment, and their interaction such as subjective well-being, or coping strategies. In this study, subjective well-being is regarded as a mediator between perceived work stress to depression.

2. Materials and Methods

2.1 Design

This framework primarily builds on the positive psychology, mental health on the workplace, and the concept of depression. It is hypothesized that the new model of SWB between perceived work stress and depression for Taiwan teachers. We had taken perceived work stress (PWS) as latent IV, subjective well-being (SWB) as a latent mediator, and Depression as latent DV, and four hypotheses were stated as following.

> ➢ Hypothesis 1. For Taiwan teachers, PWS has a significantly positive effect on Depression.

> ➢ Hypothesis 2. For Taiwan teachers, SWB has a significantly negative effect on Depression.

> ➢ Hypothesis 3. For Taiwan teachers, SWB mediates the relationship between PWS and Depression.

> ➢ Hypothesis 4. The position of teachers has a significant effect on PWS.
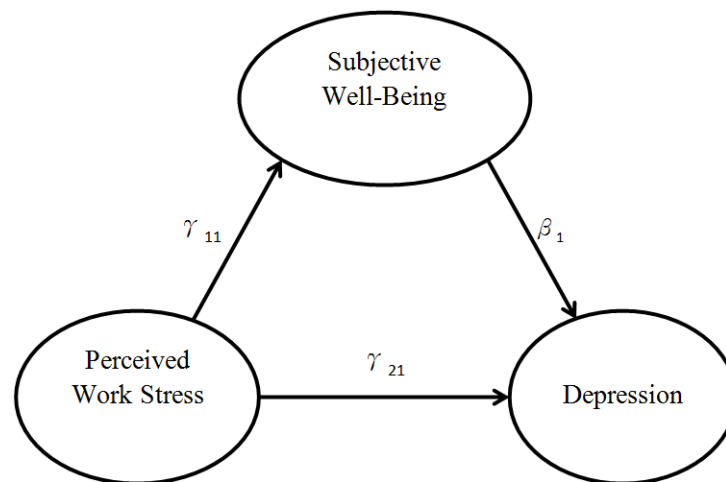
Figure 1. Hypothesized mediated model

2.2 Participants

This study involved 1212 Taiwan teachers enrolled in different level schools from primary school (70.0%), junior high school (20.1%), high school (6.2%), and vocational school (3.7%). The sample included 493 (40.7%) male and 719 (59.2%) female. Of the participants, 58.9% were the tutor, 13.7% were the subject teacher, and 26.4% were with the administrative position. Most part of teachers has the bachelor degree (46.3%) and master degree (52.6%).

2.3 Measures

Perceived Work Stress (PWS) - PWS has been used to describe how much loading teachers are suffering. Three items were used to measure the latent variable PWS, including the perceived work stress from students, parents, and peers (Chung, Yu, Syu, Chen, & Chao, 2013). All items are 4 points Likert's scale ranging from 1 to 4. The higher point means more stress teachers perceived. Three items are reliable and valid, the Cronbach's alpha was .66, and the explained variance was 60.4%.

Subjective Well-Being (SWB) - SWB was measured by short form version of Subjective Well-Being Scale with three factors, including Psychological Well-Being (PsyWB), Social Well-Being (SocWB), and Emotional Well-Being (EmoWB) (Yu, Hsieh, Lin, Chen, & Tseng, 2011). All items are 4 points Likert's scale ranging from 1 to 4. The Cronbach's alpha ranging from .63~.86, and the explained variance ranging from 40.2%~71.1%.

Depression (DEP) - DEP was measured by Taiwan Depression Scale (TDS), the local scale developed for collecting data of Taiwan people's mental disease (Yu, Huang, & Liu, 2011; Yu, Liu, & Li, 2008). There are four factors within TDS, such as Cognitive Depression (CogD), Emotional Depression (EmoD), Physical Depression (PhyD), and Social Depression (SocD). All items are 4 points Likert's scale ranging from 0 to 3. The Cronbach's alpha ranging from .81~.89, and the explained variance ranging from 51.7%~65.5%.

2.4 Data analysis

The sample has been separated into two parts by random (33% sample, n = 407; 67% sample, n = 804). The 33% sample used in measurement model (Confirmatory Factor Analysis, CFA), the other 67% sample used in structure model (Structure model and mediation test). Descriptive statistics, ANOVA and correlation estimated using SPSS 21 program, composite reliability (CR) and average variance extracted (AVE) were used to prove the reliability and validity of measurement model. Structure model was used to explaining the relationship and effect among latent variables. Structure equation modeling (SEM) was estimated using the maximum-likelihood

method in the AMOS 20 program (Arbuckle, 2011).

3. Results

3.1 Effect of Position on Perceived Work Stress

One of research questions is to figure out the relationship between teachers' position and work stress. The variable "Position" was taken as an independent variable and three kinds of PWS was taken as dependent variables. We employed a one-way (position group) ANOVA to examine the proposed hypothesis of this study. We collected three kinds of teachers' position, including tutors (n=696), subject teachers (n=166), and administrative teachers (n=320). In these analyzes, we then used these groupings separately as the IV to test its effect on the relevant DV (PWS from students, parents, and peers). The means and standard deviations of all variables are shown in Table 1.

Table1

The means and SDs of PWS scores in different groups

Source of PWS	1.Tutors		2.Subject teachers		3.Administrative teachers			
	M	*SD*	*M*	*SD*	*M*	*SD*	*F*	post hoc
Students	.96	.73	.81	.67	.75	.67	10.33***	1>3
Parents	.82	.75	.69	.78	.73	.66	3.00ns.	
Peers	.47	.68	.43	.60	.85	.76	36.55***	3>1; 3>2

Note. ns. $p > .05$; *** $p < .001$

The results revealed that the effect of position on PWS from students was significant, F = 10.33, $p < .001$. Tukey's post hoc test revealed tutors had more PWS from students than administrative teachers. However, the effect of position on PWS from parents was not significant, F = 3.00, $p = .050$. Moreover, the effect of position on PWS from peers was significant, F = 36.55, $p < .001$. Scheffe's post hoc test revealed administrative teachers had more PWS from peers than tutors and subject teachers.

3.2 Preliminary Analyses

Means, standard deviations, and zero-order correlations for the 11 measured variables are shown in Table 2. Because the number of the item were not equal in every variable, we used means to represent the mean values. All the means of observed variables ranging from 0.47~3.09, SD ranging from 0.39~.73. Multivariate normality test was used to examine whether the data met the normality assumptions underlying the maximum-likelihood procedure used to test the models in the present study. The results of the multivariate normality test indicated that the data were multivariate normal, multivariate kurtosis was 24. Therefore, the maximum-likelihood method was appropriate based on Kline's suggestion (Kline, 2005).

3.3 Measurement Model

Before a structural model is tested, Anderson and Gerbing (1988) suggested conducting a confirmatory factor analysis to examine whether the measurement model provides an acceptable fit to the data. Once an acceptable measurement model is developed, the structural model can be tested. As suggested by Byrne (2009), Hu and Bentler (1999), Tucker and Lewis (1973), five fit indices were used to assess goodness of fit for the models: the goodness of fit index (GFI; values >0.90 indicate good fit), the comparative fit index (CFI; values >0.90 indicate good fit), the Tucker-Lewis Index (TLI; values >0.90 indicate good fit), the non-normed fit index (NFI; values >0.90 indicate good fit), and the root-mean-square error of approximation (RMSEA; values <0.08 indicate good fit).

A test of the measurement model resulted in a relatively good fit to the data ($\chi2 = 95.42$*** 、 *df* = 32 、 GFI = .96 、 CFI = .96 、 TLI＝.94 、 NFI= .94 、 RMSEA = .070). All of the standardized factor loadings of the measured

variables on the latent variables were statistically significant ($p < .001$, see Table 4). CR of latent variables ranging from .71~.85, AVE ranging from .47~.60, both CR and AVE fit the standard suggest by Fornell and Larcker (1981) and Hair, Black, Babin, and Anderson (2010). Therefore, all of the latent variables appear to have been adequately operationalized by their respective indicators. In addition, correlations among the independent latent variables, the mediator latent variable, and dependent latent variables were all statistically significant ($p < .001$, see Table 5).

Table 2

Means, standard deviations, and zero-order correlations matrix (all sample, n = 1212)

	M	SD	1	2	3	4	5	6	7	8	9	10
1.PWS-students	.88	.71	1									
2.PWS-parents	.78	.73	.61	1								
3.PWS-peers	.57	.71	.27	.31	1							
4.PsyWB	2.95	.40	-.25	-.24	-.20	1						
5.SocWB	3.09	.38	-.15	-.17	-.20	.56	1					
6.EmoWB	2.80	.54	-.28	-.24	-.21	.55	.43	1				
7.CogD	.47	.39	.27	.24	.24	-.49	-.40	-.47	1			
8.EmoD	.91	.45	.36	.31	.26	-.42	-.32	-.46	.70	1		
9.BioD	.91	.49	.29	.28	.25	-.36	-.30	-.42	.55	.69	1	
10.SocD	.75	.57	.21	.21	.25	-.37	-.34	-.44	.54	.52	.56	1

Note. All values of correlation are significant ($p < .001$).

Table 3

Model fit indices

Indices	measurement model	structural model	criteria
N	404	804	
χ2	95.42***	190.39***	
df	32	32	
GFI	.955	.954	>.90
CFI	.958	.947	>.90
TLI	.941	.926	>.90
NFI	.939	.937	>.90
RMSEA	.070	.079	<.08

Table 4

Factor loadings for the measurement model (33% sample, n = 407)

Factor and Item	Standardized factor loading	SE.	t	AVE	CR
Perceived Work Stress (PWS)				.47	.71
from students	.77				
from parents	.81	.105	10.28		
from peers	.40	.076	7.06		
Subjective Well-Being (SWB)					
PsyWB	.74			.53	.77
SocWB	.65	.073	10.95		
EmoWB	.79	.116	11.53		
Depression (DEP)					
CogD	.79			.60	.85
EmoD	.89	.072	18.46		
BioD	.74	.079	15.48		
SocD	.65	.098	13.15		

Note. All standardized factor loading are significant ($p < .001$).

Table 5

Correlations matrix for the measurement model (33% sample, n = 407)

Latent Variables	1	2	3
1.Perceived Work Stress (PWS)	1		
2.Subjective Well-Being (SWB)	-.39	1	
3.Depression (DEP)	.48	-.69	1

Note. All values of correlation are significant ($p < .001$).

3.4 Structural Model for Testing Mediated Effects

We had taken Perceived Work Stress (PWS) as latent IV, Subjective Well-Being (SWB) as latent mediator, and Depression (DEP). The results showed a good fit of the model to the data ($\chi2$ =190.39***, df = 32, GFI = .95, CFI = .95, TLI = .92, NFI= .94, RMSEA = .079). Path effect is frequently referred to as direct effect. All the effect size of structural paths were medium ($\gamma11$ = -.37, $\beta1$ = -.60, $\gamma21$ = .19) and significant (p < .001, see Table 6).

MacKinnon, Lockwood, Hoffmann, West, and Sheets (2002) assessed many approaches to examine mediation considering Type I error and statistical power. Found the most often used strategy by Baron and Kenny (1986) has the least power (both $\gamma11$ and $\beta1$ have to be significant). Then, many studies using this approach have relied on the Sobel test (1982) to examine the significance of mediation effect ($\gamma11*\beta1$ have to be significant). However, there is evidence that the distribution of mediation effect is not normal (Bollen & Stine, 1990; MacKinnon & Dwyer, 1993; Stone & Sobel, 1990), and the utilization of a significance test, such as the Sobel test, which assumes a normal distribution when examining the mediation effect, is not appropriate. Most recently, Shrout and Bolger (2002) suggest the bootstrap method (Efron & Tibshirani, 1993) can be a better way to examine mediation. The bootstrap method acquires 95% confidence intervals (CI) for the indirect effect of the resampling procedure. Based on the central limit theorem, bootstrap method is robust even the distribution of mediation effect is not normal.

As Shrout and Bolger's (2002) suggestion, if the 95% CI for the estimates of the indirect effects based on these 5000 indirect effect estimates does not include zero, then it can be concluded that the indirect effect is statistically significant at the .05 level. Therefore, after the structural models were examined through the AMOS 20 program, the bootstrap procedure was used to test whether or not the indirect effects were statistically significant.

Mediation effect is frequently referred to as indirect effect ($\gamma11*\beta1$) was .22. The 95% CI for the estimates of the indirect effects ranging from .16~.28 does not include zero, then it can be concluded that the indirect effect is statistically significant at the .05 level. For Taiwan teachers, SWB plays a role as mediator between PWS and DEP. The total effect is the summation of direct effect and indirect effect ($\gamma21 + \gamma11*\beta1$), the total effect was .41, the 95% CI for total effects ranging from .32~.50 does not include zero, the total effect is statistically significant at the .05 level. The results of the structure model shown the theory model can explain depression well for Taiwan teachers. As above, hypotheses 1~3 are supported. In addition, according to Baron and Kenny (1986), because the direct effect is still significant, our model is partial mediation, shown there may be other effective mediators can be taken into consideration in the future.

Table 6

Bootstrap Analysis of Structural Model (67% sample, n = 804)

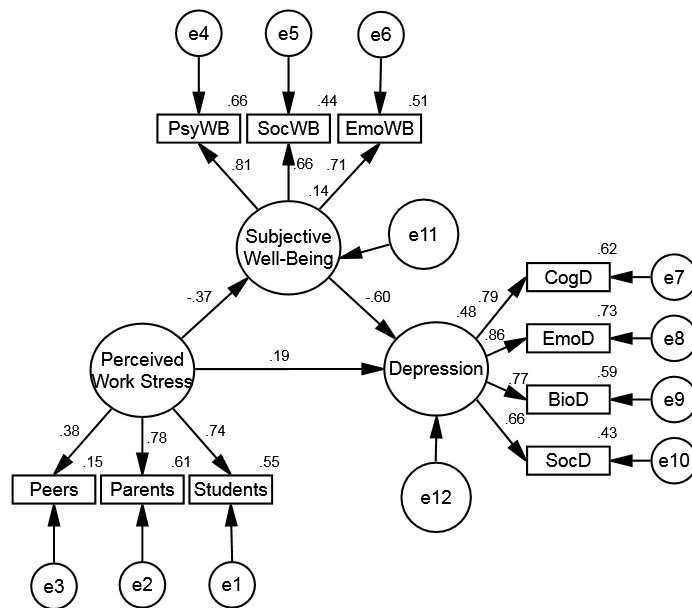| Direct effect			Indirect effect		Total effect	
$\gamma11$	$\beta1$	$\gamma21$	$\gamma11*\beta1$	95% CI	$\gamma21+\gamma11*\beta1$	95% CI
-.37***	-.60***	.19***	.22	.16~.28	.41	.32~.50

Note. *** p < .001

Figure 2. Full model

4. Conclusions

In this study, we use the structured equation modeling in providing the relation between the perceived work stress (PWS), subjective well-being (SWB), and depression (DEP) for Taiwan teachers. The result of structure model shown that the subjective well-being is a mediator between perceived work stress and depression. It indicates that high perceived work stress does not influence teacher's depression level directly, and it depends on teacher's subjective well-being level. For example, a teacher who has high perceived work stress with high subjective well-being has low depression level. Conversely, a teacher who has high perceived work stress with low subjective well-being has high depression level. It also indicates that the level of subjective well-being can decrease Taiwan teachers' depression level. In addition, according to Baron and Kenny (1986), two paths of direct effect is still significant, one mediation path in our model are partial mediation, shown there may be other effective mediators can be taken into consideration in the future such us coping strategies, personality traits, interpersonal relationship, work seniority (Katz & Kahn, 1978), and job control (Karasek, 1979).

How can we help teachers? Even though that reduce teachers' workload can decline their working stress, but Taiwan teachers' workload cannot be reduced immediately by policy, it might take a long time. Fortunately, according to our study, teachers' working stress is not always annexed to depression, if teachers have high subjective well-being level. We suggest that schools and teachers should pay attention to enhancing their subjective well-being such as healthy behavior (regular leisure activities and physical activity), appraisal support from other teachers and parents (teach teachers to give positive feedback and support each other), and practice mindfulness (Brown & Ryan, 2003; Carmody & Baer, 2008; Yu, Chung, Chen, Syu, & Chao, 2011). Their subject positive attitude can help fight depression. In addition, teachers can improve their ability of stress awareness and coping strategies, because the good coping strategies skills can help teacher to face stress healthily (Penedo et al., 2004). Schools and the government should create a positive and healthy working environment such as not only value the physical health but also pay attention to the psychological health of teachers, notice the teacher who has the signs of burnout, and provides stress coping strategies of training or workshops.

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