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ORIGINAL PAPER

The Role of Dispositional Mindfulness and Self-compassion in Educator Stress

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Abstract

Objectives Compromised educator well-being creates educational, social, and economic problems, which are not resolved by knowledge of risk factors alone. The present study explored the protective role of dispositional mindfulness and self-compassion within the context of educator stress.

Methods A total of 231 educators from 21 Australian schools completed online surveys including measures of perceived stress, mindfulness, self-compassion, student-teacher relationships, experiences in close relationships, and eating and sleeping patterns, which were used for correlation, regression, and path analysis.

Results The present study identified multiple predictors of perceived stress, with self-compassion as the strongest significant predictor. Findings of path analyses also demonstrated that lower levels of dispositional mindfulness and higher levels of anxiety in close relationships were associated with poor sleep quality, and this association was mediated by higher levels of perceived stress. The same potential pathways were suggested with self-compassion replacing dispositional mindfulness.

Conclusions The role of dispositional mindfulness and self-compassion is discussed as protective resources that could be utilized in times of stress.

Keywords Educator stress · Mindfulness · Self-compassion · Student-teacher relationship · Experience in close relationship

Educator stress is unpleasant negative emotional experience triggered by educator perceptions of threats in dealing with the demands of work made upon them (Kyriacou 2011). According to the Transactional Model of Stress and Coping (Lazarus 1966, 1993), stress is an emotional reaction to personal harms and threats that emerge out of person-environment interactions. It is not the external stressors themselves, but the process of appraising the personal meaning of external stressors that creates stress (Lazarus 1991). Coping, on the other hand, is a protective reaction to this stress and is an effort to make circumstances more favorable by altering or interpreting them differently (Lazarus 1993). Kyriacou and Sutcliffe (1978) adapted the Transactional Model of Stress and Coping (Lazarus 1966) for teaching and presented a model of educator stress. In their modified model, Kyriacou and Sutcliffe (1978) suggested that potential occupational and non-occupational stressors may lead to educator stress only if an individual educator perceives or appraises them as a threat to her self-esteem or well-being, and individual characteristics, such as biological details, beliefs-attitudes-values systems, and abilities to cope with the demands, can influence appraisal of the potential stressors and the coping mechanisms activated to reduce the perceived threat.

Studies have identified individual characteristics of educators that influence their susceptibility to stress, such as gender, years of teaching experience, and age. In studies conducted in Greece, female teachers reported higher levels of stress than their male counterparts (Antoniou et al. 2006; Michael et al. 2009), with the same pattern observed in a study with Canadian teachers (Klassen and Chiu 2010). Evidence shows

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that compared with experienced teachers, beginning teachers experience higher levels of stress (Troesch and Bauer 2017). Similarly, higher levels of emotional exhaustion and disengagement from the profession were found in younger compared with older teachers (Antoniou et al. 2006). Research also found a range of sources that led to educator stress, including heavy workload, managing challenging student behavior, and accountability for student outcomes (Kyriacou 2011; Ryan et al. 2017).

Despite its rapid development, the increasing complexity of educator stress necessitates further research concerning why certain educators are more resilient to stress and threats to well-being than others (Kyriacou 2011). Research tends to focus on identifying those individual and contextual factors that put educators' well-being in jeopardy (e.g., Antoniou et al. 2006; Michael et al. 2009). However, knowledge of risk factors does not provide an understanding of the protective factors of well-being (De Chavez et al. 2005), and it is therefore important to investigate both. Given that well-being is a multifaceted and dynamic phenomenon that relates to various dimensions of life, Halleröd and Seldén (2013) emphasized the need for understanding the links between these different domains.

Empirical studies investigating the influence of interpersonal relationships with students on educator well-being are sparse (Spilt et al. 2011). This forms a sharp contrast to studies emphasizing the importance of strengthening relatedness with educators for improving student outcomes (e.g., Hughes 2012), such as stress regulation (Ahnert et al. 2012), language development (Schmitt et al. 2012), and academic achievement (McCormick et al. 2013; Roorda et al. 2011). A recent study by Milatz et al. (2015) provided empirical evidence of close relationships with students as a resource for educator well-being. Educators in their study who developed close relationships with their students were less emotionally exhausted and depersonalized, compared with educators who established a more relational distance with students. Establishing close emotional bonds and understanding with their students is also a source of positive emotions in primary school educators (Hargreaves 2000). In contrast, conflict-ridden relationships with students are often created by student challenging behavior and elicit anger and helplessness in educators (Spilt and Koomen 2009). Educator perceptions of student challenging behavior are directly related to educator emotional exhaustion (Tsouloupas et al. 2010).

Research on work-family conflict found that educators generally experienced a greater impact of work stress at home than of home stress at work (Cinamon et al. 2007; Thomas et al. 2003). Of teaching- and non-teaching-specific stressors, management of student challenging behavior makes the strongest contribution to explaining the effects of work stress on home stress (Cinamon et al. 2007). Educators who lose their work engagement as a result of relational strain with their students tend to invest less in the relationship with their intimate partner, and this, in turn, influences their partners' depression (Bakker et al. 2012). Yet, an intimate partner was often perceived as sources of social support to deal with stress at school (Riley 2017).

Although many educators find personal satisfaction and intrinsic rewards in teaching (Skaalvik and Skaalvik 2015), high levels of stress were found to be associated with low levels of job satisfaction (Reilly et al. 2014). Job satisfaction is educators' sense of fulfillment and gratification arising from work (Organisation for Economic Co-operation and Development [OECD], 2014) and is closely connected with educator performance and educators' motivation to (dis)continue with their teaching career (Ryan et al. 2017; Skaalvik and Skaalvik 2011). According to the OECD Teaching and Learning International Survey (2014), dealing with students with behavioral problems is associated with lower levels of job satisfaction in almost all OECD countries, and educators' positive interpersonal relationships with school personnel can negate potentially detrimental effects of the challenging behavioral problems on educators' job satisfaction.

Adverse effects of stress on sleeping and eating have been established in the literature on stress, but only recently has empirical evidence reported the effects of educator stress on these physical aspects of health (e.g., Fujishiro et al. 2017; Hibbs-Shipp et al. 2015). Fujishiro et al. (2017) analyzed two large educator datasets (i.e., the Behavioral Risk Factor Surveillance System and U.S. Department of Education), which demonstrated an association between the implementation of state education reform policies and educators' inadequate sleep. In line with this, a recent study (Kottwitz et al. 2018) showed that the sleep quality of Swiss educators increased during school holidays compared with school days, while the experience of failure at work, social exclusion, and emotional dissonance were suggested to compromise educators' sleep quality.

Educators' healthy eating is of importance to education communities. Recent studies with American (Hibbs-Shipp et al. 2015) and German educators (Hoffmann et al. 2013) uniformly found that over 50% of their participants were overweight or obese. These rates are significantly higher than the global prevalence of 36.9% and 38% found in adult men and women, respectively (Ng et al. 2014). Although the role of educator stress on eating behavior was not a focus of these studies, educators nominated weight management, stress reduction, and nutritious cooking as the top three areas that required help (Hibbs-Shipp et al. 2015). Based on stress-related eating behavior found in the general population (Cotter and Kelly 2018), educator stress is expected to influence their eating behavior.

In the absence of a universally accepted definition, mindfulness is used as an umbrella term referring to a variety of

practices, processes, and characteristics (Van Dam et al. 2018). It is most commonly and operationally defined as "paying attention in a particular way: on purpose, in the present moment and nonjudgmentally" (Kabat-Zinn 1994, p. 4). Mindfulness has been studied as a stable trait (i.e., dispositional mindfulness), a temporary state that can fluctuate and be affected immediately after meditation, or a skill that can be altered through systematic training. Such training occurs through a range of experiential activities designed to cultivate regulation of attention, non-judgmental awareness of present experience, and kindness and compassion for self and others (Hwang et al. 2017). Reported effects of training educators in such activities include decreases in stress and burnout as well as increases in mindfulness and sleep quality (Flook et al. 2013; Taylor et al. 2016).

According to a recent systematic review by Tomlinson et al. (2018), dispositional mindfulness is inversely related to emotional processing and regulation (e.g., stress reactivity), psychopathological symptoms (e.g., depressive symptoms), and cognitive processes (e.g., coping strategies) in non-clinical populations. Recent research on early childhood educators showed that high levels of dispositional mindfulness are associated with higher quality relationships with students, and this association was mediated by lower levels of depressive symptoms (Becker et al. 2017). Given that the quality of the student-teacher relationship is an important determinant of student outcomes (McCormick et al. 2013; Roorda et al. 2011), the role of dispositional mindfulness on educator stress and work may have educational implications beyond educator health and well-being.

A related concept to mindfulness is self-compassion, which is often taught together with mindfulness in the context of mindfulness-based programs (MBPs). Self-compassion is acceptance of oneself when in pain and can offer an alternative to self-criticism (Germer 2009). When being confronted with personal failings, practicing mindfulness, realizing our common humanity through suffering, and nurturing self-kindness are critical for cultivating self-compassion (Neff et al. 2017). It can be developed as part of MBPs and contribute to their psychological health benefits (Germer 2009). Dispositional self-compassion can protect against self-evaluative anxiety in university students (Neff et al. 2007) and is positively associated with greater mood recovery and less self-devaluation in people with depression (Karl et al. 2018). A study with people with anxiety and depression showed that dispositional self-compassion is a stronger predictor of psychological health than mindfulness (Van Dam et al. 2011). To our knowledge, the role of dispositional self-compassion for educator stress remains to be explored. The present study aims to explore the role of dispositional mindfulness and self-compassion within the context of educator stress. Interpersonal relationships with students and a close partner are incorporated into this exploration as potential occupational and non-occupational protective and risk factors, along with symptoms of educator stress. The examination of both protective and risk factors for educator stress in this study is intended to enable exploration of links among various dimensions of educators' lives.

Method

Participants

A total of 231 educators from 21 Australian schools completed online surveys, which were used for the current analysis (Table 1). Using convenience sampling, 21 schools invited by the Departments of Education in New South Wales (nine schools) and Queensland (12 schools) participated in this study. They consisted of 12 primary schools, five special schools, three secondary schools, and one school providing both primary and secondary education. Of the 231 participants, 111 were from primary schools, 43 were from secondary schools, and 77 were from special schools. The majority of participants were female ($n = 200$, 86.6%), in a relationship ($n = 176$, 80%), and working in a teaching role ($n = 187$, 81.0%) at the time of survey completion. The remaining educators were working in roles that required interactions with students, including paraprofessionals ($n = 21$, 9.1%) and (deputy) principal positions ($n = 15$, 6.5%). The ages of participants ranged between 19 and 70 years (mean age = 42.26 years, SD = 11.76). The majority of participants were working full time ($n = 158$, 84.5%). The number of years teaching reported by educators in a teaching role ranged from less than one to 45 (mean = 13.70 years, SD = 11.27). On average, participants who were working full time in primary, secondary, and special school settings reported to work 51.95 h (SD = 11.47), 50.97 h (SD = 11.7), and 42.56 h (SD = 9.37) per week, respectively, with mean weekly work hours of 48.87 (SD = 11.66).

Procedure

Prior to data collection, ethics approval was obtained for the study from the Department of Education and Training in Queensland, the Department of Education in New South Wales, and the University's ethics committee. Information about the study was circulated within the 21 schools that confirmed their participation. Educators in these schools received a link to an online survey that contained health and well-being measures. Drop-down menus were included in the link to collect demographic (e.g., age and gender) and work-related (e.g., school setting, working hours) characteristics. A single-item question (i.e., "How satisfied are you with your work?") was used with five ordinal response options (very dissatisfied = 1; dissatisfied = 2; neutral = 3; satisfied = 4; very

Table 1 Demographic characteristics of participants

Variable	Primary school ($n = 111$)		Secondary school ($n = 43$)		Special school ($n = 77$)		Total ($n = 231$)	
	n	%	*n*	%	*n*	%	*n*	%
Gender								
Female	102	91.9%	35	81.4%	63	81.8%	200	86.6%
Male	9	8.1%	8	18.6%	14	18.2%	31	13.4%
School setting								
Primary	–	–	–	–	–	–	111	48.1%
Secondary	–	–	–	–	–	–	43	18.6%
Special	–	–	–	–	–	–	77	33.3%
State								
QLD	57	51.4%	30	69.8%	17	22.1%	104	45.0%
NSW	54	48.6%	13	30.2%	60	77.9%	127	55.0%
Age mean (SD)	43.47	(11.4)	43.06	(11.7)	44.21	(12.4)	43.64	(11.7)
Working years mean (SD)	14.99	(12.6)	12.81	(10.5)	12.33	(9.4)	13.72	(11.3)
Weekly work hours mean (SD)	51.95	(11.5)	50.97	(11.7)	42.56	(9.4)	48.87	(11.7)

satisfied = 5) to measure work satisfaction. Of the 1045 eligible staff working in the 21 Australian schools, 231 educators participated in the study, which marked a response rate of 22.1%. Participants' consent was obtained prior to the commencement of the survey.

Measures

Perceived Stress Perceived stress was measured using the Perceived Stress Scale (PSS; Cohen et al. 1983). The PSS is a validated 10-item scale measuring perceptions of stress in relation to how overwhelming or uncontrollable participants have found their lives to be over the past month. It uses a 5-point Likert scale (never = 0; almost never = 1; sometimes = 2; fairly often = 3; very often = 4) with higher scores indicating greater levels of perceived stress. A typical item example is item 1 ("In the last month, how often have you been upset because of something that happened unexpectedly?"). Principal component and reliability analyses of the PSS-10 with the current dataset supported unidimensionality of this measure with all loadings on the first principal component ranging from 0.57 to 0.80. Additionally, internal consistency was strong, with Cronbach's alpha of 0.86.

Mindfulness The Five Facet Mindfulness Questionnaire-Short Form 18 (FFMQ-SF 18; Medvedev et al. 2018) was used as a measure of mindfulness. This was developed from the FFMQ (Baer et al. 2006), which consists of 39 items examining five aspects of mindfulness: act with awareness, describe, non-judge, non-react, and observe. Items are scored on a 5-point scale (never = 1; rarely true = 2; sometimes true = 3; often true = 4; very often or always true = 5). Examples of items include "I pay attention to physical experiences, such as the wind in my hair or sun on my face" (observe facet); "I find it difficult to stay focused on what's happening in the present moment" (reversed coded item of the act with awareness facet); "I make judgments about whether my thoughts are good or bad" (reversed coded item of the non-judgmental attitude facet); "I'm good at finding words to describe my feelings" (describe facet); and "Usually when I have distressing thoughts or images I am able just to notice them without reacting" (non-react facet). Higher scores indicate higher levels of mindfulness. Cronbach's alpha for the current study was 0.85. The recent Rasch analysis of the FFMQ-18 conducted by our group with a large heterogeneous sample provided strong evidence of unidimensionality and internal validity of the FFMQ-18 as a global short measure of the mindfulness including items of the five mindfulness facets (Medvedev et al. 2018).

Self-compassion Self-Compassion Scale Short Form (SCS-SF 12; Raes et al. 2011) was used to measure self-compassion. The SCS-SF is a reliable and valid measure (Raes et al. 2011) that consists of 12 items scored on a 5-point scale, ranging from almost never = 1 to almost always = 5. Higher scores indicate higher levels of self-compassion. Principal component analysis conducted with the current dataset provided evidence of unidimensionality of the SCS with item loadings on the first principal component ranging from 0.45 to 0.77 and internal consistency Cronbach's alpha of 0.87.

Student-Teacher Relationship We used the modified short form of the Student-Teacher Relationship Scale (modified STRS; Whitaker et al. 2015), which is rated by teachers to measure their perceptions of the quality of their relationship with the collective of their classroom students. The original

STRS concerns relationships between a single student and teacher. The modifications were limited to changing "child" to "children" and verbs and modifiers accordingly (Whitaker et al. 2015). The original STRS has been widely used and has demonstrated both predictive and concurrent validities (Pianta and Stuhlman 2004). The STRS short form consists of 15 items rated on 5-point scales (definitely does not apply = 1 to definitely applies = 5) and includes two subscales: closeness (higher scores indicate perceptions of greater levels of warm relationships with students) and conflict (higher scores indicate perceptions of greater levels of conflict). An item example for closeness is "I share an affectionate, warm relationship with the children" and for conflict "The children easily become angry with me." A two-dimensional scale structure was supported in the current dataset by principal component analysis explaining 50% of variance in the data. This solution consists of the subscales closeness (8 items with loadings range 0.66–0.77; $\alpha = 0.83$) and conflict (7 items with loading range 0.34–0.73; $\alpha = 0.80$).

Experiences in Close Relationships The Experiences in Close Relationships-Revision Scale (ECR-R; Fraley et al. 2000) was used as a measure of adult attachment style. The ECR-R has demonstrated acceptable reliability and validity (Sibley et al. 2005). The ECR-R consists of 36 items forming two subscales: avoidance (18 items; discomfort with intimacy) and anxiety (18 items; fear of rejection), rated on a 7-point rating scale (1 strongly disagree to 7 strongly agree). Higher scores indicate higher self-reported levels of attachment-related avoidance and anxiety. An example avoidance item is "I find it difficult to allow myself to depend on romantic partners" and an example of an anxiety item is "I worry a lot about my relationships." A two-dimensional factor structure was confirmed with the study dataset using principal component analysis, which explained about 58% of variance. Item loadings for avoidance ranged between 0.44 and 0.87 ($\alpha = 0.94$) and for anxiety between 0.24 and 0.89 ($\alpha = 0.95$).

Sleep Quality The Pittsburgh Sleep Quality Index (PSQI; Buysse et al. 1989) measures self-reported sleep quality estimated over a 1-month time period. It has been found to be a reliable and valid tool in assessing sleep problems (Grandner et al. 2006). The PSQI consists of 19 items, which first create 7 component scores and then a total score. Lower scores indicate better sleep quality. An item example is "During the past month, how would you rate your sleep quality overall?" with the following response options: very good = 0, fairly good = 1, fairly bad = 2, and very bad = 3. Unidimensionality of the PSQI was supported in the current dataset by principal component analysis. All loadings on the first principal component ranged from 0.40 to 0.81, and Cronbach's alpha was 0.74.

Eating Behavior The Three Factor Eating Questionnaire (TFEQ-R18; Karlsson et al. 2000) measures three aspects of eating-related behavior: uncontrolled eating ($\alpha = 0.93$, 9 items), emotional eating ($\alpha = 0.90$, 3 items), and cognitive restraint of eating ($\alpha = 0.69$, 6 items). The majority of items are scored on a 4-point scale (ranging from definitely false = 1 to mostly true = 4). Higher scores indicate higher levels of the unhealthy eating behavior. An item example to measure emotional eating is "When I feel blue, I often overeat" and to measure cognitive restraint "I consciously hold back at meals in order not to gain weight." There is evidence supporting construct validity of the TFEQ-R18 (Anglé et al. 2009) and its ability to distinguish different eating patterns within a sample (de Lauzon et al. 2004). We tested the factor structure of the TFEQ with the current sample and found the best fit for the two-factor structure explaining 58% of variance in the data including uncontrolled/emotional eating (12 items with factor loadings range 0.58–0.87) and cognitive restraint (6 items with factor loadings ranging from 0.48 to 0.78).

Data Analyses

Data were analyzed using IBM SPSS v.24. Data were missing completely at random as indicated by Little's (1988) MCAR tests. Overall missing data were approximately 1% and imputation of missing values was deemed unnecessary (Cheema 2014). Correlational analyses were used to evaluate relationships between all study variables and determine the strongest and weakest relationships to inform a subsequent regression analysis. Multiple linear regression analysis was used to explore to what extent educators' perceived stress (i.e., outcome variable) is predicted by study variables. We controlled for effects of demographic and work-related variables, including age, career stage, sex, school setting (we created dummy variables for special and secondary school settings), and job satisfaction. These variables were entered in the regression model in the first step (model 1, Table 3).

In the following step (models 2–6, Table 3), variables of mindfulness, self-compassion, student-teacher relationship, experience in close relationship, sleeping, and eating were entered together using a stepwise approach. The advantage of a stepwise approach is identification of the most relevant predictors because it extracts the strongest significant predictor and controls for its effect before extracting the next strongest predictor, until no significant predictors remain. Tests conducted prior to the analysis indicated that all study variables met the assumptions for multiple regression, with no evidence of multicollinearity as indicated by a variance inflating factor below the cut-off point of 5. We present values of R^2 and R^2 change, where R^2 of 0.02 is conventionally defined as small, 0.15 as medium, and 0.26 as large (Cohen 1988).

A subsequent path analysis was conducted as a follow-up analysis in order to assist in the development of theoretical

models explaining the relationships between the variables under investigation. This analysis used the software AMOS v. 24 and treated subscale scores as manifest variables. Due to the limited sample size and potential for some of the ordinal scales to show evidence of deviations from normality, standardized regression weights were estimated using asymptotically distribution free bootstrapping (Nevitt and Hancock 2001). Informed by these results, a model was created that tested to what extent variables expressing external or dispositional factors predicted perceived stress, which in turn functioned as a mediator with relevant outcome variables.

Results

Table 2 presents correlations among all study variables. The strongest positive correlations were found between perceived stress and measures of dispositional self-compassion and mindfulness. Perceived stress showed moderate positive correlations with difficult relationships with students (i.e., conflict) and close partners (i.e., avoidance and anxiety), poor sleep quality, and unhealthy eating patterns triggered by a lack of self-control and excessive emotionality. No significant correlation was found between perceived stress and cognitively restrained eating. Dispositional mindfulness and self-compassion were positively correlated with each other. They were positively associated with job satisfaction and closeness in student-teacher relationship. They were negatively correlated with conflict in student-teacher relationship, avoidance and anxiety experienced in close relationship, poor sleep quality, and emotional and uncontrolled eating behaviors.

Table 3 presents results of a regression analysis, with perceived stress as the outcome variable. The first regression model had demographic and work-related variables as predictors. Of these, only age ($\beta = -0.25$) and job satisfaction ($\beta = -0.22$) were significant predictors of perceived stress, which together explained 12.3% of variance in perceived stress scores, with a moderate effect size. Being older and having higher job satisfaction equally predicted lower levels of perceived stress.

After controlling for demographic and work-related variables, dispositional self-compassion emerged as the strongest significant predictor of lower stress levels among educators, explaining 34% of variance in perceived stress scores (model 2, Table 3). Dispositional mindfulness was the next strongest protective predictor (i.e., predicting lower levels of perceived stress) that was extracted after controlling for dispositional self-compassion, age, and job satisfaction. It explained an additional 5.3% of variance in perceived stress (model 3). The next significant predictor was poor sleep quality, which was extracted after controlling for the protective predictors included in the previous three models and which accounted for a further 3.6% of variance in perceived stress (model 4). Poor sleep quality is a risk predictor (i.e., predicting higher levels of perceived stress) contributing to perceived stress, but its effect size after controlling for the previously identified protective predictors is relatively small. Conflict in student-teacher relationship was the next significant risk predictor extracted after controlling for the previous predictors (model 5). It explained a lower amount of variance (i.e., 2.6%) in perceived stress, compared with sleep quality. The weakest significant risk predictor of perceived stress was anxiety in close relationships, which explained only 1.5% of variance in perceived stress

Table 2 Correlations between the main measures used in the study ($n = 231$)

	Perceived stress	STRS close	STRS Con	ECR-R Avo	ECR-R Anx	SCS-SF	FFMQ-18	PSQI	TFEQ-R18 UE	TFEQ-R18 EE
STRS Close	−0.189**									
STRS Con	0.378**	−0.428**								
ECR-R Avo	0.318**	−0.244**	0.141*							
ECR-R Anx	0.475**	−0.170*	0.266**	0.548**						
SCS-SF	−0.668**	0.109	−0.258**	−0.332**	−0.412**					
FFMQ-18	−0.658**	0.196**	−0.312**	−0.396**	−0.446**	0.727**				
PSQI	0.427**	0.005	0.182**	0.242**	0.290**	−0.352**	−0.313**			
TFEQ-R18 UE	0.258**	0.001	0.136*	0.130	0.260**	−0.346**	−0.346**	0.131*		
TFEQ-R18 EE	0.320**	0.027	0.132*	0.118	0.285**	−0.398**	−0.329**	0.212**	0.785**	
TFEQ-R18 CR	0.058	0.125	−0.103	−0.051	0.032	−0.001	0.108	0.064	−0.144*	−0.084

STRS, Student-Teacher Relationship Scale; *Close*, closeness; *Con*, conflict; *ECR-R*, Experiences in Close Relationships-Revision Scale; *Avo*, avoidance; *Anx*, anxiety; *SCS-SF*, Self-Compassion Scale Short Form; *FFMQ-18*, Five Facet Mindfulness Questionnaire-18; *PSQI*, Pittsburgh Sleep Quality Index; *TFEQ-R18*, Three Factor Eating Questionnaire Revised 18; *UE*, uncontrolled eating; *EE*, emotional eating; *CR*, cognitive restraint; *$p < 0.05$; **$p < 0.01$

Table 3 Summary of multiple linear regression analysis for variables predicting perceived stress in teachers ($n = 215$)

Perceived stress	*B*	*SE*	β	*R*	R^2	R^2 change	*p*
Model 1				0.351	0.123	0.123	0.000
Sex	− 0.320	1.085	− 0.020				0.769
Age	− 0.118	0.036	− 0.253				0.001
Career stage	− 0.559	0.997	− 0.044				0.576
School setting							
Special	− 1.008	0.806	− 0.088				0.212
Secondary	− 1.734	0.999	− 0.121				0.084
Job satisfaction	− 1.286	0.377	− 0.224				0.001
Model 2				0.681	0.464	0.340	0.000
Self-compassion	− 5.078	0.443	− 0.635				0.000
Model 3				0.719	0.517	0.053	0.000
Mindfulness	− 0.214	0.045	− 0.345				0.000
Model 4				0.744	0.554	0.036	0.000
Sleep quality	0.316	0.077	0.213				0.000
Model 5				0.761	0.579	0.026	0.001
STRS conflict	1.444	0.41	0.184				0.001
Model 6				0.771	0.594	0.015	0.006
ECR anxiety	0.571	0.207	0.144				0.006

B, unstandardized beta; *SE*, standard error; β, standardized beta; *R*, multiple correlation coefficient; *p* value < 0.05 indicates a statistically significant effect

after accounting for the predictors extracted in the previous five models. Its effect size is very small.

Directly informed by the preceding analysis, path analyses were conducted separately for dispositional mindfulness and self-compassion as predictor variables (Figs. 1 and 2, respectively). Due to the lack of an association between conflict in student-teacher relationship and poor sleep quality, conflict in student-teacher relationship was not included in these models. In the first model (Fig. 1), dispositional mindfulness ($\beta = -0.25$) and anxiety in close relationships ($\beta = 0.19$) directly predicted poor sleep quality. These associations were no longer significant when perceived stress was added as a mediator, which can be interpreted as evidence for full mediation. When self-compassion was used instead of dispositional mindfulness, results were similar (Fig. 2). Using the cut-off criteria of CFI > 0.950 and RMSEA < 0.060 (Hu and Bentler 1998), there was evidence for excellent fit for the model shown in Fig. 1 (CFI = 0.995, RMSEA = 0.052) as well as the model shown in Fig. 2 (CFI = 0.988, RMSEA = 0.079).

Discussion

The present study explored the role of dispositional mindfulness and self-compassion within the context of educator stress. The findings with 231 educators identified multiple predictors of perceived stress, with dispositional self-compassion and mindfulness as the strongest significant predictors. The study also found that lower levels of dispositional mindfulness and higher levels of anxiety in close relationships were associated with poor sleep quality, and this association was mediated by higher levels of perceived stress. The same potential pathways were suggested with self-compassion replacing dispositional mindfulness.

Consistent with prior research with non-clinical populations (e.g., Tomlinson et al. 2018), educators with higher levels of dispositional mindfulness and self-compassion showed lower levels of perceived stress. Perceived stress was positively associated with sleeping problems, which is in line with recent studies suggesting adverse effects of educator stress on sleeping (Fujishiro et al. 2017; Kottwitz et al. 2018). Perceived stress was also positively associated with unhealthy eating patterns (i.e., uncontrolled and emotional eating), and this association may explain why rates of overweight and obesity higher than global prevalence were reported for educators (Hibbs-Shipp et al. 2015; Hoffmann et al. 2013).

In support of the interplay between work stress and home stress (Cinamon et al. 2007; Thomas et al. 2003), especially the detrimental effects of conflict-ridden relationships with students (i.e., work stress) on the quality of the relationship with an intimate partner (Bakker et al. 2012), findings of the present study showed small positive correlations between conflict in relationships with students and anxiety in relationships with an intimate partner. Small correlations between higher levels of positive relationships with students (i.e., closeness)

and lower levels of avoidance in relationships with an intimate partner extend prior research that suggested positive relationships with students as a resource for educator emotion and interpersonal relationships (Milatz et al. 2015). Given that educators perceive intimate partners as the greatest source of support to deal with stress at school (Riley 2017), interactions between relational strain arising at work and home warrant attention and call for further investigation.

In line with previous findings (e.g., Antoniou et al. 2006; Reilly et al. 2014), demographic and work-related factors, being older and having higher levels of job satisfaction, predicted lower levels of perceived stress. As detrimental effects of interpersonal conflict in the classroom on educator emotion have been documented in previous studies (e.g., Spilt and Koomen 2009; Tsouloupas et al. 2010), this is not a new finding. This association was further explored in a recent study with early childhood educators (Becker et al. 2017), which found that educators with greater dispositional mindfulness reported lower levels of interpersonal conflict in the classroom, and this association was partially mediated by lower levels of depressive symptoms.

Of the above associates, self-compassion was the strongest predictor of lower educator stress, followed by dispositional mindfulness, age, and job satisfaction. The amount of variance in perceived stress explained by self-compassion and mindfulness is almost five times larger than that of combined variance explained by all significant risk predictors, which are poor sleep quality, conflict in student-teacher relationship, and anxiety in close relationship. Compared with dispositional mindfulness, self-compassion was considerably better at predicting perceived stress in teachers, accounting for six times more variance in perceived stress than in mindfulness.

According to the path analyses, dispositional mindfulness and self-compassion, however, were almost comparable in their predictive ability of perceived stress and showed the same potential pathways. Higher levels of dispositional mindfulness and lower levels of anxiety experienced in close relationships were associated with better sleep quality, and these associations were fully mediated by lower levels of perceived stress. The same potential pathways were suggested with self-compassion replacing dispositional mindfulness, which indicate dispositional mindfulness, and self-compassion may measure similar constructs. The findings of the present path analyses are inconsistent with prior research that documented self-compassion explaining ten times more unique variance in anxious depressive symptoms than in mindfulness in a large community sample (Van Dam et al. 2011). Inconsistent findings noted above call for further investigation to examine the predictive ability of both dispositional mindfulness and self-compassion for educator stress.

In summary, more mindful educators and less relationally anxious educators had less perceived stressful experience and better sleep quality. Similarly, more self-compassionate educators and less relationally anxious educators had less perceived stressful experience and better sleep quality. Within the model of educator stress (Kyriacou and Sutcliffe 1978), dispositional mindfulness and self-compassion, as stable traits of individual characteristics, may influence an appraisal process by altering perceptions about potential stressors. Non-judgmental awareness of present experience and acceptance of oneself when in pain, for example, may prevent stressors from becoming actual stress. If educators with greater dispositional self-compassion and mindfulness appraise potential stressors as non-threatening, their coping may not need to occur. Alternatively, dispositional self-compassion and mindfulness may function as coping strategies. It is possible that returning to the present-moment experience instead of being lost in painful thoughts, and nurturing self-kindness when being confronted with personal failings make difficult circumstances more favorable.

The research implications of this study concern the development of factors that are negatively associated with greater perceived stress and the reduction of factors that are positively associated with greater perceived stress. Some factors (e.g., age) obviously cannot be altered, while others can. Recent mindfulness-based intervention studies for educators reported increases in mindfulness and self-compassion as well as reductions in stress (Flook et al. 2013; Taylor et al. 2016). This indicates that not only mindfulness and self-compassion, but also educator stress can be changed. Future MBPs for educators may investigate how the enhancement of mindfulness and self-compassion changes stress processing, especially stress appraisal (i.e., views) and stress coping (i.e., views and actions). As the predictive ability of dispositional self-compassion for perceived stress slightly exceeds that of dispositional mindfulness, future research should examine if

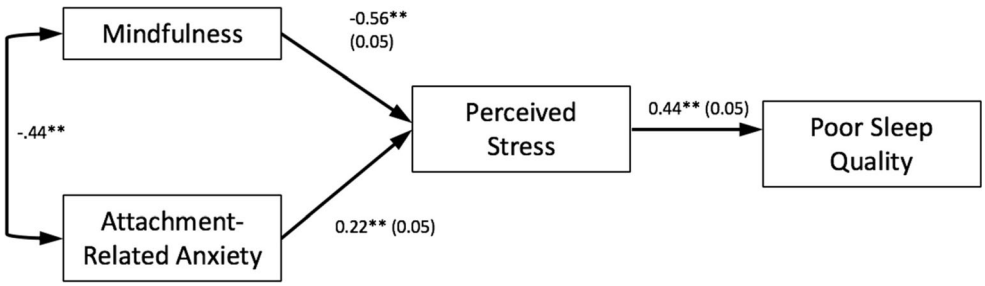

Fig. 1 Path analysis showing perceived stress mediating the associations between mindfulness and poor sleep quality as well as attachment-related anxiety and poor sleep quality. Values in parentheses for directional paths are standard errors. $^{**}p < 0.01$

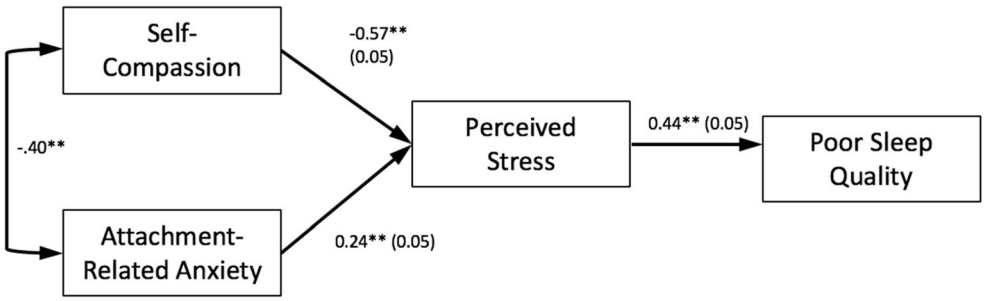

Fig. 2 Path analysis showing perceived stress mediating the associations between self-compassion and poor sleep quality as well as attachment-related anxiety and poor sleep quality. Values in parentheses for directional paths are standard errors. $^{**}p < 0.01$

intervention effects might be increased through the promotion of self-compassion in existing mindfulness-based programs.

Limitations and Suggestions for Future Research

Cross-sectional data were analyzed meaning that conclusions about causality cannot be claimed between the study variables concerning educator stress. The scope of the variables identified as critical for educator stress is largely at the individual level. However, educator stress is also influenced by environmental and societal conditions and has ramifications for the wider society. Therefore, environmental and societal conditions need to be taken into consideration in future research. Like any survey-based studies, this study relied on self-report. Existing studies on educator stress noted the limitations of self-reports, such as social desirability and biases in the likelihood of recalling particular experiences (Moè 2016). This limitation can be addressed in the future by use of both subjective and objective data. Despite the relatively small sample size, path analyses were adopted to explore complex relationships within educator stress. Caution is required when interpreting these exploratory findings. Future research needs to include a larger sample with longitudinal data to fully address the complexity of educator stress and the role of dispositional mindfulness and self-compassion.

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Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants.

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