Volume One – Research Component:

UNDERSTANDING AND ADDRESSING STRESS AND WELLBEING IN SCHOOL TEACHERS

by

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Thesis Overview

This thesis is presented in two volumes: the research (Volume One) and clinical (Volume Two) components. Volume One presents three research papers focusing on understanding and addressing stress and wellbeing in school teachers. The first paper is a meta-analysis of mindfulness interventions for teacher wellbeing. The second is an empirical study examining the role of the teacher-student relationship in teachers' emotional responses to student behaviour. The third is a report written to disseminate the research findings to teachers and teacher training organisations.

Volume two consists of five clinical practice reports (CPRs). CPR One presents two formulations (using cognitive-behavioural and psychodynamic models) of a 48-year-old man presenting with symptoms of low mood. CPR Two is an evaluation of therapy drop-out in a primary care talking therapy service. CPR Three describes a single case experiment evaluating a positive-behaviour-support intervention for a 78-year-old man diagnosed with dementia. CPR Four presents the assessment, integrative formulation and intervention conducted with an 18-year-old woman with a diagnosis of a mild learning disability, who was behaving in ways that her mother found challenging. The abstract of CPR 5 – an oral case presentation of an 11-year-old boy with a diagnosis of obsessive compulsive disorder – is also included.

For

Sophie

Acknowledgements

I am indebted to Dr Gary Law and Dr Ruth Butterworth, who supervised the research presented in Volume One of this thesis. Their combined patience, creative thinking and pragmatism have helped to motivate and contain me throughout the process. Ruth and Gary have also provided invaluable support in other aspects of my clinical training. Without Gary's calming presence and Ruth's ability to say exactly the right thing at the right time, I know that the road would have been a lot more bumpy. Thank you both.

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Chapter One – Literature Review:

A systematic review and meta-analysis of mindfulness interventions for teacher wellbeing

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Submitted for publication to Mindfulness.

A systematic review and meta-analysis of mindfulness interventions for teacher wellbeing

Abstract

Background. School teachers experience significant levels of occupational stress, with multiple deleterious effects. In recent years there has been growing interest in improving the wellbeing of school teachers using mindfulness-based interventions (MBIs). This review is the first meta-analysis of randomised controlled trials of MBIs for school teachers.

Methodology. Systematic searches were conducted in six databases in October 2015. Seventeen studies reporting results of a trial of an MBI for teachers, using a non-active wait-list control and measuring wellbeing outcomes of stress, burnout, anxiety and depression were identified for review. Twelve used randomisation procedures and were included in the meta-analysis. Methodological quality was rated against published criteria.

Results. The overall treatment effect was Cohen's d = 0.31 [95% CI = 0.02, 0.61], ranging from d = 0.30 to 0.55 for individual outcomes. A subgroup analysis was conducted based on intervention-type. The overall treatment effect for MBIs using open-meditation approaches was d = 0.58 [95% CI = 0.24, 0.93], ranging from d = 0.69 to 0.87 for individual outcomes. For MBIs using focused-meditation and acceptance and commitment therapy approaches, effects were less consistent and smaller.

Discussion. The evaluation of MBIs for improving teacher wellbeing is a nascent field of enquiry, with a small number of mixed quality trials. Issues with sampling bias were common. However, the consistency of positive findings, particularly for open-meditation MBIs, indicates that this may be a promising approach for improving teacher wellbeing.

Introduction

It is widely recognised that education is a stressful profession. Teaching is ranked amongst the most stressful occupations in terms of physical and psychological wellbeing (Health and Safety Executive, 2013; Johnson et al., 2005), resulting in a range of negative outcomes. A number of survey studies have suggested that, internationally, increasing turnover in the profession is due in large part to the effects of job stress (Aud et al., 2011; Ingersoll, 2001; Jackson, Schwab & Schuler, 1986; teachersupport.info, 2014). There is some indication that teaching quality is affected for stressed teachers (Blas, 1986) and that their students also experience anxiety (Sinclair & Ryan, 1987).

Occupational stress is often understood in terms of the relationship between the sources (*stress*) and impact (*strain*) of workplace demands (Jex & Beehr, 1991). Research has demonstrated a significant emotional strain of job stress for teachers. Rates of anxiety and depression are higher in teachers than in the general population (teachersupport.info, 2014). Further, teachers have been found to experience high levels of burnout (Hakanen, Bakker & Schaufeli, 2006) – a multifaceted construct that includes emotional exhaustion, depersonalisation of others and a sense of reduced personal accomplishment (Maslach, 1982).

A wide range of interventions have been developed for reducing occupational stress. In a meta-analysis of thirty-six occupational stress management intervention studies, Richardson and Rothstein (2008) concluded that cognitive-behavioural interventions were the most effective in reducing distress over an average of 7.4 weeks. Relaxation interventions were the most prevalent. Specifically for teachers there has been little systematic research into interventions for improving emotional wellbeing. Richardson & Rothstein (2008) identified only four studies that focused on stress management for teachers, all of which were published before 1990. These studies evaluated different interventions, including stress-inoculation, a "holistic support programme", relaxation and classroom management skills training.

Mindfulness. Recently there has been a growing interest in the potential of mindfulness-based interventions (MBIs) for improving emotional wellbeing in school teachers (Meiklejohn et al., 2010). Mindfulness has been defined as the self-regulation of attention, accompanied by an attitude of acceptance (Bishop et al., 2004). MBIs are effective at reducing distress and improving wellbeing for a variety of clinical and non-clinical populations (see Hofmann, Sawyer, Witt & Oh, 2010; Khoury, Sharma, Rush & Fournier, 2015, for reviews). A range of explanations has been offered for the efficacy of mindfulness practice in improving emotional wellbeing, including increased meta-cognitive awareness and cognitive flexibility (Shapiro, Carlson, Astin & Freedman, 2006). A prevailing view is that mindfulness "may promote the ability to be more aware of automatic emotional reactivity, promoting the ability to have greater control over one's responses" (Jennings & Greenberg, 2009, p.511).

There is debate in the literature as to what constitutes an MBI. Focused meditation practices ('focused-meditation'; FM) involve focusing attention on a chosen external object, thought or sound, such as a mantra. The focus of meditation in open-awareness meditation ('open-meditation'; OM) is not directed solely towards one object, but rather is open to the entire content of awareness. Open-meditation often includes focal points such as the breath or the body, but in such a way that other aspects of experience are also attended to when they arise, with an attitude of acceptance and compassion. Recent reviews have considered OM as categorically different to FM (e.g. Kallapiran, Koo, Kirubakarn & Hancock, 2015; Zoogman, Goldberg, Hoyt & Miller, 2014). However, there has been a move towards reconceptualising meditative practices such that OM and FM are no longer considered to be categorically oppositional, but are instead different dimensions of mindfulness meditation (see Chiesa & Malinowski, 2011). Both OM and FM fit Bishop's (2004) definition of mindfulness as the self-regulation of attention with an attitude of acceptance.

Similarly, there is disagreement over the categorisation of multicomponent interventions such as acceptance and commitment therapy (ACT; Hayes, Strosahl & Wilson, 1994) as MBIs. ACT is a structured intervention that integrates acceptance, mindfulness and values-based behaviour change strategies (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). While some MBI reviews include ACT intervention studies (Chiesa & Malinowski, 2011; Kallapiran et al., 2015; Simkin & Black, 2014), others exclude them (Zoogman, Goldberg, Hoyt, & Miller, 2014).

Mindfulness in education. MBIs have been shown to be examples of evidence-based therapy for children and adolescents (Kallapiran et al., 2015; Zenner, Herrnleben-Kurz & Walach, 2014), reflecting a move to integrate mindfulness into educational settings (Meiklejohn et al., 2010). Increasingly, school teachers are being encouraged to engage in MBIs with multiple aims, including dissemination of mindfulness practice to students, improvement of classroom management and teacher-student relationships, and improvements in teacher wellbeing through improved emotional resilience (Albrecht, Albrecht & Cohen, 2012; Crane, Kuyken, Hastings, Rothwell & Williams, 2010; Jennings & Greenberg, 2009; Roeser, Skinner, Beers & Jennings, 2012).

Self-reported mindfulness has been found to be associated with fewer symptoms of burnout in school teachers (Abenavoli, Jennings, Greenberg, Harris & Katz, 2013). A recent report from the Mindfulness in Schools project (MiSP; Weare, 2014) reviewed the impact of open-awareness MBIs for school teachers in thirteen studies with multiple study-designs. The report concluded that participation in an MBI led to reduced stress, increased compassion, and improvements in mental and physical health, cognitive functioning and job performance.

The present review aims to extend the MiSP report by considering a broader range of MBIs (including focused-concentrative meditation and ACT-based interventions), assessing the methodological quality of studies, and using meta-analysis to consolidate the research

findings. The use of meta-analysis further offers an external criterion of efficacy, reducing the potential of bias in the review. The present review includes controlled trials only, as these carry most weight when evaluating whether a particular therapy is 'empirically supported' (Chambless & Hollon, 1998). Further, this review focuses only on mental health and wellbeing outcomes, essentially evaluating MBIs as a potential occupational stress management intervention for school teachers.

Method

Studies included in this review were controlled trials of an MBI implemented in an educational setting, reporting quantitative outcomes of mental health and/or wellbeing for teachers and other school staff. Mindfulness was defined as the self-regulation of attention, accompanied by an attitude of acceptance (Bishop et al., 2004).

Search strategy. The present review aimed to examine the evidence from intervention studies. In addition to peer-reviewed studies, 'grey literature' (e.g. unpublished doctoral theses) was included to reduce the impact of publication bias (Higgins & Green, 2011; chapter 10.3.2; Smith, 2006). There has been some suggestion that trials with statistically significant results are more likely to be published in English language journals (Egger et al., 1997). Therefore, to further reduce bias in identifying relevant studies, articles in languages other than English were included in this review[1].

A literature search was conducted using the Psycinfo, MEDLINE, Embase, Social Policy and Practice databases, as well as the ERIC and Proquest UK and Global dissertation databases (accessed through Proquest). The search was limited to studies published after

[1] Three Spanish-language articles were identified in the final sample of included studies. These articles were translated by a Clinical Psychology doctoral researcher whose first language was Spanish.

1970, due to database restrictions. Keyword and subject-heading strategies were used. Subject-headings were exploded and also included as unqualified keyword searches. All search terms within three topics (Teachers, Stress, Mindfulness; see Table 1.1) were combined, before combining the three topic searches, resulting in 406 papers.

Table 1.1

Subject Heading and Keyword search terms used in literature search.

Search	Topic	Subject Headings	Keywords
1	Teachers	Teachers (Psycinfo, MEDLINE, Embase)	Educator* Schoolteacher Teach*
2	Stress	Stress (Psycinfo, MEDLINE, Embase) Anxiety (Psycinfo, MEDLINE, Embase) Depression (MEDLINE, Embase) Depression (Emotion) (Psycinfo) Distress (Psycinfo) Burnout (MEDLINE, Embase) Mental health (MEDLINE, Embase) Wellbeing (Embase)	Anx* Burnout Depress* Distress* Exhaust* Mental Health Wellbeing Stress*
3	Mindfulness	Mindfulness (Psycinfo, MEDLINE, Embase) Meditation (Psycinfo, MEDLINE) Acceptance and commitment therapy (Psycinfo, MEDLINE)	Acceptance and commitment therapy MBCT MBSR Mediatat* Mindful*

Notes: The search was conducted on 7th October 2015. Subject heading searches were database specific (in parentheses); keyword searches were conducted across all databases.

Inclusion/exclusion criteria. Best practice guidance in meta-analysis recommends that randomised controlled trials (RCTs) should not be analysed with non-randomised trials, due to the risk of selection bias in non-randomised trials (Higgins & Green, 2011; Chapter 13.2.1.1). However, it has been argued that non-randomised trials give valuable evidence of intervention efficacy (Ioannidis et al., 2001) and warrant consideration, particularly when the number of published trials is small. Consequently, although non-randomised trials were not included in the statistical meta-analysis, they were included in the present search and summarised in the narrative overview of the literature, with consideration for the degree of convergence with the randomised trials.

Exclusion criteria were applied to the identified 406 articles. The order of these exclusions (dependent on the filters available in the databases) is presented in Figure 1.1. A list of excluded intervention studies is presented in Appendix One. Studies were excluded if they reported results previously published elsewhere. Where overlap of reported data was identified between peer reviewed journal articles and unpublished theses, the thesis was excluded. Further studies were excluded where no control condition was used (n = 1), where mindfulness meditation comprised only a minor aspect of a multi-component intervention (n = 2)[2], and where only qualitative results were reported (n = 9) or data were reported in a form not suitable for meta-analysis (n = 5). Given that this is the first systematic review of MBIs in a teaching population, and that comparison with other active interventions would reduce the estimation of MBI efficacy, studies using an active control condition were excluded (n = 4).

[2] In one study (Bertoch Nielsen, Curley & Borg, 1989), mindfulness meditation was the focus of one week of a 12-week intervention. In another (Stuck, Rigotti & Mohr, 2004), mindfulness meditation comprised roughly one sixth of each session, with autogenic training and psychoeducation forming the majority of the intervention.

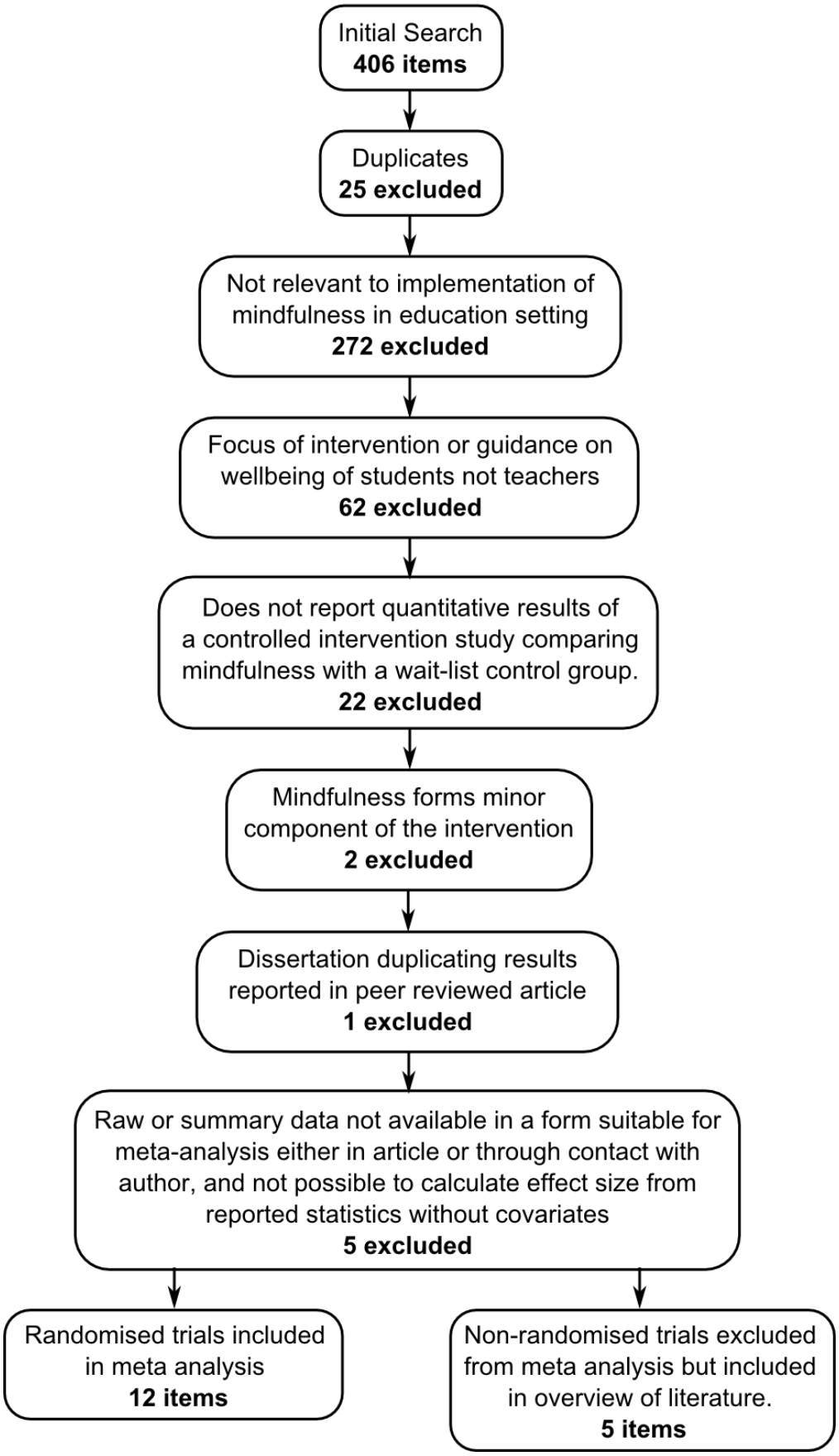


Figure 1.1. Criteria and procedure for exclusion of items returned by initial search.

Coding. Studies were coded for outcomes and intervention by the author, a doctoral researcher. Outcome measures were categorised into one of four outcome classes; Stress, Burnout, Anxiety and Depression. Anxiety outcome measures were categorised into two sub-classes (Trait and State). Interventions were categorised as using Focused-Meditation (focusing attention on an external or artificial stimulus such as a mantra), Open-Meditation (focusing attention on internal, naturally occurring experiences as they arise) and ACT (combining open-meditation techniques with a focus on personal values).

Quality of the identified trials was coded using Downs and Black's (1998) controlled trial quality criteria. Across 16 items, different features of study quality were scored as 0 or 1, and were summed to give a total score out of 16 with subscale scores for External Validity (three items), Internal Validity (seven items) and Selection Bias (six items). The Reporting subscale was not used because these items do not reflect the quality of the trial. As the statistical models used in the present meta-analysis (see below) weight the effect size of individual studies as a function of sample size, the Power subscale of the Downs and Black criteria was not used in the present review. Following the guidance of Johnson & Eagly (2014), it was decided not to a-priori penalise unpublished studies when rating study quality, instead rating these studies on the same criteria.

Four studies were selected at random and independently rated for quality by another researcher using the Downs and Black criteria. Interrater reliability analysis was conducted using intra-class correlations (ICC; two-way random model using agreement method and single measures). Indicating a satisfactory level of reliability and independence from bias in quality ratings (cf. Cicchetti & Sparrow, 1981), interrater reliability was high for individual subscales: External Validity, ICC = 1.0 (i.e. identical ratings), Internal Validity, ICC = .63, and Selection Bias, ICC = .92, and for the scale total, ICC = .78. Discrepancies were resolved through discussion between the raters.

Data analysis.

Data extraction. For studies included in the meta-analysis, Cohen's *d* effect size (and standard error of *d*) was calculated for each eligible outcome measure. Where possible, this was done using end-of-intervention scores (means, standard deviations and sample sizes for intervention and control groups), and change-from-baseline scores where these were not available (cf. Higgins & Green, 2011; chapter 9.4.5.2).

Effect size aggregation. The mean number of outcome measures used per study was 5 (range = 1 – 10). Of these, there was a mean of 2 eligible outcomes measured per study (range = 1 – 4). Therefore, there were a number of studies where aggregation of effect sizes was required (after Borenstein, Hedges, Higgins & Rothstein, 2009) to produce one effect size per outcome class. One study (Jeffcoat & Hayes, 2012) reported outcomes separately for different subgroups of the sample. In two studies (Anderson, Levinson, Barker & Kiewra, 1999; Hirss, 1988), two of the outcomes measured were of the same class (trait and state anxiety). A correlation of r = .71 was assumed between measures of state and trait anxiety, based on published values (Grös, Antony, Simms & McCabe, 2007; Mojgan, Kadir & Soheil 2011). In five studies (Anderson et al., 1999; Elder et al., 2014; Flook et al., 2013; Jennings et al., 2013; Lantieri et al., 2011), only subscale scores of the Maslch Burnout Inventory (MasBI) were reported. Assumed correlations between subscales of the MasBI are shown in Table 1.2, based on published values (Enzmann, Schaufeli & Girault, 1995; Enzmann, Schaufeli, Janssen & Rozeman, 1998; Hu & Schaufeli, 2009; Poghosyan, Aiken & Sloane, 2009; Richardsen & Martinussen, 2004; Rostami, Abedi, Schaufeli, Ahmadi & Sadeghi, 2013; Schutte, Toppinen, Kalimo & Schaufeli, 2000; Taris, Schreurs & Schaufeli, 2005, 1999).

Table 1.2

Assumed correlations between MasBI subscales.

	1	2
1. Emotional exhaustion		
2. Depersonalisation	**.57** (.27 – .87)	
3. Personal accomplishment	**.30** (.05 – .55)	**.22** (.01 – .43)

Notes: Numbers in parentheses indicate range of values in published studies. Mid-points (in bold text) were used in analysis.

In addition, a composite outcome was created for each study following Borenstein et al. (2009), aggregating across all available main outcomes. Assumed correlations between the outcomes are shown in Table 1.3, based on published values (Ahola, Hakanen, Perhoniemi & Mutanen, 2014; Bianchi, Boffy, Hingray, Truchot & Laurent, 2013; Campos & Maroco, 2012; Creswell & Eklund, 2006; Hewitt, Flet & Mosher, 1992; Lee, 2012; Rostami, Abedi, Schaufeli, Ahmadi & Sadeghi, 2013; Truzzi et al., 2008; Wampold et al., 1997).

Table 1.3

Assumed correlations between outcome classes.

	1	2	3
1. Stress			
2. Burnout	**.37** (.25 – .49)		
3. Anxiety	**.49** (.18 – .8)	**.33** (.14 – .52)	
4. Depression	**.49** (.22 – .76)	**.48** (.21 – .74)	**.50**

Notes: Numbers in parentheses indicate range of values in published studies. Mid-points (in bold text) were used in analysis. For depression/anxiety, see Wampold et al. (1997).

Analytic approach. A separate meta-analysis was conducted for each outcome (stress, burnout, anxiety, depression and the composite outcome described above), using MetaXL 2.0 (Barendregt & Doi, 2011). Summary effect sizes and 95% confidence intervals (CI) were calculated for each outcome class using the random effects (RE) model[3]. This model assumes that observed study effect sizes vary due to underlying between-study differences in the true effect as well as sampling error. The summary effect is calculated as the mean of weighted study effect sizes, where study weighting is a combination of within-study variance and a between-study random effects variance component (REVC). The REVC was calculated using the DerSimonian & Laird (1986) approach.

Another meta-analytic model, the quality effect (QE) model (Doi, Barendregt, Khan, Thalib & Williams, 2015a) assumes that a degree of heterogeneity in effect sizes is attributable to variation in the methodological quality of studies. The QE model is more conservative than the RE model, and produces wider confidence intervals. Therefore, where a significant RE effect was identified, QE confidence intervals were also calculated in order to examine whether the significant RE result was robust to variation in methodological quality as identified using the Downs and Black (1998) criteria.

Summary effects were interpreted using Cohen's rule of thumb, where 0.2 = small, 0.5 = medium and 0.8 = large (Cohen, 1988). Heterogeneity in the study effects was quantified using Higgins' I^2 (indicating the proportion of heterogeneity reflecting real variation in true effect size relative to within-study error), with values of 25%, 50% and 75% indicating low, medium and high levels (Higgins, Thompson, Deeks & Altman, 2003). Cochran's Q was examined to test whether hetereogeneity was greater than expected by chance.

[3] In the results, positive effects favour intervention. Where an effect favours control, this will be noted.

Where significant heterogeneity was indicated, two subsequent analyses were conducted. Firstly, the impact of individual trials on the summary effect size was evaluated by sequential removal of trials that evidence the largest effect (Bax, Yu, Ikeda, Tsuruta & Moons, 2006). Secondly, a subgroup analysis was conducted, evaluating the statistical significance of the variance in subgroup mean effects around the grand mean effect ($Q_{Between}$). Studies were grouped by intervention type (focused- vs open-meditation vs acceptance and commitment therapy; see narrative overview, below). Where heterogeneity was low and/or non-significant, these analyses were not required.

Results

Literature search results. Of the seventeen final studies, twelve were RCTs, and were included in the meta-analysis. Five trials did not use randomisation procedures to allocate participants to intervention group, and were excluded from the meta-analysis but included in the narrative overview of the literature. Three of the final seventeen studies (2 randomised and 1 non-randomised) were unpublished research theses. The final twelve RCTs included in the meta-analysis are summarised in Table 1.4, while the five non-randomised trials included in the literature overview are summarised in Table 1.5.

Table 1.4

Summary of studies reporting RCTs included in the meta-analysis.

Study	Article type and language	Sample					Intervention					Outcome measures (outcome class)	Summary of conclusions
		School type	n	% female	% white	Mean age[a]	Description	Length (weeks)	Contact time (hours)	Follow-up length	Delivery method		
Hirss (1982)	Doctoral thesis (English)	Mixed primary and secondary	20	70	No data	30+[b]	Focused-meditation: Standardised mantra meditation	6	6	None	Weekly class with experienced instructor, self-directed practice	STAIT (Anxiety); STAIS (Anxiety)	Reductions in state and trait anxiety in MBI group not significantly greater than control.
Anderson et al. (1999)	Peer reviewed article (English)	Primary	91	85	93	22 – 60[c]	Focused-meditation: Standardised mantra meditation	5	7.5	4 weeks	Weekly class with experienced instructor, self-directed practice	TSI (Stress); MasBI (Burnout); STAIT (Anxiety); STAIS (Anxiety)	Intervention effective for reducing perceived stress, burnout and anxiety, both at end-of-intervention and follow-up.
Winzelberg & Luskin (1999)	Peer reviewed article (English)	Student teachers	21	71	No data	25	Focused-meditation: "RISE Meditation" (Standardised mantra meditation)	4	3	8 weeks	Weekly class, self-directed practice	TSI (Stress); STAIS (Anxiety)	MBI group reported greater improvements in perceived stress, but not in self-reported state anxiety or self-efficacy relative to control, maintained at follow-up.
Franco (2009)	Peer reviewed article (Spanish)	Student teachers	34	91	No data	21	ACT-based: "Flow meditation" (Mindfulness with ACT metaphor education)	10	15	None	Weekly class, self-directed practice	PSQ (Stress)	Significantly lower perceived stress post-intervention in MBI relative to control.

Study	Article type and language	Sample					Intervention					Outcome measures (outcome class)	Summary of conclusions
		School type	n	% female	% white	Mean age	Description	Length (weeks)	Contact time (hours)	Follow-up length	Delivery method		
Lantieri et al. (2011)	Book chapter (English)	Primary	57	98	50	21 – 30[b]	Open-meditation: "Inner Resilience Programme" (Yoga, meditation, psychoeducation)	36	104.25	None	Weekly class with experienced instructor, monthly retreats and self-directed practice	PSS (Stress); MasBI (Burnout)	MBI group reported greater improvement in resilience, but not perceived stress relative to control.
Mañas et al. (2011)	Peer reviewed article (Spanish)	Secondary	31	74	No data	39	ACT-based: "Flow meditation" (meditation with ACT metaphor education)	10	15	None	Weekly class, self-directed practice	TSS (Anxiety, Depression)	Significant reduction in anxiety and depression symptoms (and sick leave) in MBI group relative to control.
Jeffcoat & Hayes (2012)	Peer reviewed article (English)	Mixed primary and secondary	236	91	No data	30 – 60[b]	ACT-based: "Get out of your mind and into your life" (ACT)	8	0	10 weeks	Self-help book with weekly online quiz	DASS (Stress, Anxiety, Depression)	At post-intervention and follow-up, MBI group showed greater improvement in depression, anxiety and stress relative to control.
Bakosh (2013)	Doctoral thesis (English)	Primary	16	No data	No data	No data	Open-meditation: "Inner Explorer Programme": Mindfulness of senses, thoughts and emotions	10	8.5	None	Daily standardised audio recordings, to students and teachers.	PSS (Stress)	43% reduction in teacher stress, and significant large increases in student attainment.
Flook et al. (2013)	Peer reviewed article (English)	Primary	18	89	94	43	Open-meditation: Mindful Based Stress Reduction adapted for school teachers	8	26	None	Weekly class with experienced instructor, self-directed practice	MasBI (Burnout)	Greater reductions in burnout and distress and increases in mindfulness and self-compassion in MBI group relative to control.

Study	Article type and language	Sample					Intervention					Outcome measures (outcome class)	Summary of conclusions
		School type	n	% female	% white	Mean age	Description	Length (weeks)	Contact time (hours)	Follow-up length	Delivery method		
Jennings et al. (2013)	Peer reviewed article (English)	Mixed primary and secondary	50	89	94	36	Open-meditation: "Cultivating Awareness and Resilience in Education" (meditation, psychoeducation)	12	31	None	Weekly class conducted by researcher, self-directed practice	MasBI (Burnout); CES (Depression)	MBI group showed greater improvement in wellbeing, burnout, self-efficacy and mindfulness relative to control.
Roeser et al. (2013)	Peer reviewed article (English)	Mixed primary and secondary	113	89	80	47	Open-meditation: "Mindfulness Training"	8	36	12 weeks	Weekly class with experienced instructor, self-directed practice	MLS (Stress); MasBI (Burnout); STAIS (Anxiety); BDI (Depression)	MBI group reported greater improvement in mindfulness, self-compassion, focused attention, stress and burnout relative to control, maintained at follow-up. This was not reflected in physiological measures of stress.
Elder et al. (2014)	Peer reviewed article (English)	Special school	40	48	98	36	Focused-meditation: Transcendental meditation	16	7.25	None	Lectures and individual sessions with experienced instructor, self-directed practice	PSS (Stress); MasBI (Burnout); MHI (Depression)	Greater reductions in perceived stress, depression and burnout in MBI group relative to control.

Notes: *BDI* = Beck Depression Inventory, *CES* = Center for Epidemiologic Studies Depression Scale, *DASS* = Depression Anxiety Stress Scale, *MasBI* = Maslach Burnout Inventory, *MHI* = Mental Health Inventory, *MLS* = Modified Lambert's Stress Scale, *STAIS* = State Trait Anxiety Inventory (State), *STAIT* = State Trait Anxiety Inventory (Trait), *PSQ* = Perceived Stress Questionnaire, *PSS* = Perceived Stress Scale, *TSI* = Teacher Stress Inventory. Primary school = 5 – 11 years of age; Secondary school = 11+ years of age.

[a] Data are mean participant age except where indicated as a modal age range ([b]) or overall age range ([c]).

Table 1.5

Summary of studies reporting non-randomised trials included in the literature overview.

Study	Article type and language	Sample					Intervention					Outcome measures (outcome class)	Summary of conclusions
		School type	n	% female	% white	Mean age	Description	Length (weeks)	Contact time (hours)	Follow-up length	Delivery method		
Delgado (2010)	Peer reviewed article (Spanish)	Mixed primary and secondary	31	94	No data	No data	ACT-based: Mindful breathing and body scan; Human Values Education	10	30	None	Weekly class, self-directed practice	PSS (Stress); STAIT (Anxiety); BDI (Depression)	Reduced negative affect, anxiety, depression and stress in MBI group relative to control.
Emery (2012)	Doctoral thesis (English)	Mixed primary and secondary	35	83	66	47	ACT based: ACT	12	6	None	One-off workshop conducted by researcher	ITS (Stress); MasBI (Burnout)	Greater reductions in burnout in MBI group relative to control, but not for stress.
Ancona & Mendelson (2014)	Peer reviewed article (English)	Mixed primary and secondary	43	81	42	40 – 49[b]	Open-meditation: Yoga breathing and postural exercises; Mindful reflection	3	4.5	None	Weekly class with experienced instructor, self-directed practice	TSI (Stress); MasBI (Burnout)	Significant reduction in stress but not burnout in MBI group relative to control.
Beshai et al. (2015)	Doctoral thesis (English)	Secondary	89	69	99	No data	Open-meditation: Mindfulness Based Cognitive Therapy (adapted for non-clinical group)	9	11.25	None	Weekly class with experienced instructor, self-directed practice	PSS (Stress)	Improvement in stress and wellbeing post-intervention in MBI group relative to control.
Frank et al. (2015)	Peer reviewed article (English)	Special school	36	78	97	41	Open-meditation: Mindful Based Stress Reduction adapted for school teachers	8	16	None	Weekly class with experienced instructor, self-directed practice	MasBI (Burnout); BSI (Anxiety, Depression)	Improvements in mindfulness, compassion and sleep but not wellbeing in MBI group relative to control.

Notes: *TSI* = Teacher Stress Inventory, *MasBI* = Maslach Burnout Inventory, *STAIT* = State Trait Anxiety Inventory (Trait), *PSS* = Perceived Stress Scale, *BDI* = Beck Depression Inventory, *ITS* = Inventory of Teacher Stress, *BSI* = Brief Symptom Inventory. Primary school = 5 – 11 years of age; Secondary school = 11+ years of age.

[a] Data are mean participant age except where indicated as a modal age range ([b]) or overall age range ([c]).

Narrative overview of literature.

Study quality. Quality ratings for the seventeen included studies are presented in Table 1.6. In sum, the majority of studies in this review were of medium quality, with four studies deemed to be good quality and one as poor quality. Unsurprisingly, quality was higher for RCTs (mean = 10.42) than non-randomised (mean = 7) trials. Across both groups of studies, external validity was most consistently rated as poor quality. This was partly because in a number of studies there was insufficient information about recruitment procedures and participant demographics. In those studies where information was provided, participants were self-selecting, making it difficult to generalise findings into a population who were not interested in mindfulness. In terms of internal validity, all studies were penalised because blinding procedures were not used in intervention allocation, while only one study (Flook et al., 2013) used outcome measures that allowed for intervention-blinding. Only six studies reported any attempt to maximise or measure adherence to the intervention protocol (Bakosh, 2013; Beshai et al., 2015; Elder et al., 2014; Emery, 2012; Jeffcoat & Hayes, 2012; Jennings et al., 2013).

Regarding selection bias, most of the studies were penalised for not considering confounding influences in the analysis, and for not keeping allocation concealed until recruitment was complete. Analysis of data was inconsistent between studies. While some studies used intent-to-treat analyses and others used completer-only analyses, seven studies (Anderson et al., 1999; Elder et al., 2014; Flook et al., 2013; Franco, 2009; Frank et al., 2015; Mañas et al., 2011; Winzelberg & Luskin, 1999) did not report on attrition from treatment, making it impossible to determine what analytic approach had been used.

A final issue regarding analysis relates to the adequacy of participant sampling. Study sample-size ranged from 16 to 236 (mean = 57), with a mean treatment group size of 29. With samples of this size, it is unlikely that randomisation would be an adequate control for

participant variation. Similarly, the statistical power of the individual studies is limited by such small sample-sizes and indicates the possibility of systematic Type II errors in these studies. Accordingly, the prevalence of small-sample studies further underscores the need for meta-analytic interpretation of this literature.

Table 1.6

Quality ratings for the studies included in the review.

Study	External validity (max = 3)	Internal validity (max = 7)	Selection bias (max = 6)	Total (max = 16)
RCTs				
Anderson et al. (1999)	2	5	3	10
Bakosh (2013)	2	5	4	11
Elder et al. (2014)	1	5	6	12
Flook et al. (2013)	1	6	3	10
Franco (2009)	1	4	4	9
Hirss (1982)	3	5	5	13
Jeffcoat & Hayes (2012)	2	5	6	13
Jennings et al. (2013)	1	5	3	9
Lantieri et al. (2011)	1	4	3	8
Mañas et al. (2011)	1	5	4	10
Roeser et al. (2013)	2	5	5	12
Winzelberg & Luskin (1999)	1	4	3	8
Non-randomised trials				
Ancona & Mendelson (2014)	2	4	1	7
Beshai et al. (2015)	2	5	3	10
Delgado (2010)	0	3	0	3
Emery (2012)	0	5	2	7
Frank et al. (2015)	1	4	3	8

Notes: Cells are colour-coded to indicate poor (red), medium (yellow) and good (green) quality, based on the upper, middle and lower third of the range of scores on each scale.

Intervention. Across the seventeen studies, fourteen different MBIs were evaluated. While sharing a core focus on mindfulness, the interventions also differed in certain systematic ways. The main distinction was between MBIs that employed 'focused' (FM) versus 'open' (OM) meditation practices. In the case of the FM interventions included in this review, the focus of meditation was either a standardised (Anderson et al., 1999; Hirss, 1982; Winzelberg & Luskin, 1999) or ideographic mantra (Elder et al., 2014). The OM studies in this review included adapted versions of existing mindfulness interventions such as Mindfulness Based Stress Reduction (MBSR; Flook et al., 2013; Frank et al., 2015) and Mindfulness Based Cognitive Therapy (MBCT; Beshai, 2015), as well as novel interventions that focused purely on OM practices (Bakosh, 2013; Roeser et al., 2013), or integrated OM practice with yoga (Ancona & Mendelson, 2014; Lantieri et al., 2011) or emotion regulation training (Jennings et al., 2013). Another category of interventions included concepts from Acceptance and Commitment Therapy (ACT; Hayes et al., 1994). Some interventions in the present review were purely ACT (e.g. Emery, 2012; Jeffcoat & Hayes, 2012), while others included psychoeducation about values as a corollary component to OM techniques (Delgado 2010; Franco, 2009; Mañas et al., 2011).

Delivery method. While all interventions encouraged participants to engage in mindfulness practice between sessions, delivery format differed across studies. A majority of interventions were small classes led by experienced meditators (see Tables 1.4, 1.5), while other studies used researchers to deliver the intervention in larger groups. Two studies used alternative media to deliver the intervention on a large scale. Bakosh (2013) used pre-recorded audio clips, while Jeffcoat & Hayes (2012) used a standardised self-help book. A number of studies did not provide information about who delivered the intervention. Intervention length ranged from 3 to 36 weeks (mean = 10 weeks), while time spent in contact with a therapist ranged from 0 (self-help) to 105 hours (mean = 19 hours).

Sample. Reporting of demographic information across the studies was variable; detailed age and teaching-experience data were frequently not reported. The studies in this review recruited teachers from a variety of settings, including primary and/or secondary, special schools and teacher training (see Tables 1.4, 1.5). Importantly, across all studies participants were self-selecting introducing the possibility for sampling bias. For instance, Ancona & Mendelson (2014) present some qualitative data suggesting that many staff are too stressed to attend the intervention. Indeed, Jeffcoat & Hayes (2012) were the only authors who examined the differential impact of their intervention on different levels of clinical severity; they reported that a self-help ACT intervention has different effects when used for prevention or amelioration of stress. A majority of outcome measures used in the studies under review do not have published clinical ranges, cut-offs or guidelines for categorising responses as "high" or "low". Therefore it was not possible in this review to characterise the baseline emotional wellbeing of participants receiving the interventions.

Outcome measures. All studies in this review measured outcomes using self-report methods. A strength of both Flook et al. (2013) and Roeser et al. (2013) was in their use of physiological measures of stress to validate self-report. Roeser et al. (2013) found that improvement in self-reported wellbeing was not reflected in reduced physiological stress, while Flook et al. (2013) reported concordance in these measures, favouring intervention.

A range of self-report measures was used. Very few studies assessed all outcomes concurrently, however, meaning that comparison of intervention effectiveness between studies proved difficult. In the meta-analysis these "wellbeing" measures were aggregated into one composite measure in addition to examining individual outcomes separately, to allow for comparison across all studies. Only four of the studies in the review assessed the outcomes at follow-up as well as post-intervention. Reporting of outcomes was equally inconsistent, with four studies being excluded for not reporting raw outcome data. The same critique also

applied to reporting of demographic characteristics, which were not presented in a majority of papers (see Tables 1.4, 1.5).

Analysis. In terms of the statistical methods employed, there were two main issues that arose in these studies. Firstly, only a minority of studies corrected for multiple comparisons despite studies routinely conducting a large number of statistical tests on data from the same sample of participants. Secondly, a majority of studies used statistical tests that assume independence of data. In the context of group interventions, this assumption is not valid, as the experiences of participants in the same intervention group may affect each other. Only two studies considered this non-independence of data in their analysis. Mañas et al. (2011) used a non-parametric test (Mann-Whitney test), while Jeffcoat & Hayes (2012) analysed their data using hierarchical linear modelling techniques.

Convergence of RCTs and non-RCTs. The majority of RCTs reported significant treatment effects for psychological outcomes (e.g. stress, burnout, anxiety and depression) as well as other outcomes including mindfulness, self-compassion and self-efficacy. A small number, however, reported that the MBI had been ineffective for reducing anxiety (Hirss, 1988; Winzelberg & Luskin, 1999) and self-reported (Lantieri et al., 2011) or physiological (Roeser et al., 2013) measures of stress. The non-randomised studies, on the contrary, reported more mixed findings. While Ancona & Mendelson (2014) reported a significant treatment effect for stress but not burnout, Emery (2012) reported an opposite pattern of findings. Beshai et al. (2015) and Delgado (2010) reported improvements in self-reported outcomes, while Frank et al. (2015) found no effect of an MBI on subjective wellbeing. Only four of the RCTs and none of the non-RCTs collected data at follow-up (see Tables 1.4, 1.5). Intervention effects were generally maintained at follow-up.

Meta-analysis results. Summary effects and heterogeneity statistics for each of the main outcomes are presented in Table 1.7.

Table 1.7

Results of meta-analysis of RCTs.

Outcome type	Number of studies	RE model summary effect, [95% CI]	Heterogeneity statistics	
			Cochran's Q (*p*)	Higgins' I^2
Stress	9	0.38, [-0.03, 0.79]	**41.41** (<.001)	80.68
Burnout	6	**0.39, [0.20, 0.59]**	6.02 (.30)	16.98
Anxiety	6	0.30, [-0.16, 0.76]	**22.32** (<.001)	77.60
Depression	5	**0.55, [0.14, 0.95]**	**11.92** (.02)	66.45
Composite	12	**0.31, [0.02, 0.61]**	**50.28** (<.001)	78.12

Notes:
Significant summary effects and Q values are shown in bold.
Rule of thumb for effect size: Small = 0.2; Medium = 0.5; Large = 0.8 (Cohen, 1988).
Rule of thumb for I^2: Small = 25; Medium = 5; Large = 75 (Higgins et al., 2003)

Stress. Across nine studies a small non-significant treatment effect was observed for stress related outcomes, with significant levels of heterogeneity between individual trials (see Figure 1.2, Table 1.7). There was a high degree of consistency in the direction of the reported effect, with the only exception being Franco (2009) who reported a significant effect favouring controls. Exclusion of Franco (2009) resulted in a medium, significant summary treatment effect, while all other exclusions did not change the pattern of results (see Figure 1.3). This significant summary effect (not including Franco, 2009), remained significant using a QE model, ES = 0.47, 95% CI [.15, .78], indicating that, in the remaining studies this result is robust to variance in methodological quality.

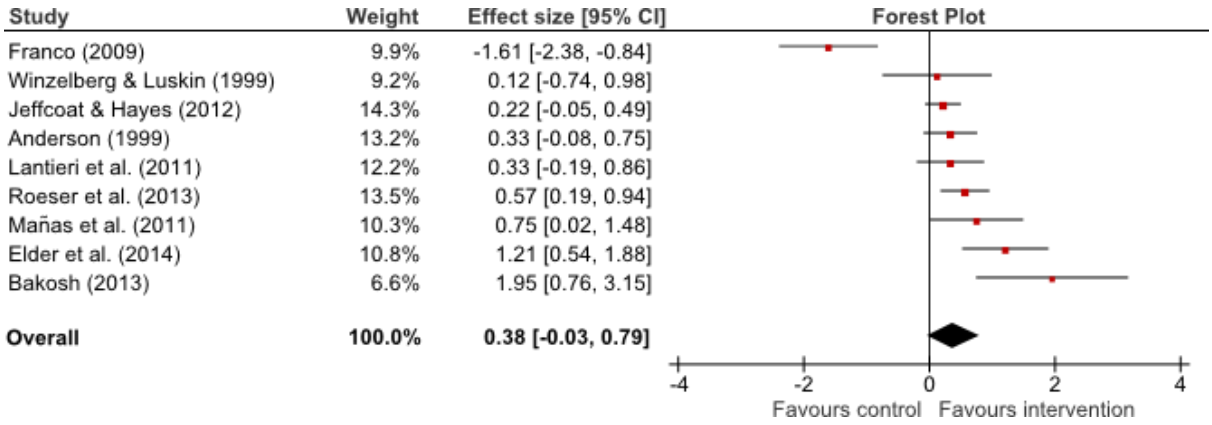


Figure 1.2. Forest plot for stress outcomes.

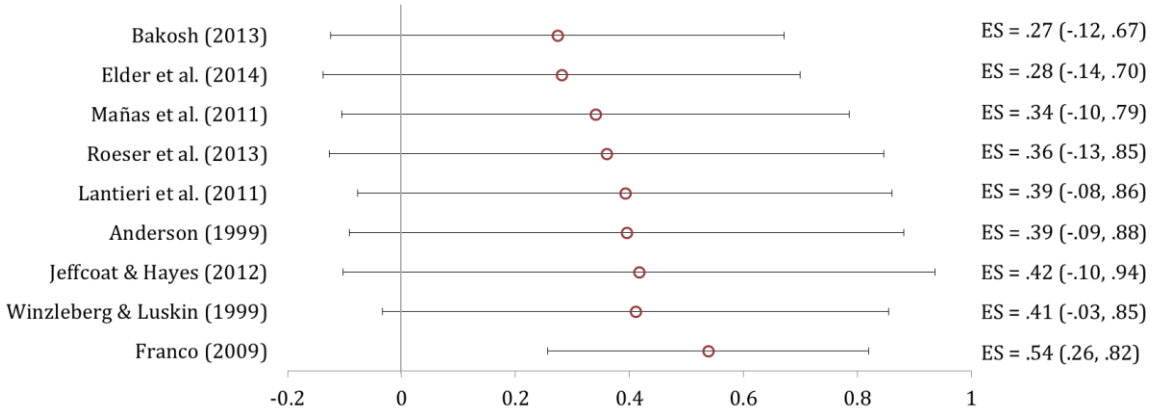


Figure 1.3. Exclusion sensitivity plot for stress outcomes. Graph shows summary effects and 95% CIs excluding each study in turn, sorted in descending order of effect size.

Grouping studies by intervention type accounted for a significant portion of between study variance, $Q_{Between} = 7.34$, $p = .03$. The open-meditation group summary effect was medium and significant; the focused-meditation group effect was medium and non-significant and the ACT group effect was small, favoured control, but was non-significant (see Figure 1.4). The summary effect for open-meditation studies remained significant in a QE model, ES = 0.67, 95% CI [0.02, 1.32], indicating that this result is robust to variance in quality in these three studies. Of note, when excluding Franco (2009), the ACT group summary effect remained non-significant but favoured intervention, ES = 0.37, 95% CI [-0.10, 0.85].

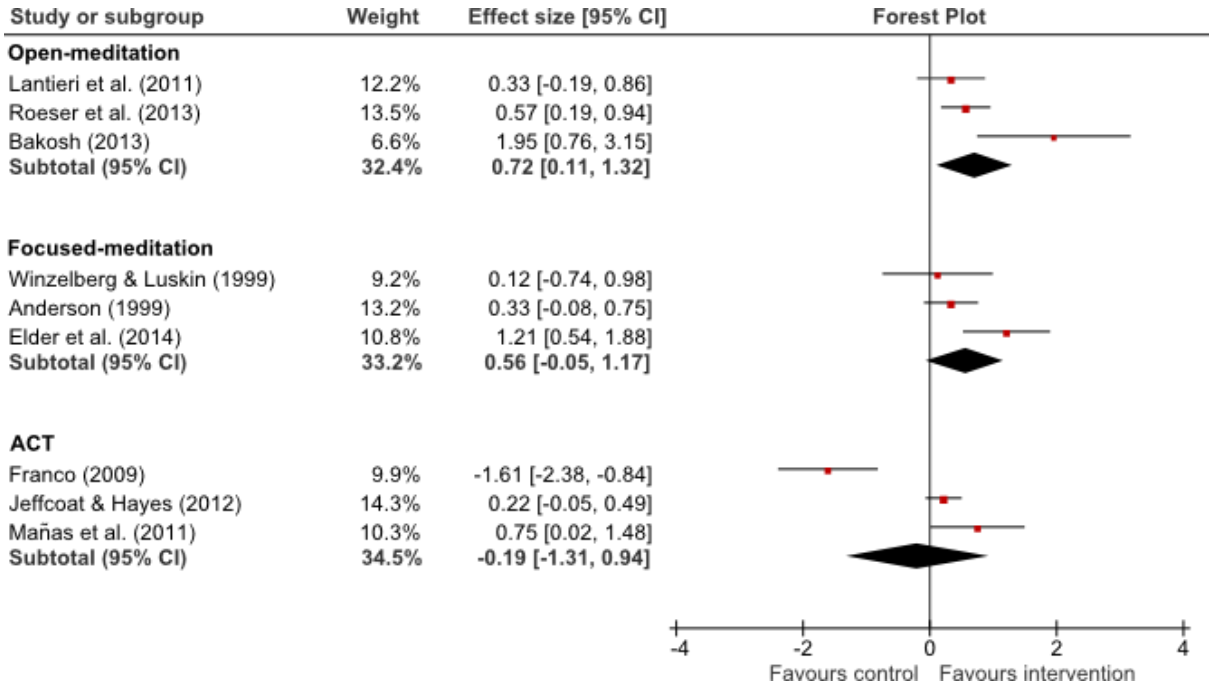


Figure 1.4. Forest plot for stress outcomes organised by intervention group.

Burnout. For burnout outcomes, a small, significant treatment effect was observed across six studies (see Figure 1.5, Table 1.7). In a QE model, the same pattern of results emerged, ES = 0.42, 95% CI [0.22, 0.62], indicating that this positive effect was robust to variable study quality. Heterogeneity between trials was very low and not significant (see Table 1.7), hence a subgroup analysis was not conducted for burnout; all studies favoured intervention.

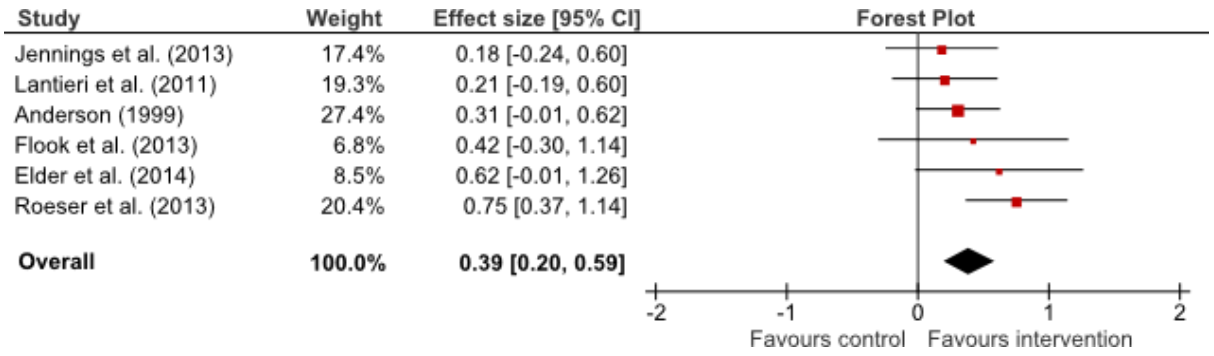


Figure 1.5. Forest plot for burnout outcomes.

Anxiety. A small, non-significant treatment effect was observed for anxiety outcomes across six studies (see Figure 1.6, Table 1.7). Three of the six studies favoured intervention, while three favoured control; heterogeneity between individual trials was high and significant (see Table 1.7). No study exclusion impacted the size or significance of the summary effect (see Figure 1.7).

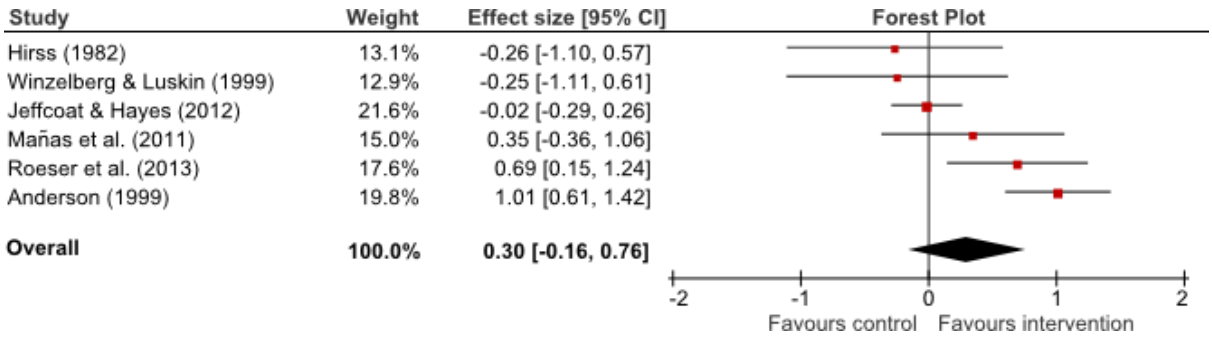


Figure 1.6. Forest plot for anxiety outcomes.

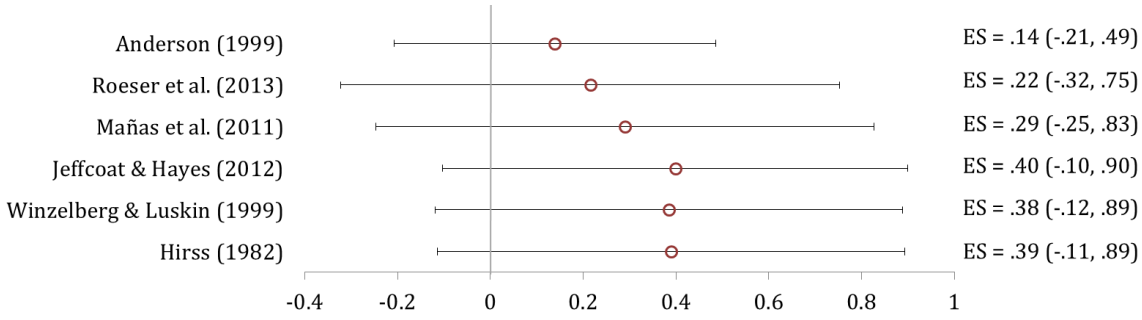


Figure 1.7. Exclusion sensitivity plot for anxiety outcomes. Graph shows summary effects and 95% CIs excluding each study in turn, sorted in descending order of effect size.

Intervention group accounted for a significant portion of the between study variance, $Q_{Between} = 9.71$, $p = .01$. The open-meditation subgroup had a medium significant effect (see Figure 1.8). However, this group consisted of only one study (Roeser et al., 2013) so the QE model gave identical results. For the focused-meditation and ACT subgroups, the summary effects were small but non-significant (see Figure 1.8).

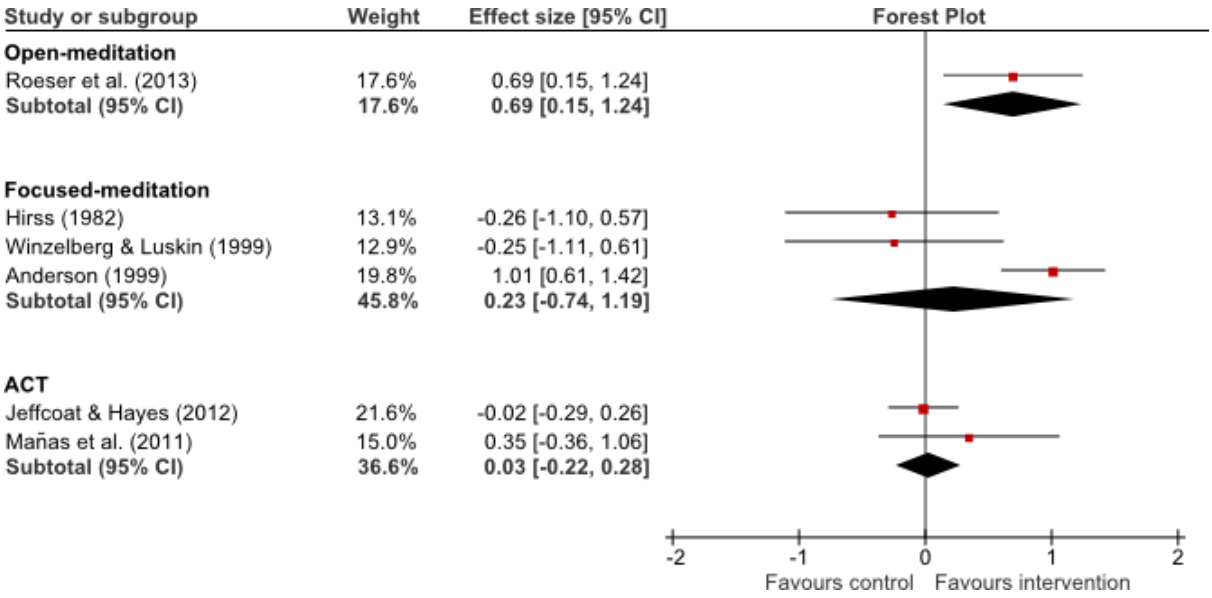


Figure 1.8. Forest plot for anxiety outcomes organised by intervention group.

Depression. For depression, a medium significant treatment effect was observed with significant heterogeneity (see Figure 1.9, Table 1.7). All five studies favoured intervention. No study exclusions changed the significance of the summary effect (see Figure 1.10). In a QE model, the summary effect was small and non-significant, ES = 0.37, 95% CI [-0.12, 0.86]. Of note, excluding Jeffcoat & Hayes (2012) (the study with the highest quality rating and largest sample) resulted in a medium, significant QE effect, ES = 0.75, 95% CI [0.44, 1.06]. In other words, this high quality, large-sample study had a significant influence over the QE summary effect. It is therefore possible that the significant RE effect, favouring intervention, may not be robust to additional future high quality, large-sample studies.

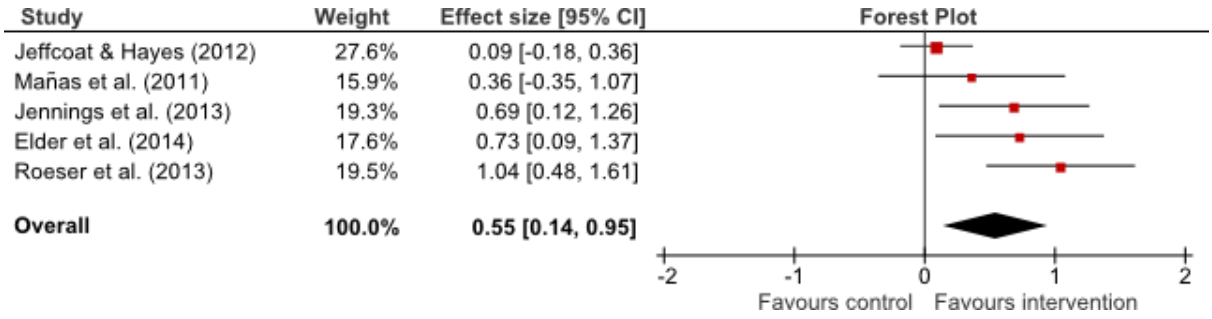


Figure 1.9. Forest plot for depression outcomes.

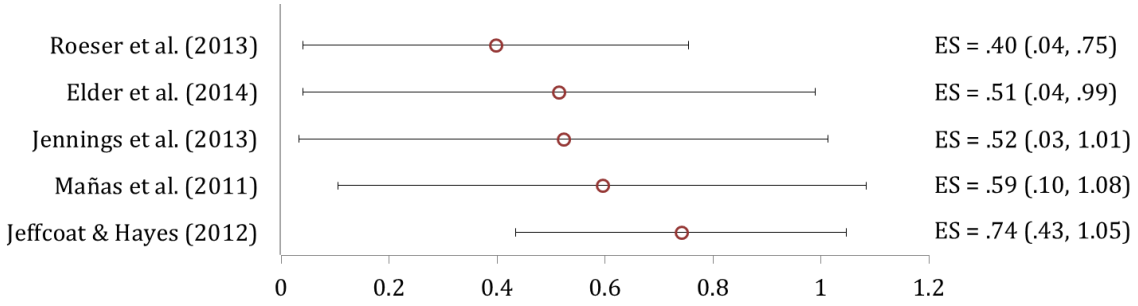


Figure 1.10. Exclusion sensitivity plot for depression outcomes. Graph shows summary effects and 95% CIs excluding each study in turn, sorted in descending order of effect size.

A significant portion of between-study variance was accounted for by intervention group, $Q_{Between} = 10.68$, $p < .01$. The open- and focused- meditation subgroup effects were both large and medium, respectively, and were both significant, while the ACT subgroup effect was small and non-significant (see Figure 1.11). In a QE model, the open-meditation group effect remained large and significant, suggesting that this was robust to variable study quality, ES = 0.89, 95% CI [0.49, 1.30]. The focused-meditation group consisted of one trial and therefore the QE model gave identical results.

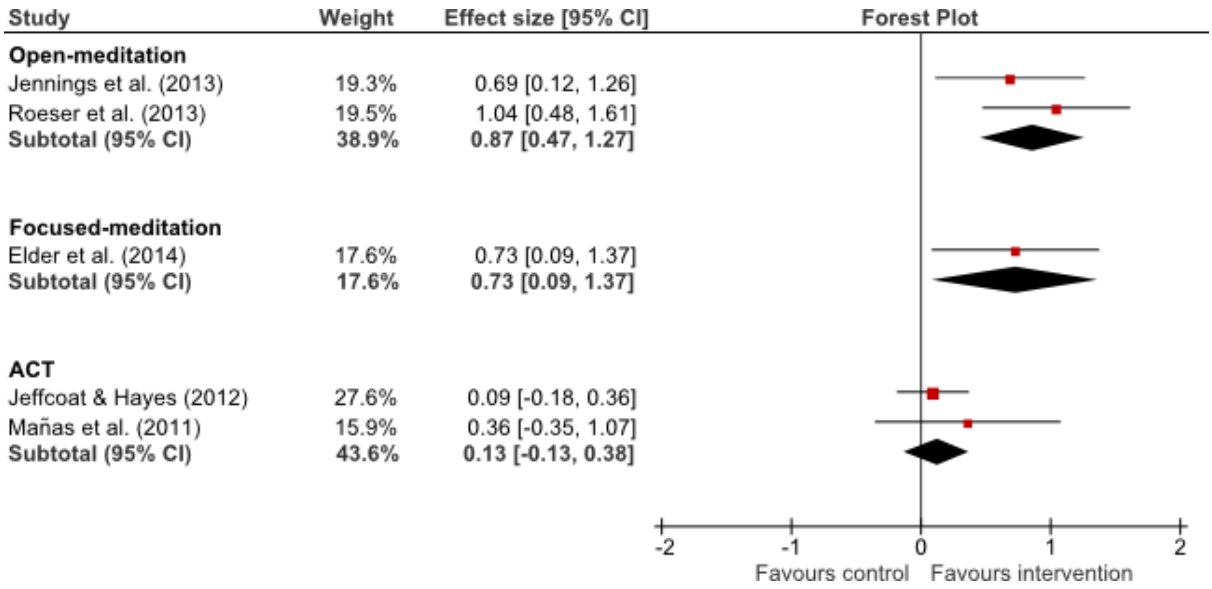


Figure 1.11. Forest plot for depression outcomes organised by intervention group.

Composite variable. Across all twelve RCTs, for the composite outcome (aggregated within-study from all available eligible outcomes), a small and significant treatment effect was observed, with significant between-trial heterogeneity (see Figure 1.12, Table 1.7). The direction of study effects was mostly consistent, with nine of the twelve studies favouring intervention. However, excluding any of these nine studies resulted in a non-significant effect, suggesting that this result is not reliable (see Figure 1.13). Indeed, in a QE model the summary effect was of similar magnitude but non-significant, ES = 0.33, 95% CI [-0.04, 0.70], indicating that the significant RE model summary effect is not robust to variable study quality. In the QE model, the summary effect became significant when excluding Franco (2009), ES = 0.39, 95% CI [0.13, 0.65], or Jeffcoat & Hayes (2012), ES = 0.45, 95% CI [0.08, 0.81]. These two studies were, respectively, the one that most favoured control, and the one with the highest quality rating, which may account for their notable impact on the QE model summary effect. In sum, although the balance of evidence suggests that intervention is favoured, this result is not reliable.

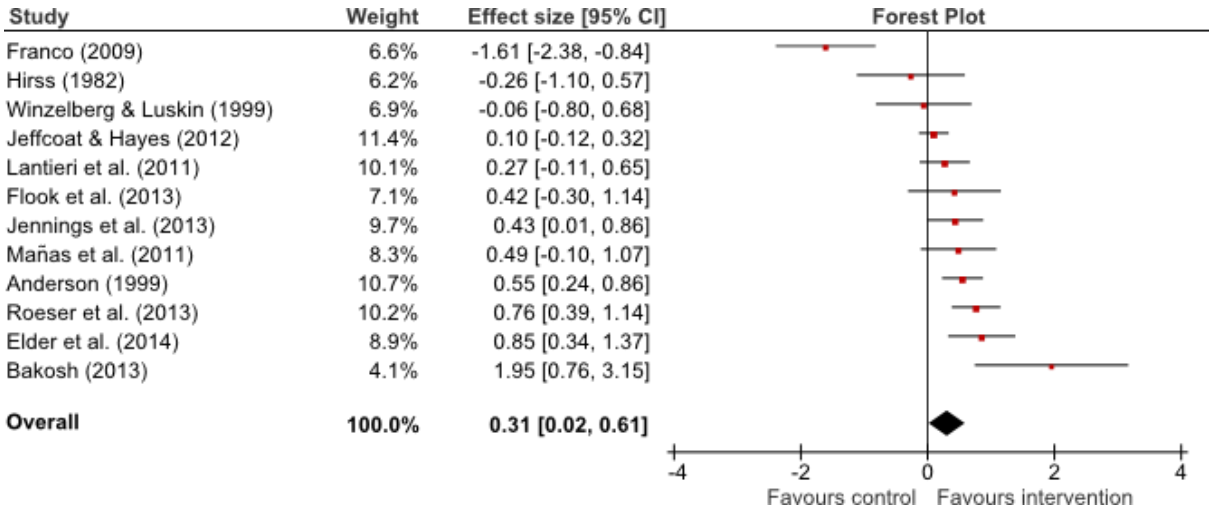


Figure 1.12. Forest plot for the composite variable.

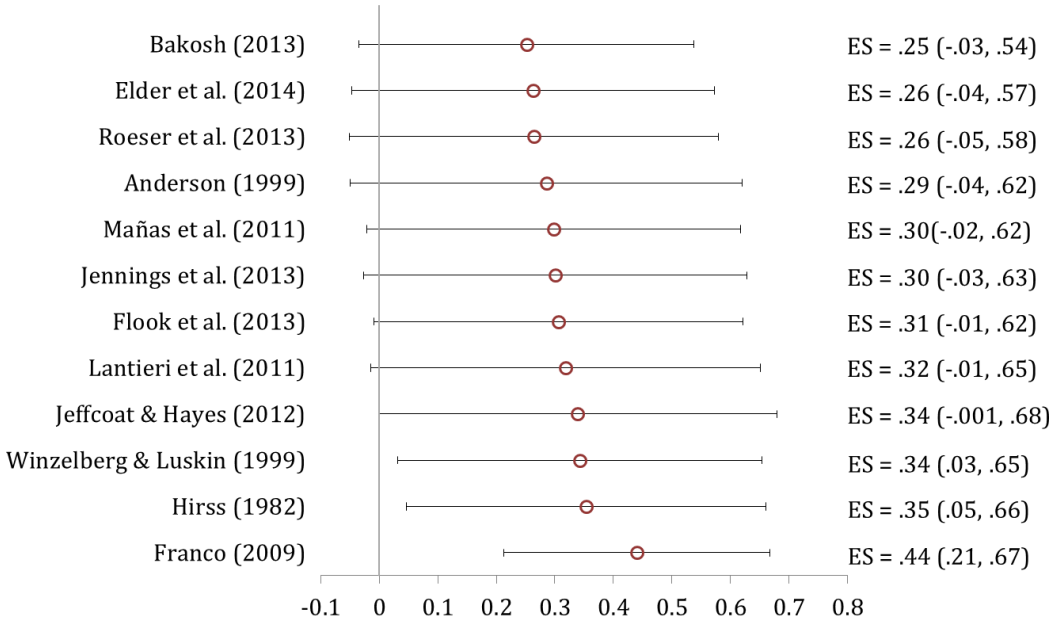


Figure 1.13. Exclusion sensitivity plot for the composite variable. Graph shows summary effects and 95% CIs excluding each study in turn, sorted in descending effect size.

Intervention group accounted for a significant portion of between-study variance, $Q_{Between} = 14.01$, $p < .001$. The open-meditation group effect was medium and significant; the focused-meditation group effect was small and non-significant, and the ACT group effect was small, favoured control, but was non-significant (see Figure 1.14). In a QE model, the open-meditation result remained medium and significant, ES = 0.64, 95% CI [0.28, 0.99], indicating that it was robust to variable study quality.

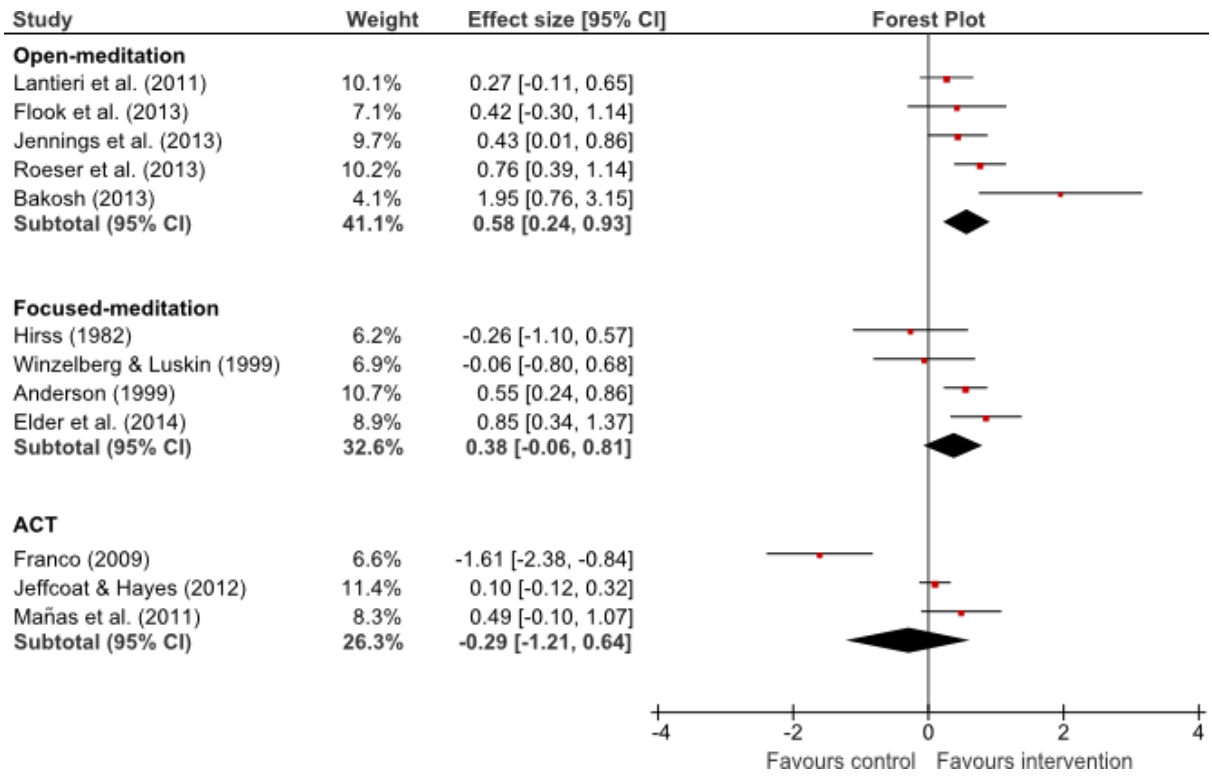


Figure 1.14. Forest plot for the composite variable organised by intervention group.

Summary. Figures 1.15 and 1.16 present a summary of the results. Figure 1.15 shows a forest plot of the overall summary effects for each outcome. Figure 1.16 shows a forest plot of the summary effects for each subgroup broken down by outcome.

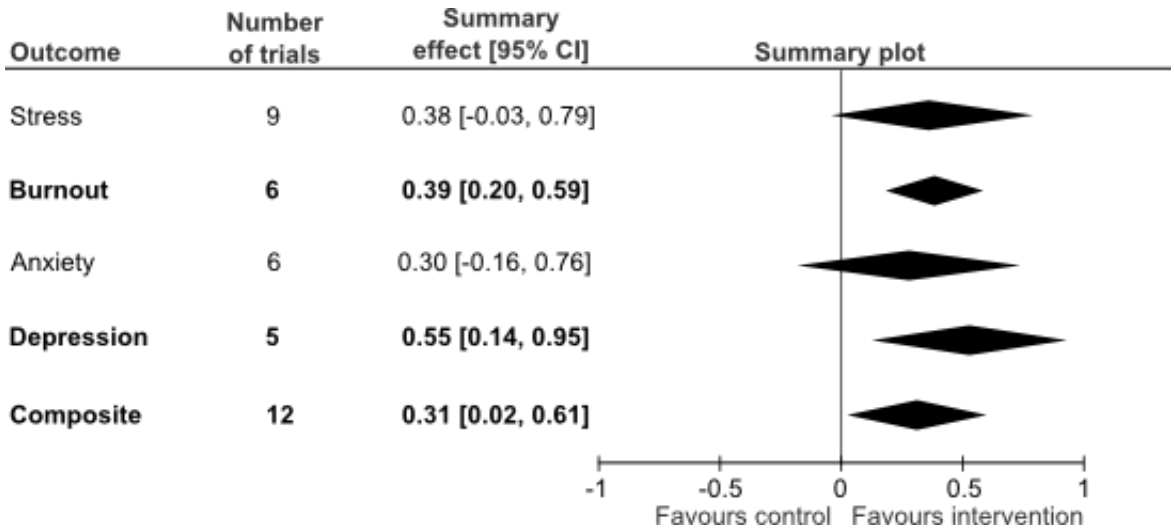


Figure 1.15. Plot of summary effects and 95% confidence intervals for each outcome. Significant effects are highlighted in bold text.

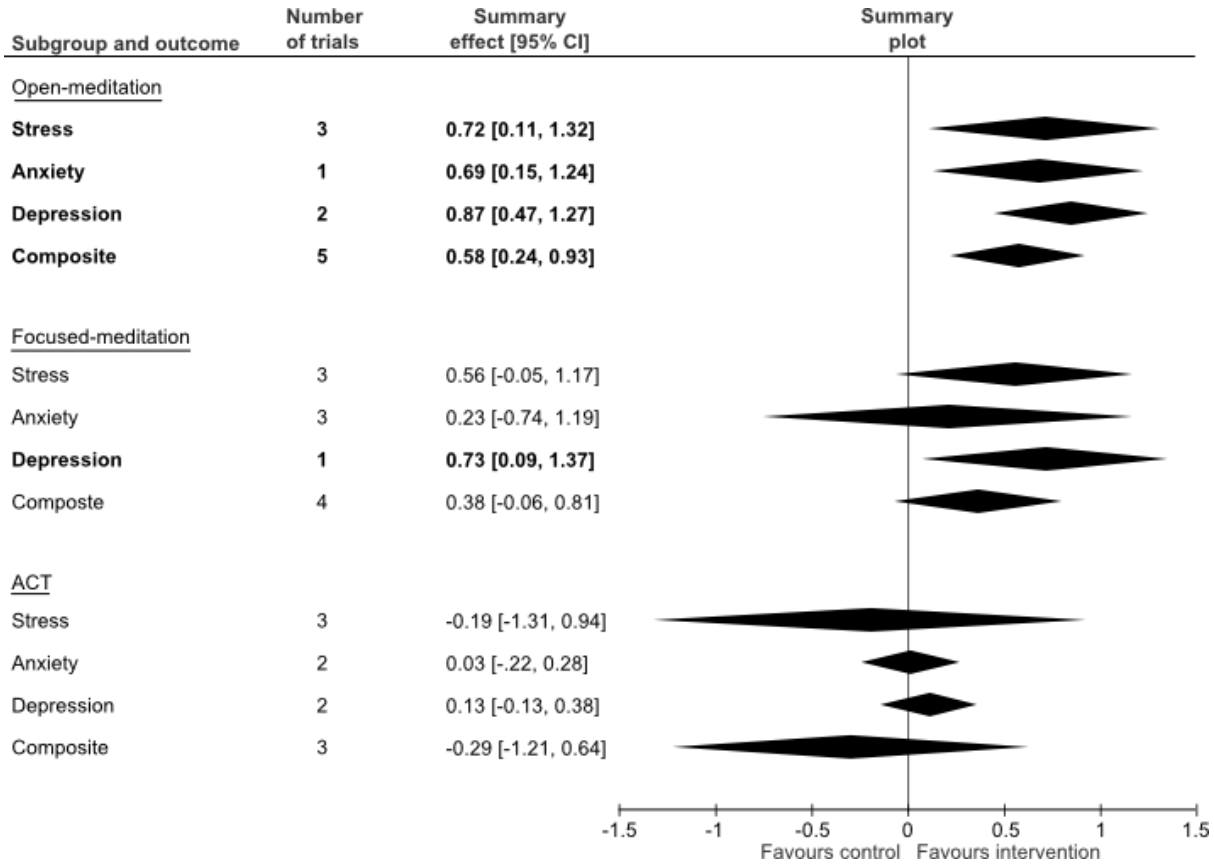


Figure 1.16. Plot of summary effects and 95% confidence intervals for each sub-group broken down by outcome. Significant effects are highlighted in bold text. Burnout outcome effects are not shown in this graph as low levels of heterogeneity precluded a subgroup analysis.

Discussion

This review used meta-analytic methods to examine the efficacy of mindfulness-based interventions (MBIs) for improving the emotional wellbeing of school teachers. Seventeen trials were identified, of which twelve RCTs were included in the meta-analysis. A variety of MBIs were considered, including open- and focused-meditation as well as acceptance and commitment therapy based interventions, (following Chiesa & Malinowski, 2011).

The balance of evidence across outcomes is that MBIs, relative to wait-list control, have a small-medium effect for burnout, depression and a composite of the main outcomes (see Figure 1.15). For depression and the composite outcome, this result was not robust to variations in the methodological quality of studies, although this appeared to be primarily due to the impact of Jeffcoat & Hayes (2012), owing to the high quality rating and very large

sample size of this study. For stress, anxiety, depression and composite outcomes, significant heterogeneity in study effects was accounted for by intervention-type, with larger treatment effects reported for OM. In contrast, there is little consistent evidence for the use of FM or ACT for these outcomes (see Figure 1.16).

The overall MBI effect for burnout and the open-meditation MBI effects for stress, anxiety and depression indicate that aspects of mindfulness are promising for improving the emotional wellbeing of teachers. The majority of outcomes in the reviewed studies measured emotional *strain* in participants (burnout, anxiety, depression). This is consistent with the fact that MBIs are aimed at increasing resilience rather than making systemic changes that target the sources of stress (cf. Newman & Beehr, 1979). The stress outcome, however, consisted of measures of perceived *stress*, rather than experienced *strain*. That open-meditation MBIs demonstrated a significant effect in reducing perceptions of stress, without directly intervening with the school organisational system, demonstrates the potential utility of this approach.

The studies in this review did not aim to recruit teachers who were experiencing particularly high levels of stress or burnout, in line with previous research (e.g. Chiesa & Serretti, 2009). Indeed, qualitative feedback in Ancona & Mendelson (2014) indicates that highly stressed teachers did not volunteer to participate in research. In a meta-analysis of outcomes of MBIs for children and adolescents, Zoogman et al. (2014) found significantly different intervention effect sizes for clinical vs non-clinical groups. Jeffcoat & Hayes (2012) analysed subgroups of their sample separately based on baseline levels of emotional distress. They found that a self-help ACT bibliotherapy intervention had both preventative and ameliorative effects for these different subgroups of school teachers. It is possible that by collapsing clinical and subclinical groups together in the present review, significant intervention effects have been masked. This highlights the importance of considering whether

a school-based MBI is delivered as a preventative or curative measure (Kompier & Kristensen, 2001). None of the other eleven studies in this review examined outcomes for different subgroups of the sample. Future trials should examine the differential efficacy of MBIs for teachers experiencing a range of stress levels. To aid interpretation researchers should also characterise the baseline emotional wellbeing of participants, which was reported in a minority of studies in this review.

Building on the MiSP report of MBIs for school teachers (Weare, 2014), this is the first review to systematically synthesise findings from RCTs regarding efficacy of MBIs for improving emotional wellbeing of school teachers. The use of a meta-analytic approach reduces the impact of subjective biases in the review of these studies. Other potential sources of bias were reduced by using the quality effects model to examine the validity of the random effects model, accounting for study quality. Although Greenland (2001) argues that using an overall indicator of study quality is open to bias, Doi, Barendregt and Mozurkewich (2001) and Doi et al. (2015b) have demonstrated that the quality effects model is robust to bias in quality-ratings. Further, the criteria developed by Downs and Black (1998) have good internal consistency, which is a crucial factor according to Moher (1996).

Limitations of the literature. There are a number of limitations to the existing literature which make it difficult to draw firm conclusions from the present data. Firstly, it cannot be concluded that intervention effects were attributable to improved mindfulness in teachers because, in this review, MBIs were compared to wait-list control interventions. Further, only two studies demonstrated statistical mediation of the intervention effect by changes in self-reported mindfulness or acceptance (Emery 2012; Roeser et al., 2013). It is possible that other non-specific intervention factors such as therapeutic alliance or increased motivation were responsible for intervention effects. Further research is required to compare the efficacy of MBIs with alternative intervention approaches. However, as few other

occupational stress interventions for teachers have been empirically validated (Richardson & Rothstein, 2008), it is not clear which comparison would be most useful.

Secondly, study quality was mixed. The criteria for an 'empirically supported therapy' include not only the statistical significance of effects, but also the quality of trials (Chambless & Hollon, 1998). Only four of the seventeen identified studies were of good quality overall. Issues around external validity and sampling bias were consistently found in the reviewed studies. Better quality trials with more transparent recruitment procedures will be important for the further evaluation of MBIs for school teachers.

Thirdly, heterogeneity in study design makes it difficult to draw firm conclusions from this review. There was inconsistency in intervention delivery method, duration and intensity, and in sample type. Because the number of trials in the review was small it was not possible to quantify the impact of different aspects of heterogeneity (e.g. by using meta-regression). However, this diversity in intervention and sample type also demonstrates the adaptability and flexibility of mindfulness as an intervention approach in this population. The potential effectiveness of low-cost extensive intervention delivery methods, such as standardised audio-recording or bibliotherapy (e.g. Bakosh, 2013; Jeffcoat & Hayes, 2012) should be further examined.

Clinical implications. Despite the small number of trials identified in this review some tentative clinical implications can be drawn. Firstly, the high levels of stress, depression and anxiety reported by Jeffcoat and Hayes (2012) and Winzelberg and Luskin (1999) evidence the importance of addressing teachers' wellbeing. The evidence synthesised in the present review – in the absence of a similar body of evidence for an alternative teacher wellbeing intervention– indicates that schools may benefit from offering MBIs to staff. However, as the overall effect sizes reported here are small – medium it is likely that other adjunctive therapies may be necessary to support those teachers experiencing extreme levels

of stress. As Ancona and Mendelson (2014) point out, engaging acutely stressed teachers in such support presents a significant challenge for schools.

Secondly, of the interventions reviewed here, open-meditation MBIs received most empirical support. Schools might be prudent in exploring the feasibility of these interventions over focused-meditation or ACT alternatives. This contrasts with findings of the efficacy of ACT (see Powers, Zum Vorde Sive Vording & Emmelkamp, 2009, for a review). The limited evidence for the efficacy of ACT in this review may be due to contextual influences in schools such as high workload and role ambiguity (Kyriacou, 2001). These factors may prevent teachers acting in accordance with their values, as promoted in ACT. If systemic barriers are also addressed, it is possible that ACT may be more helpful.

Thirdly, as a number of different open-meditation MBIs exist (see Table 1.4), pragmatic factors will play an important part in schools' decision about which specific intervention to implement. MBIs that minimise cost, training requirements and disruption are likely to be favoured. Self-help may be a promising and effective method of delivery for MBIs, as found in a recent meta-analytic review (Cavanagh, Strauss, Forder & Jones, 2014). Another example is the intervention evaluated by Bakosh (2013), delivered through audio recordings during the school day. An additional benefit of this intervention was that it was delivered to teachers and students simultaneously. This holistic, whole-school approach to improving wellbeing is thought to lead to more widespread and lasting changes (Weare, 2000).

Limitations of the review. There are a number of potential limitations to this review that warrant discussion. Firstly, the use of MBIs for school teachers has multiple goals, of which improved emotional wellbeing is only one. Other goals, including dissemination to students, improvement of classroom management and relationships (Albrecht, Albrecht & Cohen, 2012; Crane, Kuyken, Hastings, Rothwell & Williams, 2010; Jennings & Greenberg,

2009; Roeser, Skinner, Beers & Jennings, 2012) have not been considered in the present review. There is emerging evidence, for example, that mindfulness training for teachers impacts positively on students' behaviour (Singh, Lancioni, Winton, Karazsia & Singh, 2013) and teachers' sense of professional self-efficacy (Napoli, 2004). While some of these variables were measured in some of the present studies, there was insufficient evidence to warrant broadening the scope of the review. Assessing the efficacy of MBIs for these additional goals may be a focus for future review and meta-analysis when more research has been carried out.

A second potential limitation of this review is the use of outcome measure aggregation procedures. As discussed above, by aggregating across subgroups in Jeffcoat & Hayes (2012), potentially interesting differences between clinical vs non-clinical participants may have been masked. Similarly, by aggregating across outcomes within each study to produce an estimated 'composite' outcome may have washed out interesting effects. However, this approach enabled all studies to be directly compared within the meta-analysis, and the potentially problematic 'washing out' effect of aggregation was circumvented by also considering each outcome separately.

Future research. The findings of this meta-analysis suggest that further high quality, larger-scale randomised controlled trials are required to evaluate the efficacy of MBIs for improving wellbeing in school teachers. Future research should aim to reduce sampling bias, by providing fewer details about the mindfulness component of the intervention during recruitment. Another method for reducing bias in trials would be to include objective outcome measures, such as physiological indicators of stress (e.g. Flook et al., 2013; Roeser et al., 2013). Future RCTs should also be careful to clearly report raw outcome data; the failure to do so resulted in the exclusion of five eligible studies in this review.

Similarly, clear reporting of sample characteristics and recruitment procedures should be a priority in future RCTs. In addition to demographic data, it might be helpful to include information regarding participants' baseline clinical severity on outcome measures. Researchers might also consider evaluating the outcomes of MBIs for different subgroups of participants based on baseline clinical severity information.

In order to evaluate the unique contribution of mindfulness in these interventions, future research might employ an active in addition to a wait-list control group. Researchers might consider directly comparing outcomes of different classes of MBI. In addition, process measures of mindfulness, acceptance and self-compassion would allow for analysis of the mediating role of these variables in outcome change.

Conclusion

Empirical enquiry into the effectiveness of mindfulness-based interventions for improving the emotional wellbeing of school teachers is at an early stage, with a small number of randomised controlled trials of mixed quality published mostly in the last six years. However, the current review of this literature indicates that, for a number of facets of emotional wellbeing, mindfulness shows promise as an intervention for school teachers, particularly when an open-awareness approach to meditation is adopted.

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Chapter Two – Empirical Research Paper:

The role of mental representations of the teacher-student relationship in school teachers' emotional responses to student behaviour.

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The role of mental representations of the teacher-student relationship in school teachers' emotional responses to student behaviour.

Abstract

Background. Teaching is widely recognised as one of the most stressful professions, with behaviour of students identified as one of the main sources of stress. This study examines the relational context of teaching as a contributory factor in the decreased wellbeing of teachers, specifically focusing on teachers' internal mental representations of their relationships with students. In particular, the impact of a compulsive caregiving attachment style on teachers' wellbeing was examined.

Methodology. 243 trainee and qualified teachers participated in this cross-sectional survey study. Participants completed questionnaire measures of perceived misbehaviour, representations of relational conflict and closeness, and negative affective responses relating to a specific identified student in their class, as well as measures of general student behaviour, compulsive caregiving and teacher wellbeing. Moderation, mediation and moderated mediation analyses were used to test the study hypotheses, based on the model of Spilt, Koomen & Thijs [(2011), Educational Psychology Review, 23, 457 - 477]

Results. Perceived student misbehaviour was positively related to teachers' negative affective responses. This association was mediated by conflict representations and this indirect effect was lessened by closeness representations. Compulsive caregiving did not impact on the dynamics of dyadic relationships, but strengthened the negative association between widespread perceived student misbehaviour and teacher wellbeing.

Discussion. The present study is consistent with theoretical accounts of teacher wellbeing and argues for the introduction of relationship-focused reflective practice into teacher training and support. Limitations of the study include the cross-sectional design and the questionnaire measure of wellbeing.

Introduction

In recent years there has been much empirical and political interest in the psychological wellbeing of school teachers, ranked as one of the most stressful occupations (Health and Safety Executive, 2015; Johnson et al., 2005). A recent survey in the UK reported that 84% of teachers had experienced some form of mental health problem in the previous two years; predominantly stress (77%), anxiety (60%) and depression (38%; Education Support Partnership, 2015). Stress has been cited as being responsible for significant attrition and elevated rates of suicide in the profession (Aud et al., 2011; National Union of Teachers, 2013).

Of the diverse occupational sources of teacher stress that have been identified (Kyriacou, 2001), problems with student discipline and behaviour have repeatedly been reported as a major factor by teachers (Blasé, 1986; Chan, Chen & Chong, 2010; Ingersoll, 2001). This association is borne out by numerous findings of a significant inverse association between students' behaviour problems and teachers' psychological wellbeing (Bibou-Nakou, Stogiannidou & Kiosseoglou, 1999; Friedman, 1995; Friedman-Krauss, Raver, Morris & Jones, 2014; Hastings & Bham, 2003; Kokkinos, 2007; McCormick & Barnett, 2011; Otero López et al., 2008; Tsouloupas, Carson, Matthews, Grawitch & Barber, 2010). For example, teachers who struggle with behaviour management (in their own opinion or that of their students) experience greater burnout (Brouwers & Tomic, 1999, 2000; Evers, Tomic & Brouwers, 2004). The stressful nature of student behaviour problems appears to be greater for teachers in urban schools relative to their colleagues in rural settings (Abel & Sewell, 1999).

A number of theorists have suggested that the adverse impact of student behaviour problems on mental wellbeing is due to the negative emotional responses that teachers have in their interactions with students (Chang, 2009; Frenzel, Goetz, Stephens & Jacob, 2009; Hargreaves, 1998; Spilt, Koomen & Thijs, 2011). This view is supported by empirical

findings, for example that students' ratings of their own behaviour problems predicted teachers' negative emotional experiences (Becker, Keller, Goetz, Frenzel & Taxer, 2015) and that teachers' emotional classroom experiences were associated with burnout (Keller, Chang, Becker, Goetz & Frenzel, 2014). Further, Chang (2013) found a positive relationship between teachers' negative emotional responses to perceived student misbehaviour and levels of burnout. Indeed, there is a growing body of literature that acknowledges the role of emotional labour – the daily effortful regulation of emotional experience and expression – in teacher burnout (Hargreaves, 2000; Kinman, Wray & Strange, 2011; Näring, Briët & Brouwers, 2006; Näring, Vlerick & van de Ven, 2012; Philipp & Schupbach, 2010).

In their theoretical model of teacher wellbeing, Spilt et al. (2011) proposed that the teacher-student relationship is a crucial context for understanding the emotional impact on teachers of student misbehaviour. The effect of teacher-student relationships on student outcomes is well understood (Cornelius-White, 2007; McGrath & Van Bergen, 2015), but the emotional impact of these relationships on teachers has only recently been appreciated (Chang & Davis, 2009). The teacher-student relationship (TSR) has been shown to be an important source of both positive and negative affect for teachers (Hargreaves, 2000; Jo, 2014; Kitching, Morgan & O'Leary, 2009; Stuhlman & Pianta, 2001). Good quality TSRs are associated with better psychological outcomes for teachers (Grayson & Alvarez, 2008; Veldman, van Tartwijk, Brekelmans & Wubbels, 2013), while TSRs characterised by perceived conflict have been found to be associated with negative emotional outcomes for teachers (Gastaldi, Pasta, Longobardi, Prino & Quaglia, 2014; Hamre, Pianta, Downer & Mashburn, 2008).

Spilt et al. (2011) situated their model within an attachment framework, arguing that internalised representational models of the TSR mediate teachers' emotional responses to student misbehaviour (see Figure 2.1). For example, if a student's behaviour is perceived to be problematic in some way – such as disruptive or disobedient – a teacher may develop a

mental model of their relationship as one of conflict and discord. This mental representation of the relationship may shape future interactions with the student and result in negative affect.

Some empirical findings have bearing on the model proposed by Spilt et al. (2011). For example, Hamré et al. (2008) found that 53% of variance in teachers' relational representations of conflict (i.e., the degree to which a teacher views the relationship with a specific student as being conflictual) was accounted for by perceived student misbehaviour. Doumen et al. (2008) reported a longitudinal association between teachers' ratings of aggressive student behaviour and conflict representations in the TSR. Specifically, levels of perceived aggressive behaviour at the start of an academic year predicted conflict mid-year, which subsequently predicted later aggressive student behaviour; this finding has been replicated in the context of special education (Breeman, Nouchka, Wubbels, Maras & van Lier, 2014). Although the research reviewed above is consistent with aspects of the model of Spilt et al. (2011), the specific role of the TSR as a mediating factor between student misbehaviour and teachers' emotional responses has not been empirically tested to date.

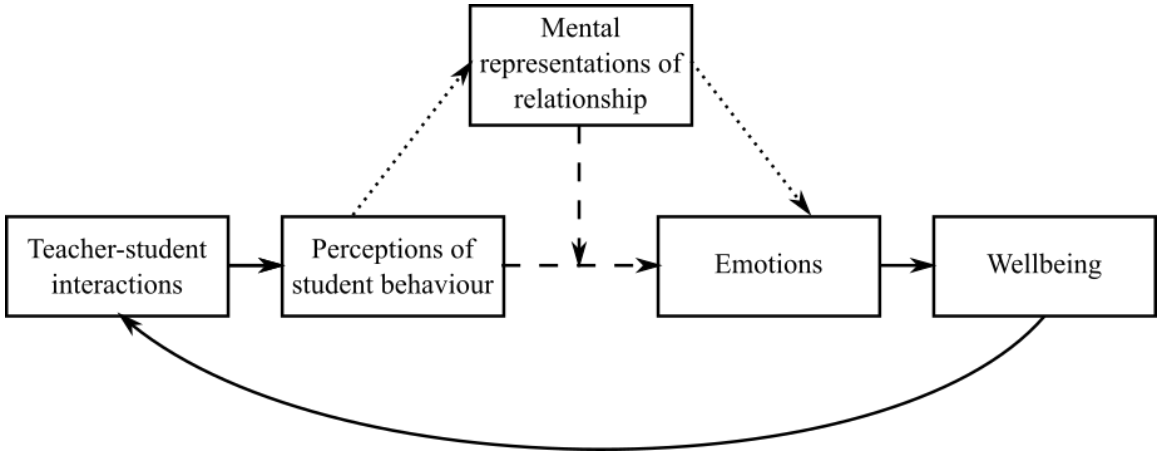


Figure 2.1. Pictorial depiction of the theoretical model of Spilt et al. (2011), based on their Fig. 1. Dotted lines indicate proposed mediation – the shaping of relational representations by perceptions of behaviour. Dashed lines indicate proposed moderation of relationship between behaviour and emotions by relational representations. Spilt et al. (2011) argue that mental representations of relationship can exist at different levels of abstraction – they can be specific to a particular TSR or can be more general models of attachment.

Central to a relational understanding of teacher wellbeing is the notion that negative emotions arise in response to situations that are incongruent with an individual's goals (Lazarus & Folkman, 1987; Lazarus, 1991). Spilt et al. (2011) argue that conflict representations are incongruent with teachers' goal of achieving relatedness with their students – considered to be a central motivating process for humans (Baumeister & Leary, 1995; Ryan & Deci, 2000) – and therefore result in negative emotions. Indeed, the goal of achieving a sense of relatedness with students has been identified as a major feature of a teacher's professional identity (Schutz, 2001; Sikes, Measor & Woods, 1991). For teachers, satisfaction of this goal has been associated with more positive and fewer negative emotions, while thwarting of this goal has predicted burnout (Bartholomew, Ntoumanis, Cuevas & Lonsdale, 2014; Klassen, Perry & Frenzel, 2012). With this in mind, Spilt et al. (2011) propose that in the context of a close TSR, conflict representations may be less predictive of negative emotional consequences, a view that has not been previously tested.

Internalised mental representations of relationships are thought to exist at different levels of a hierarchy, from specific relationships (e.g., TSRs) to a broader internal working model (IWM) that guides more generally how relationships are viewed (e.g., attachment patterns; Sibley & Overall, 2008). The attachment system (viewed as a 'behavioural control system') is thought to set goals such as proximity and relational closeness (Bowlby, 1977; West & Sheldon-Keller, 1994) and therefore may play a significant role in the processes discussed above. Indeed, Spilt et al. (2011) suggest that broader attachment patterns may shape or "amplify (i.e., *moderate*) the negative effects of perceived misbehaviour" (p. 470). A number of studies have consistently reported that a more secure attachment style is related to lower levels of occupational burnout in other professions (Pines, 2004; Ronen & Baldwin, 2010; Ronen & Mikulincer, 2009; Simmons, Gooty, Nelson & Little, 2009). In a sample of security guards, Vanheule & Declercq (2009) found that an insecure attachment style

increased the risk of burnout following the experience a stressful incident at work. Within caring professions, there have been mixed findings on associations between attachment style and burnout. A positive association between insecure attachment and burnout was reported in a sample of dementia care staff (Kokkonen, Cheston, Dallos & Smart, 2014), but not in a sample of hospice care staff (Hawkins, Howard & Oyebode, 2007).

In the context of teaching there has been less research on the role of attachment patterns, but a high proportion of teachers reported an insecure attachment (Horppu & Ikonen-Varila, 2004), particularly early in their career (Riley, 2009, 2013). Moreover, insecure attachment styles have been associated with emotional distress and burnout in teachers (Littman-Ovadia, Oren & Lavy, 2013), particularly when there is an incongruence between teachers' attachment security and perceived closeness with their students (Milatz, Lüftenegger & Schober, 2015). Of note, Morris-Rothschild & Brassard (2006) found that teachers who demonstrated an insecure attachment style were more likely to use ineffective management strategies and struggled with classroom behaviour. While the impact of attachment patterns on teachers' wellbeing appears to be similar to other professions, more research is needed to understand the role of teachers' broader attachments in their relationships with specific students, particularly those whose behaviours are viewed as problematic.

One limitation of the research discussed above is that it has primarily focused on general attachment insecurity, while it may be of more clinical interest to consider the role of particular IWMs (e.g., Bartholomew & Horowitz, 1991; Brennan, Clark & Shaver, 1998; West & Sheldon-Keller, 1994). One specific IWM which may in theory increase teachers' vulnerability to experiencing conflict in their relationships with students is that of compulsive caregiving. Compulsive caregiving is characterised by attending to the needs of others to the exclusion of one's own and is thought to develop as a proximity-seeking strategy in childhood when the communication of distress is discouraged (Bowlby, 1977; Crittenden, 2008).

Compulsive caregiving was termed the "helping profession syndrome" by Malan (2001, p. 161), and is particularly prevalent in other helping professions (Leiper & Casares, 2000). Malan proposed that compulsively meeting the needs of others leads to a "deficit in the emotional balance of payments" (2001, p. 161) and cited this as the main reason that helping professionals seek therapeutic support. However, the role of compulsive caregiving in the teachers' wellbeing has not previously been studied. In a compulsive caregiving IWM, one's self-worth is contingent on giving care to others. If care is blocked, for example by a student misbehaving in class, a teacher with this IWM might question their own worth and perceive greater conflict in the relationship. It is therefore possible that compulsive caregiving may facilitate the shaping of conflict representations in the face of perceived student misbehaviour.

The emotional consequences of TSRs may not be restricted to specific relationships, but rather to broader patterns of TSRs across a teacher's experience. For example, Milatz et al. (2015) used response surface analysis to examine the association between teacher burnout and the homogeneity of TSRs in a teacher's classroom. They found that burnout was highest when there were large discrepancies in how close teachers felt to the students in their class. Multiple TSRs characterised by conflict may have an additive effect, leading to reduced wellbeing when behaviour is generally perceived as problematic in the school. If compulsively caregiving teachers struggle with the "emotional balance of payments" (Malan, 2001, p. 161) in the classroom, one might expect this IWM to be particularly vulnerable to reduced wellbeing when widespread student misbehaviour is the norm in a school.

In summary, the present study aimed to test a number of predictions that arise from the relational account of teacher wellbeing proposed by Spilt et al. (2011) in a diverse sample of British school teachers. At the dyadic relationship level, it was firstly hypothesised in line with previous findings (Becker et al., 2015; Keller et al., 2014) that the misbehaviour of specific students would be associated with teachers' negative affective responses:

H1: Perceived student misbehaviour and teachers' negative affective responses are positively related.

Based on the proposition of Spilt et al. (2011) that perceived student misbehaviour shapes teachers' representations of conflict in their relationship with that student and that these conflict representations then result in negative affective responses, the following mediational hypothesis was made:

H2: Teachers' relational representations of conflict mediate the association between perceived student misbehaviour and teachers' negative affective responses.

It was further hypothesised that, as conflict representations are argued to result in negative emotions due to thwarting of the goal of relatedness (Spilt et al., 2011), closeness representations in the teacher-student relationship will ameliorate the adverse emotional impact of conflict representations:

H3a: Teachers' closeness representations moderate the association between conflict representations and negative affective responses – i.e., the relation between conflict representations and negative affect is weaker for teachers who view the dyadic relationship as being more close.

H3b: The indirect effect of perceived misbehaviour on negative affect through conflict representations (H2) varies as a function of closeness relational representations – i.e., the indirect effect is smaller for teachers who view the dyadic relationship as being more close.

A fourth hypothesis was proposed, that the shaping of teachers' conflict representations by perceived student misbehaviour would be facilitated by the teacher's attachment style. The IWM examined in the present study was compulsive caregiving due to its theoretical vulnerability to challenging behaviour:

H4a: Compulsive caregiving moderates the association between perceived misbehaviour and conflict representations – i.e., the association between perceived misbehaviour and conflict representations is stronger for teachers with relatively high levels of compulsive caregiving.

H4b: The indirect effect of perceived misbehaviour on negative affect through conflict representations (H2) varies as a function of compulsive caregiving – i.e., the indirect effect is greater for teachers with relatively high levels of compulsive caregiving.

At the level of general relationships, and in line with previous findings (e.g., Bibou-Nakou et al., 1999), it was hypothesised that perceptions of widespread misbehaviour would be associated with reduced wellbeing:

H5: Perceptions of general classroom misbehaviour and teacher wellbeing are inversely associated, even when controlling for other sources of teacher stress.

Finally, it was hypothesised that, through the repeated and widespread experience of conflict in relationships, a compulsive caregiving IWM would intensify the association between perceptions of general misbehaviour and reduced wellbeing:

H6: Compulsive caregiving moderates the association between perceptions of general misbehaviour and teacher wellbeing. This association is stronger for teachers with relatively high levels of compulsive caregiving.

Methods

Participants. Participants were 243 teachers working in British inner-city primary and secondary schools. Table 2.1 shows characteristics of the participating teachers. The intention was to sample teachers with a broad range of experience, to maximise the generalisability of the findings from this study. Fimian & Blanton (1987) found that the occupational burnout of trainee teachers is almost indistinguishable from that of their qualified colleagues. Consequently, qualified and trainee teachers were recruited for this study.

Trainee teachers were recruited through Teach First – a vocational training program that aims to recruit university graduates with high leadership potential. 101 trainee teachers participated at voluntary recruitment events held at six Teach First training conferences in London, Kent and Birmingham. Information about these events was provided in advance with the conference schedules.

Qualified teachers were recruited firstly through schools. Forty-three primary and secondary schools from the Birmingham area that had expressed willingness to participate in research were invited to advertise the current study to their teachers, of which three primary schools agreed to take part. Sixty-one qualified teachers participated from these three schools at voluntary recruitment events held during inset teacher training sessions. Information about these inset events was provided in advance to class teachers by school management during staff meetings. Further, another four schools (two primary, two secondary), as well as "Teaching Leaders" – a charity that provides professional development to qualified teachers – sent an invitation to their teachers to participate through an online portal. Eighty-one qualified teachers participated in this manner, giving a total of 142 qualified teachers.

To ensure that teachers had sufficient opportunity to develop coherent relational representations with students (cf. Doumen et al., 2008), only teachers who had at least four months (one term) of experience with their current classes were included. There were no other exclusion criteria for recruitment to this study.

Materials. The variables in this study (perceived misbehaviour, relationship representations and affective responses) were measured at two levels: dyadic and global. All questionnaires are presented in Appendix Two. For the dyadic measures, participants were asked to identify a specific student in their class (or with whom they had daily contact) who "often gets into trouble," and respond to the questionnaires about that student *over the past two weeks*.

Dyadic Measures.

Student Behaviour. To measure perceived misbehaviour of the identified student, the Teacher Observation of Classroom Adaptation Checklist (TOCAC; Leaf, Schultz, Keys & Ialongo, 2002) was used. Across twenty-one items, participants rated the frequency with which the identified student displayed a range of behaviours, comprising three subscales: concentration (e.g., "this child pays attention"), disruptive behaviour (e.g., "this child breaks rules") and prosocial behaviour (e.g., "this child is friendly") on a six-point Likert scale (anchored with "Never" and "Almost always"). The total scale score (with concentration and prosocial behaviour items reverse scored) was used rather than individual subscales to reflect the possibility that different teachers may consider different aspects of behaviour more challenging (Clunies-Ross, Little & Kienhuis, 2008; Friedman, 1995; Hastings & Bham, 2003). The checklist has been previously validated (Koth, Bradshaw & Leaf, 2009), and the total scale demonstrated good internal consistency in the current study ($\alpha = .81$). A higher score indicated a higher degree of perceived misbehaviour (range = 21 – 126).

Relational representations. To measure conflict and closeness in the teachers' representation of their relationship with the identified student, two subscales of the Student-Teacher Rating Scale (STRS; Pianta, 2001) were used. The conflict (eight items, e.g., "This child and I always seem to be struggling with each other") and closeness (seven items, e.g., "I share an affectionate, warm relationship with this child") subscales are measured across fifteen items, each rated on a five-point Likert scale (anchored with "Definitely does not apply" and "Definitely applies"). The factor structure of this questionnaire has been validated (Drugli & Hjemdal, 2013). Internal consistency in the current study was good for both the conflict ($\alpha = .85$) and closeness ($\alpha = .86$) subscales. Higher scores on each subscale indicated greater perceived conflict and closeness, respectively (range: conflict = 8 – 40; closeness = 7 – 35).

Affective consequences. The negative affect scale of the Positive and Negative Affect Schedule (PANAS; Watson, Clark & Tellegen, 1988) was used to measure teachers' negative emotional responses to interactions with the identified student. This measure, which covers a broad range of negative feelings (e.g., upset, scared, guilty), was chosen because no particular specific negative emotion was hypothesised to characterise teachers' affective response. The negative affect scale of the PANAS consisted of ten single-word items (e.g., "Distressed", "Hostile"), which participants rated on a five-point Likert scale based on how much they felt that way in their interactions with the identified student (anchored with "Not at all" and "Very much"). This measure has been validated in a non-clinical sample (Crawford & Henry, 2004), and demonstrated good internal consistency in the current study ($\alpha = .85$). Higher scores indicated a greater negative affective response (range = 10 – 50).

Global measures.

Student behaviour. To measure perceived global misbehaviour, the Student Interactions subscale of the revised School Level Environment Questionnaire (SLEQ; Johnson, Stevens & Zvoch, 2007) was used. Participants rated how well four items described their general interactions with students, on a five-point Likert scale (anchored with "Strongly disagree" and "Strongly agree"). The revised SLEQ also contains a number of other subscales that were used to measure other organisational sources of stress. To aid interpretation of these measures as potential sources of stress, positively worded items (e.g., "There is good communication among teachers") were reverse scored, giving four scales that were named: problematic student interactions (four items, e.g., "Students in my class are well behaved"); lack of collaboration (six items, e.g., "Good teamwork is not emphasised enough at my school"); lack of resources (four items, e.g., "The supply of equipment and resources is not adequate") and lack of involvement in decision-making (three items, e.g., "I have very little say in the running of the school") for the purposes of this study. Because the subscales had

varying numbers of items, and to aid comparison between subscales, subscale averages were calculated by dividing subscale totals by the number of items. Internal consistency of the "problematic student interactions" (α = .85) and "lack of collaboration" (α = .79) subscales was good in the current study, but was limited for the "lack of resources" (α = .68) and "lack of involvement in decision making" (α = .58) subscales. Higher scores on each subscale indicated greater levels of each source of stress (range = 1 – 5).

Relational representations. The global relationship representation of interest in this study was a compulsive caregiving IWM, which was measured using the Compulsive Caregiving subscale of the Reciprocal Attachment Questionnaire (RAQ; West & Sheldon-Keller, 1994). Participants were asked to complete this questionnaire based on their attachment figure, which was defined as the person to whom they felt closest. Across twenty-eight items, rated on a five-point Likert scale (anchored with "Strongly disagree" and "Strongly agree"), the RAQ pattern scale gives scores for four different attachment patterns (compulsive caregiving, compulsive care-seeking, compulsive self-reliance, and angry withdrawal). Only the compulsive caregiving scale (seven items, e.g., "I put my attachment figure's needs before my own") was used in this study. West & Sheldon-Keller (1994) report an α of .70 for this scale, although reliability in the present study was somewhat lower (α = .61). Higher scores indicated a greater degree of compulsive caregiving (range = 7 – 35).

Affective consequences. General mental wellbeing was measured using the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS; Tennant et al., 2007). Participants rated each of fourteen statements about their thoughts and feelings over the past two weeks (e.g., "I've been feeling cheerful") on a five-point Likert scale (anchored with "None of the time" and "All of the time"). Tennant et al. (2007) report an α of between .89 and .90, which was replicated in the present study (α = .90). Higher scores indicated greater mental wellbeing (range = 14 – 70).

Procedure. Ethical approval for the study was obtained from the University of Birmingham Science, Technology, Engineering and Mathematics Ethical Review Committee (see Appendix Three). All participants gave written informed consent (see Appendix Four for information sheet and consent form). The school inset and Teach First recruitment events lasted up to two hours, during which time participants gave informed consent and completed the battery of questionnaires using pencil and paper. Participants were then debriefed during the session through a short talk by the researcher, supported by written information (see Appendix Five). For those participants who completed the study online (33%), the online portal was hosted by LimeSurvey (Schmitz, 2015). Participants accessed the study information sheet, consent form and an electronic version of the questionnaires through a secure URL. After completion of the questionnaires, participants could download an electronic version of the debrief information.

Data Analysis. Data analyses were carried out using SPSS (v.22; IBM Corp., 2013). Regression analyses were conducted using ordinary least squares (OLS) regression. Moderation, mediation and moderated mediation analyses were carried out using the PROCESS macro for SPSS. Specific details of hypothesis testing are described in the results section.

For mediation analyses, Hayes (2013) and Preacher, Rucker & Hayes (2007) recommend calculating bias-corrected 95% confidence intervals from bootstrapped samples as an inferential test. This is because indirect effects involve the product of regression coefficients which are unlikely to be normally distributed, violating a core assumption of traditional inferential tests (Preacher et al., 2007). When calculating an indirect effect in the current study, if the bootstrapped 95% confidence interval did not include zero, then the indirect effect was deemed significant. This approach is also more statistically powerful (Mackinnon, Lockwood & Williams, 2004) than a normal-theory approach.

For moderation analyses, it has been argued that variables should be mean-centred and standardised (Aiken & West, 1991) to avoid issues of multicollinearity. This method has been demonstrated to be unnecessary (Hayes, 2013), although can aid interpretation of main effects in moderation analyses. As main effects were not the main focus of the present study, it was decided not to mean-centre or standardise variables prior to moderation analysis to aid clarity.

Of the 243 participants, 229 completed all of the questionnaires. Six did not complete the RAQ, six did not complete any of the dyadic measures (TOCAC, STRS and PANAS) and two did not complete the SLEQ. Each analysis was conducted using the maximum number of participants available for the variables involved in the analysis. Preacher et al. (2007, Table 5) report empirical power of bias-corrected bootstrapped confidence intervals in a simulated moderated mediation model similar to those hypothesised in the current study. With a sample size of 200, empirical power was 1.00 when regression coefficients were moderate (.39) and was .46 when regression coefficients were small (.14). Therefore the current sample size was deemed sufficient for identifying effects of moderate size, which may be of clinical interest (Jacobson & Truax, 1991).

Results

Means and standard deviations of the study variables are shown in Table 2.1. Inter-correlations (Pearson's r) between study variables are shown in Table 2.2. The mean values of the dyadic measures were generally around the midpoint of the possible ranges; it was not possible to compare these to previously published values as this study was unique in requiring participants to identify a student who "often gets in trouble." Regarding the general sources of stress, problematic student interactions had the lowest mean of the four SLEQ scales, but were lower than previously published values (Collie, Shapka & Perry, 2012). Mean levels of compulsive caregiving were similar to those reported in a previous sample of helping professionals (Dickson, Moberly, Marshall & Reilly, 2011) and were roughly at the midpoint

of the possible range. Mean levels of general wellbeing were roughly at the midpoint of the possible range, but were somewhat lower than the population median (Tennant et al., 2007).

Examining potential demographic confounding variables. Table 2.3 shows correlation coefficients (Pearson's r) between the study variables and the demographic variables (categorical demographic variables coded as dummy variables, indicated in table notes). Because this involved ten separate statistical comparisons for each demographic variable, a Bonferroni correction was applied to reduce Type I error rate, resulting in correlations in Table 2.3 being tested at an alpha level of .05/10 = .005. Apart from ethnicity, all of the demographic variables were significantly associated with at least one of the study outcome or mediator variables at this Bonferroni corrected alpha level. Consequently, all of the analyses described below were repeated including age, teaching experience as continuous covariates and gender, school type and qualification status as dummy covariates. In all cases, when repeating the following analyses additionally controlling for these demographic variables, an identical pattern of results emerged.

Table 2.1

Characteristics of sample (N=243).

Variables	*n* or Mean	% or SD	Range
Demographics			
Age	31	9.83	21 – 69
Gender (Female)	183	75.31	n/a
Ethnicity			
Caucasian	195	80.25	n/a
Ethnic minorities:	48	19.75	n/a
Mixed	14	5.76	n/a
Asian/Asian British	16	6.58	
Black/Black British	15	6.17	n/a
Other	3	1.23	n/a
Qualification status			
In training	101	41.56	n/a
Completed training	142	58.44	n/a
School type			
Primary	131	53.91	n/a
Secondary	112	46.09	n/a
Length of teaching experience (Years)	6.85	7.85	0.33 – 37.25[a]
Dyadic relationship measures			
TOCAC perceived individual misbehaviour	73.93	8.56	38 – 94
STRS conflict	26.03	7.01	8 - 39
STRS closeness	22.56	6.22	7 – 35
PANAS Negative affect	20.68	7.35	10 - 42
General measures			
RAQ compulsive caregiving	23.66	3.76	12 – 34
SLEQ sources of stress			
Problematic student interactions	2.36	0.75	1.00 – 4.75
Lack of collaboration	2.81	0.79	1.17 – 5.00
Lack of resources	3.01	0.82	1.25 – 5.00
Lack of involvement in decision-making	3.52	0.79	1.33 – 5.00
WEMWBS wellbeing	45.44	7.78	25 – 68

Notes: [a] Trainee teachers had a range of 0.33 – 2 years' teaching experience. Qualified teachers had a range of 1 – 37.25 years' teaching experience.

Table 2.2

Pearson's correlations (r) between all study variables.

	2	3	4	5	6	7	8	9	10
Dyadic relationship measures									
1. TOCAC perceived individual misbehaviour	.37***	-.01	.27***	.06	.26***	.14*	.22***	.08	-.17*
2. STRS conflict		-.40***	.51***	.05	.41***	.26***	.11	.27***	-.25***
3. STRS closeness			-.20**	.05	-.34***	-.12^{+}	.03	-.09	.10
4. PANAS Negative affect				.05	.36***	.20**	.10	.25***	-.24***
General measures									
5. RAQ compulsive caregiving					.07	-.02	.05	.07	.02
6. SLEQ Problematic interactions with students						.35***	.26***	.26***	-.28***
7. SLEQ lack of collaboration							.52***	.58***	-.23***
8. SLEQ lack of resources								.31***	-.15*
9. SLEQ lack of involvement in decision-making									-.21**
10. WEMWBS wellbeing									

Notes: $^{+}$ $p < .1$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 2.3

Pearson's correlations (r) between study and demographic variables.

	Demographic variable					
Study variable	Age	Gender[a]	Ethnicity[b]	Teaching experience	School type[c]	Qualification status[d]
TOCAC Perceived individual misbehaviour	-.02	.04	-.03	-.11^{+}	.01	**-.20****
STRS conflict	-.15*	-.08	.04	**-.21****	**-.26*****	**-.37*****
STRS closeness	.06	**.20****	.09	.11^{+}	**.36*****	.16*
PANAS Negative affect	**-.21****	.05	.16*	**-.24*****	-.05	**-.34*****
RAQ compulsive caregiving	-.08	-.05	-.03	-.03	.01	.09
SLEQ Problematic interactions with students	-.17*	-.08	.03	**-.22****	**-.28*****	**-.39*****
SLEQ lack of collaboration	-.16*	-.10	-.01	**-.24*****	-.16*	**-.41*****
SLEQ lack of resources	-.08	.10	-.05	-.15*	-.003	**-.30*****
SLEQ lack of involvement in decision-making	**-.30****	-.16*	-.06	**-.35*****	-.16*	**-.42*****
WEMWBS wellbeing	.01	-.06	-.01	.01	-.03	.16*

Notes: Dummy variables coded as: [a] Gender: male = 0, female = 1; [b] Ethnicity: Caucasian = 0, ethnic minority = 1; [c] School type: secondary = 0, primary = 1; [d] Qualification status: in training = 0, completed training = 1

$^{+}$ $p < .1$, * $p < .05$, ** $p < .005$, *** $p < .001$. Values in bold text indicate correlations significant at the Bonferroni corrected alpha level of .005.

Dyadic relationships.

Association of perceived misbehaviour and negative emotional consequences. In a regression model, supporting H1, a single point increase in perceived student misbehaviour (measured using the TOCAC) was associated with around a quarter point increase in teachers' negative affect (measured using the PANAS), B = 0.23, SE = 0.05 $p < .001$. In the terminology of the proceeding mediation analysis, this is the total effect of perceived misbehaviour on negative affect (path *c*, see Figure 2.2). Further, and consistent with the model of Spilt et al. (2011), teachers' specific negative affective responses to the identified student were inversely correlated with their global wellbeing (measured using the WEMWBS; see Table 2.2).

The mediating effect of conflict representations. Supporting H2, a simple mediation analysis demonstrated that perceived individual misbehaviour influenced teachers' negative affect indirectly through its impact on conflict representations (measured using the STRS conflict scale). Figure 2.2 reports the regression coefficients for the model. Perceived individual misbehaviour was positively related to conflict representations (path $a = 0.30$), which were in turn positively associated with negative affect (when controlling for perceived individual misbehaviour; path $b = 0.50$). Multiplying these paths gives an indirect effect of $ab = 0.15$. In other words, a one-unit increase in perceived individual misbehaviour is expected, through its indirect effect on conflict representations, to result in a 0.15-unit increase in negative affect. A bias corrected 95% confidence interval from 10000 bootstrap samples indicated the indirect effect was significantly greater than zero (95% CI = 0.09 to 0.23). Indicating full mediation, this model found no significant association between perceived individual misbehaviour and negative affect independent of conflict representations (path $c' = 0.07$, $p = .16$). It should be noted, however, that as these variables were measured using cross-sectional questionnaires, firm causal conclusions cannot be drawn.

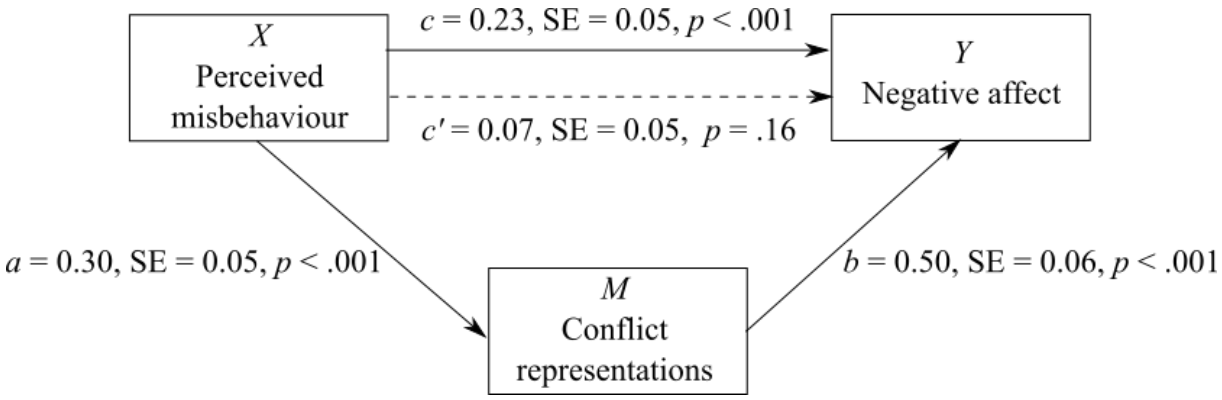


Figure 2.2. Mediation model showing indirect effect of perceived individual misbehaviour (*X*) on teachers' negative affect (*Y*) through relational representations of conflict (*M*).

The moderating effect of closeness representations. H3a predicts that path *b* in the above mediation model – the association between conflict representations and negative affect – is conditional on closeness representations. This hypothesised moderation is represented in Figure 2.3 as conceptual and statistical diagrams. To test H3a, negative affect was regressed on conflict representations, closeness representations (measured using the STRS closeness scale) and their product (cf. Aiken & West, 1991). For consistency with the moderated mediation analysis (see below), perceived individual misbehaviour was also included as a predictor. The coefficients of this regression analysis are shown in Table 2.4, Panel A in the model of negative affect. The significant interaction term (B = -0.02, p = .02) indicates that the association between conflict representations and negative affect was conditional on closeness representations.

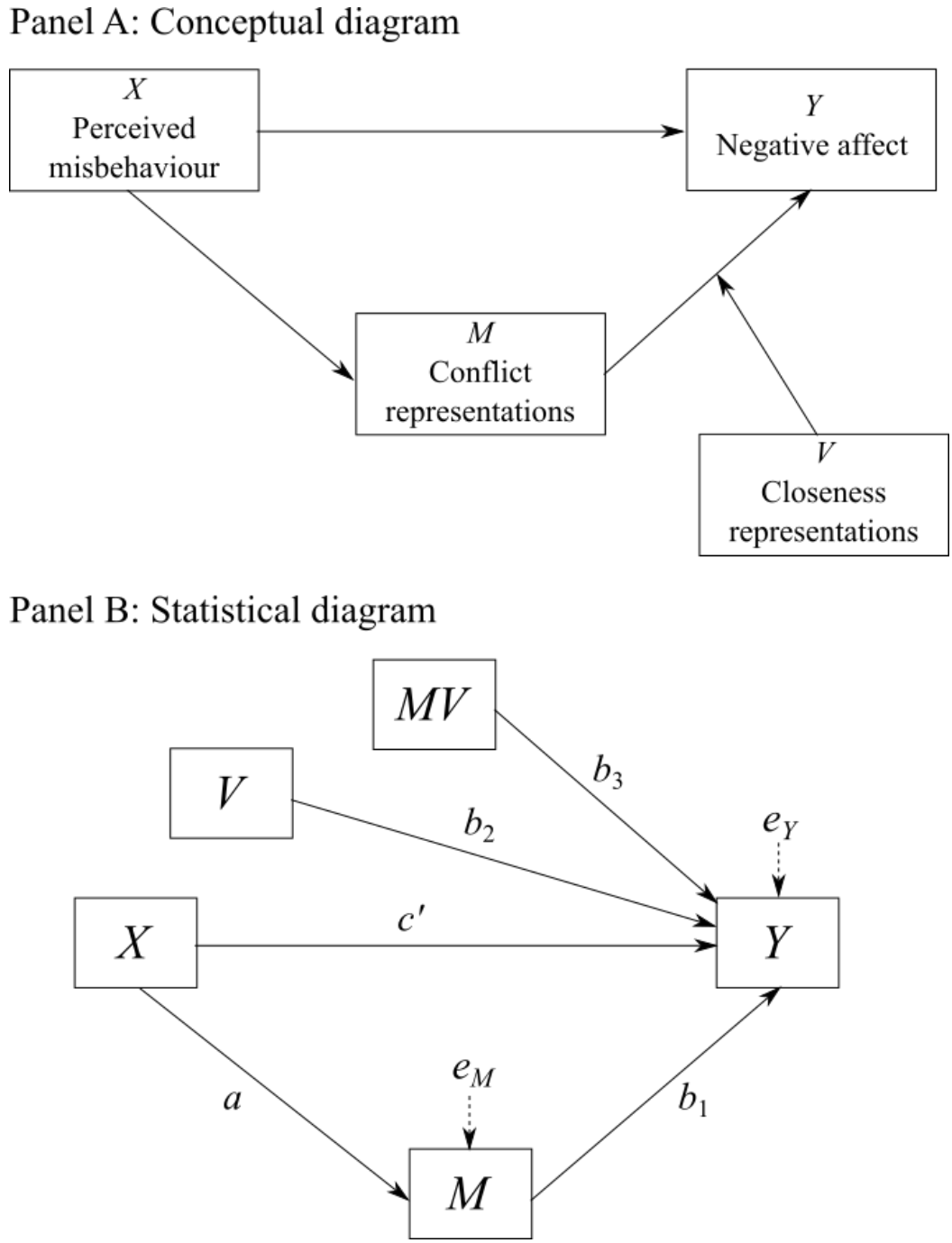


Figure 2.3. Conceptual (Panel A) and Statistical (Panel B) diagrams of conditional indirect effect of perceived individual misbehaviour (*X)* on teachers' negative affect (*Y*) through conflict representations (*M*) moderated by closeness representations (*V*). This is Model 14 from Hayes (2013).

Table 2.4

Results of moderated mediation analysis.

Panel A: Regression results

Conflict representations regressed on:	B coeff.	SE	p
Constant	3.52	3.71	.34
Perceived individual misbehaviour (*a*)	0.30	0.05	<.001

$R^2 = 0.14$, $p < .001$

Negative affect regressed on:	B coeff.	SE	p
Constant	-11.95	7.34	.11
Perceived individual misbehaviour (*c'*)	0.08	0.05	.12
Conflict representations (b_1)	1.00	0.23	<.001
Closeness representations (b_2)	0.57	0.26	.03
Interaction (conflict x closeness; b_3)	-0.02	0.01	.02

$R^2 = 0.28$, $p < .001$

Panel B: Indirect effect of perceived individual misbehaviour conditioned at values of closeness representations, with bias-corrected bootstrapped 95% confidence intervals (10000 bootstrap samples)

			Bias-corrected bootstrapped 95% confidence intervals	
Closeness representations		Indirect effect	Lower	Upper
-1 SD	16.34	0.20	0.12	0.29
Mean	22.56	0.16	0.09	0.23
+1 SD	28.78	0.12	0.05	0.20

Using the pick-a-point approach described in Bauer & Curran (2005) and Hayes (2013), the association between conflict and negative affect was calculated at chosen values of closeness (mean, +/-1SD). Figure 2.4 shows these associations, demonstrating that, in partial support of H3a, the relation between conflict representations and negative affect is weaker at higher levels of closeness representation. The value of conflict representations at the crossover point of this interaction is 26.60 (see Widaman et al., 2012, for a derivation of this value). When conflict was greater than 26.60, higher levels of closeness were associated with lower negative affect, consistent with H3a. However, at values of conflict below 26.60, higher levels of closeness were associated with marginally greater negative affect, contrary to H3a.

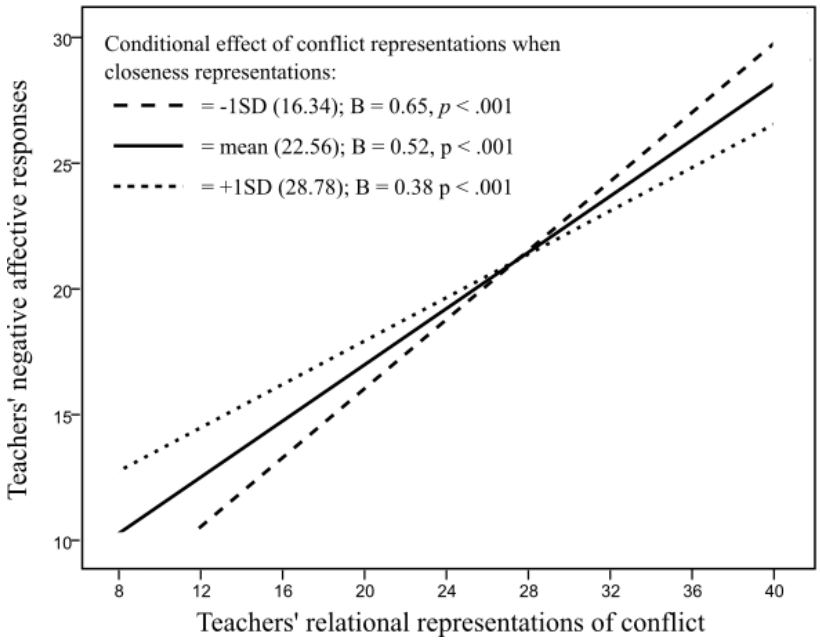


Figure 2.4. Interaction of teachers' relational representations of conflict and closeness.

Following from this, H3b predicts that the indirect effect of perceived individual misbehaviour on negative affect through conflict representations is conditional on closeness representations. Hayes (2013) recommends testing such a *moderated mediation* hypothesis by conducting an inferential test to assess the significance of the conditional indirect effect at chosen values of the moderating variable. The conditional indirect effect is expressed as $a(b_1$

+ b_3V) in the terminology of Figure 2.3, Panel B (i.e., the product of the effect of the independent variable on the mediator – path a – and the conditional effect of the mediator on the outcome, defined by Hayes, 2013, as $b_1 + b_3*V$). This conditional indirect effect was calculated with bias corrected 95% confidence intervals (from 10000 bootstrap samples) at chosen values of the moderator (mean, +/-1SD), shown in Table 2.4, Panel B and represented graphically in Figure 2.5. As closeness representations increased, the conditional indirect effect of perceived individual misbehaviour on negative affect through conflict representations became weaker, although remained significant.

The difference in the conditional indirect effect at any two given values of the moderator is calculated as $a(b_1 + b_3V_1) – a(b_1 + b_3V_2)$, simplifying to $ab_3(V_1 – V_2)$. Given that in a set of bootstrapped samples, $(V_1 – V_2)$ will always be constant, then a bootstrapped 95% confidence interval of ab_3 alone can serve as an inferential test of moderated mediation (Hayes, 2013). Using 10000 bootstrap samples, the bias corrected 95% confidence interval of ab_3 for this model was -0.01 to -0.001, with a point estimate of -0.01, indicating that the conditional indirect effect of perceived misbehaviour on negative affect through conflict representations was significantly different at any two given values of closeness representation, supporting H3b.

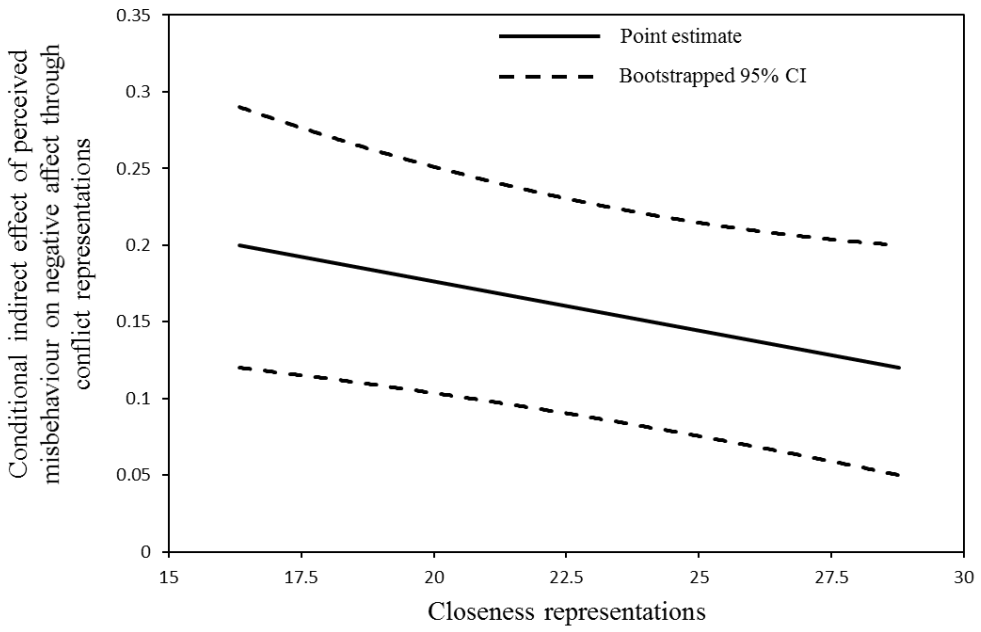


Figure 2.5. Conditional indirect effect of perceived individual misbehaviour on negative affect through conflict representations plotted as a function of closeness representations, including bias corrected 95% confidence intervals calculated from 10000 bootstrap samples.

The moderating effect of compulsive caregiving. H4a states that the shaping of conflict representations by perceived individual misbehaviour is amplified by a compulsive caregiving IWM. This predicts that path *a* in Figure 2.2 is conditional on compulsive caregiving. To test H4a, teachers' conflict representations were regressed on perceived individual misbehaviour, compulsive caregiving (measured using the RAQ) and their product. The regression coefficients are shown in Table 2.5, Panel A. The interaction term was not significant ($p = .79$), indicating that, contrary to H4a, the relation between conflict representations and perceived individual misbehaviour was not conditional on compulsive caregiving. Of further note, the zero-order correlation between compulsive caregiving and conflict representations was not significant (see Table 2.2), further challenging the notion that compulsive caregiving facilitates the shaping of dyadic relational representations. Due to a lack of evidence for a conditional effect, it was decided not to test the conditional indirect effect (H4b).

Given this surprising result, a further post-hoc moderation analysis was conducted to test whether the total effect of perceived individual misbehaviour on negative affect (H1, path *c* in Figure 2.2) was conditional on compulsive caregiving. Negative affect was regressed on perceived individual misbehaviour, compulsive caregiving and their product. The regression coefficients are shown in Table 2.5, Panel B. The interaction term was not significant (p = .24), providing no evidence for the hypothesis that specific negative affective responses to perceived misbehaviour of an individual student are conditional on compulsive caregiving.

Table 2.5

Results of analyses of moderation of dyadic relationship associations by compulsive caregiving.

Panel A: Moderation of effect of perceived misbehaviour on conflict representations			
Conflict representations regressed on:	B coeff.	SE	p
Constant	-3.72	24.25	.88
Perceived individual misbehaviour (PIM)	0.39	0.32	.23
Compulsive caregiving (CC)	0.31	1.02	.76
Interaction (PIM x CC)	-0.004	0.01	.79
$R^2 = 0.14$, $p < .001$			
Panel B: Moderation of effect of perceived misbehaviour on conflict representations			
Negative affect regressed on:	B coeff.	SE	p
Constant	31.74	25.98	.22
Perceived individual misbehaviour (PIM)	-0.16	0.34	.64
Compulsive caregiving (CC)	-1.22	1.10	.27
Interaction (PIM x CC)	0.02	0.01	.24
$R^2 = 0.08$, $p < .001$			

Global relationships.

Association of perceived misbehaviour and negative emotional consequences. To test H5 – that perceived global misbehaviour is inversely related to teachers' global wellbeing, even when accounting for other sources of teaching stress – teachers' wellbeing (measured using the WEMWBS) was regressed on the four SLEQ scales (problematic student interactions, lack of collaboration, lack of resources and lack of involvement in decision-making). Together, these sources of stress accounted for roughly 10% of variance in the wellbeing measure. Regression coefficients are shown in Table 2.6, Panel A. Problematic student interactions were significantly associated with reduced wellbeing (B = -2.23, $p < .01$). Of the sources of stress measured by the SLEQ, the problematic student interactions scale had the lowest mean levels (see Table 2.1), but was the strongest predictor of reduced wellbeing (see Table 2.6, Panel A). In contrast with these and previous findings (McCormick & Barnett, 2011), many participating teachers shared during the study debrief that their interactions with students were a primary source of job satisfaction (e.g., "it's the kids that keep me sane"), rather than stress.

The moderating effect of compulsive caregiving. H6 predicts that the inverse association between perceived global misbehaviour and global wellbeing is moderated by compulsive caregiving. Of note, the zero-order correlation between compulsive caregiving and global wellbeing was not significant (see Table 2.2). To test H6, compulsive caregiving and its interaction with the SLEQ problematic student interactions scale were included as a predictor in the regression analysis described above (see Table 2.6, Panel B). The interaction term (B = -0.10, $p < .01$) indicates a significant moderation effect.

Table 2.6

Association between perceived global misbehaviour and wellbeing, moderated by compulsive caregiving.

Panel A: Simple association of perceived global misbehaviour and wellbeing

Wellbeing regressed on:	B coeff.	SE	p
Constant	57.05	2.62	<.001
SLEQ Problematic student interactions	-2.23	0.69	<.01
SLEQ Lack of collaboration	-0.86	0.86	.32
SLEQ Lack of resources	-0.13	0.70	.85
SLEQ Lack of involvement in decision-making	-1.01	0.76	.19

$R^2 = 0.10$, $p < .001$

Panel B: Moderation of simple association by compulsive caregiving

Wellbeing regressed on:	B coeff.	SE	P
Constant	30.49	9.72	<.01
SLEQ Problematic student interactions (PSI)	7.57	3.62	.04
SLEQ Lack of collaboration	-0.33	0.85	.70
SLEQ Lack of resources	-0.07	0.69	.92
SLEQ Lack of involvement in decision-making	-1.26	0.74	.09
Compulsive caregiving (CC)	1.10	0.40	.01
Interaction (CC x PSI)	-0.10	0.04	.01

$R^2 = 0.13$, $p < .001$

Using the pick-a-point approach described above, the association between problematic student interactions and wellbeing was calculated at chosen values of compulsive caregiving (mean, +/-1SD). Figure 2.6 shows these associations, demonstrating that, in support of H6, as levels of compulsive caregiving increased, so did the strength of the inverse association between problematic student interactions and wellbeing. Of note, at low levels of compulsive caregiving (-1SD), this inverse association was not significant (B = -0.67, p = .43, see Figure 2.6). Consistent with H6, when problematic student interactions were high (above the interaction crossover point of 2.65), higher levels of compulsive caregiving were associated with lower wellbeing, while the converse was true when problematic student interactions were low (i.e., below 2.65).

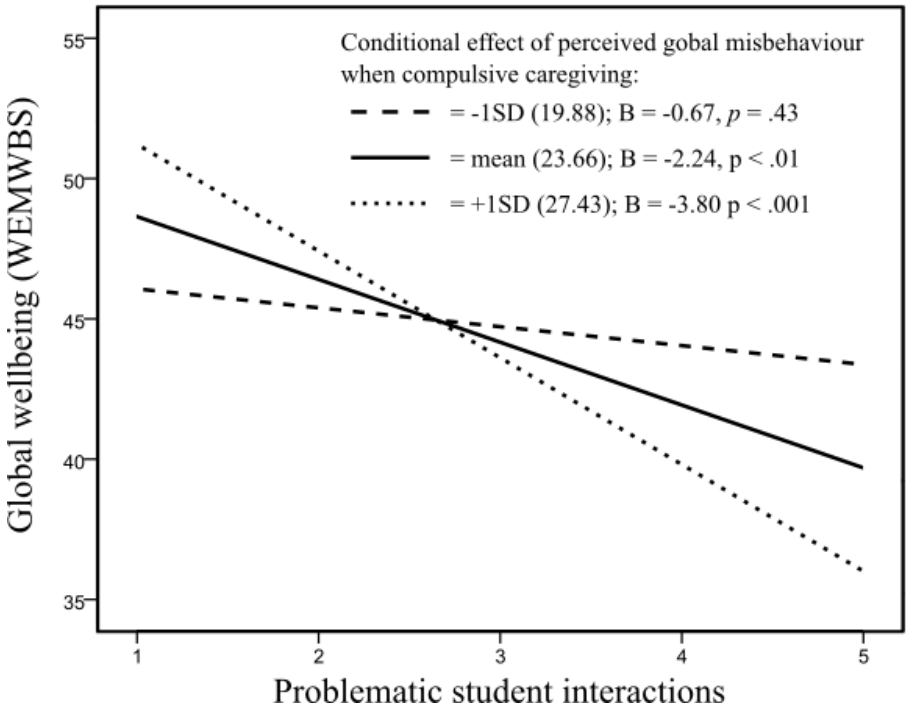


Figure 2.6. Interaction of compulsive caregiving and perceived general misbehaviour.

Discussion

Spilt et al. (2011) proposed a model of teacher wellbeing in which problematic student behaviour leads to negative teacher emotions through the shaping of mental representations of conflict in the teacher-student relationship (TSR), which are incongruent with the close relationships that teachers seek to build with their students. Using a cross-sectional design, the present study tested predictions arising from this model, in addition to examining whether general patterns of attachment (specifically compulsive caregiving) might facilitate the role of conflictual teacher-student relationships in teacher wellbeing, both in dyadic relationships and across teachers' wider experiences of students.

In support of H1, perceptions of an identified student's misbehaviour were positively associated with teachers' negative affective responses. Supporting H2, there was evidence that this association was significantly mediated by teachers' mental representations of conflict in the teacher-student relationship. Due to the cross-sectional nature of this study, it is not possible to draw firm causal conclusions from this mediational model, but the results are consistent with the causal model proposed by Spilt et al. (2011).

Partially supporting H3, impact of relational conflict was conditional on closeness in the TSR: the indirect effect of perceived student misbehaviour on teachers' negative affect via relational conflict was mitigated by closeness. However, when conflict representations were low, greater perceived closeness was associated with a more negative affective response, indicating that closeness may carry risks as well as offering protection against the negative impact of conflict.

Contrary to H4, there was no indication that the shaping of conflict representations by perceptions of student misbehaviour was facilitated by a compulsive caregiving internal working model. Further, the post-hoc hypothesis that the association between perceived student misbehaviour and negative affect (H1) would be stronger at higher levels of

compulsive caregiving was not supported. On the other hand, the significant association between general levels of perceived misbehaviour in a teacher's wider school experience and their general wellbeing (supporting H5) *was* stronger at higher levels of compulsive caregiving, supporting H6.

These findings highlight the TSR as an important context for understanding the negative emotional consequences of perceived problematic student behaviour and the particular role of teachers' internal mental representations of these relationships in mediating the effect of this context. Although previous studies have examined associations between student behaviour and teachers' emotions (e.g., Abel & Sewell, 1999; Bibou-Nakou et al., 1999; Tsouloupas et al., 2010), student behaviour and TSRs (Doumen et al., 2008; Hamre et al., 2008), and TSRs and teacher wellbeing (Gastaldi et al., 2014; Grayson & Alvarez, 2008; Veldman et al., 2013), this is the first study to empirically test the interplay of all three components of the model proposed by Spilt et al. (2011). The broad sample of teachers with different levels of experience and training recruited in the present study mean that the findings have good generalisability to the wider teaching population.

While previous research has explored the impact of conflict and closeness in the TSR separately (e.g., Hamre et al., 2008; Milatz et al., 2015), the current study is unique in examining the interaction between these dimensions of the TSR. The present finding that closeness with challenging students is protective against the negative emotional consequences of conflict in this relationship is partly consistent with existing work. For example, Milatz et al. (2015) found that emotional exhaustion was lowest when teachers reported relationships that were consistently close across *all* students in the class, including with the least attached students. In the present study, however, the benefits of achieving a close relationship with a student identified as behaving problematically appear to be limited to ameliorating the effects of conflict. Closeness in the absence of conflict was associated with marginally negative

emotional consequences. This finding seems surprising, but may indicate additional risks to developing close relationships with challenging students. For example, a teacher who feels close to a student whose behaviour presents a barrier to their academic achievement might feel more frustrated than a teacher who is less invested in the relationship. Indeed, Le Cornu (2013) interviewed newly-qualified teachers and concluded that they "were both sustained by and drained by the relationships they developed with their students" (p.4).

In examining the role of a specific attachment internal working model (IWM) in teacher wellbeing (compulsive caregiving), the present study goes beyond previous research, which has measured general attachment insecurity in teachers (e.g., Littman-Ovadia et al., 2013; Morris-Rothschild & Brassard, 2006). The pattern of findings across H4 and H6 suggests that compulsive caregiving is a risk factor for negative emotional responses to problematic student behaviour when perceived broadly across a teacher's experience, but not within dyadic teacher-student relationships. This divergence in the impact of compulsive caregiving across general and dyadic relationships is somewhat surprising, and may be a methodological artefact. Given the current sample size, the statistical power to detect a significant interaction of such small magnitude (see Table 2.5, Panel A) would be limited (Preacher et al., 2007). This problem may have been compounded by the moderate reliability of the compulsive caregiving measure (acknowledged also by Field & Sundin, 2001).

Another possible explanation for the lack of support for a role of compulsive caregiving in affecting the dynamics of dyadic TSRs is that attachment style may have systematically affected student selection in the present study. Silberman (1969) proposed a system of classifying students into four categories based on teachers' feelings towards that student: *Rejection* ("If your class was to be reduced by one child, whom would you be relieved to have removed?" p. 403); *Attachment* ("If you could keep one student another year for the sheer joy of it, whom would you pick?" p. 403); *Indifference* ("If a parent were to drop

in, unannounced, for a conference, whose child would you be least prepared to talk about?" p. 403); and *Concern* ("If you could devote all your attention to a child who concerns you a great deal, whom would you pick?" p. 403). Teachers in the present study were instructed to identify a student who "often gets into trouble." It is conceivable that teachers with a more compulsive caregiving IWM may have been more likely to identify a *Concern* student (based on Silberman's classification), while others may have identified a *Rejection* student. Equally, compulsive caregiving teachers may have identified students who "often get into trouble" (cf. the task instructions) with other teachers, but not themselves. These potential systematic differences could have masked other important effects of compulsive caregiving.

Alternatively, attachment IWMs may indeed have greater impact across a teacher's wider experience than in their dyadic relationships. For instance, in a study of early-years educators, Constantino and Olesh (1999) found that educators' attachment security did not predict the quality of their reciprocal interactions with specific children. Further, Milatz et al. (2015) reported that global attachment security was less important than closeness with a specific student in predicting teacher burnout. The emotional risks associated with compulsive caregiving may only arise when *multiple* relationships are threatened by conflict. If a minority of students misbehave, a compulsively caregiving teacher may seek to direct their caregiving efforts towards other more accepting students in their class. If a majority of students in a class or school are rejecting of a teacher's attempts to care, however, this may amplify the "deficit in the emotional balance of payments" (Malan, 2001, p. 161), which is the proposed emotional cost of compulsive caregiving. In support of this idea, Milatz et al. (2015) found that consistently close student relationships *across* a teacher's experience predicted reduced burnout.

Clinical implications. The present findings are consistent with a relational account of teacher wellbeing – that relationships can be a threat to, and a resource for, teachers'

emotional experience. Encouraging teachers to reflect upon and manage their experiences of relationships with students in their classroom may be an effective strategy for supporting school staff. While training teachers from a relational perspective has been advocated as a method of improving outcomes for children (see Sabol & Pianta, 2012, for a review), this may have additional benefits for preventing and reducing the consequences of teacher stress, such as burnout and attrition (Spilt, Koomen, Thijs & van der Leij, 2012).

In light of the finding that teachers who report a compulsive caregiving IWM are more prone to experience reduced wellbeing in the face of generally problematic behaviour in their school, teachers may also benefit from spending some time reflecting on the strengths and risks of their broader approach to relationships. In the nursing profession, for example, it has been suggested that, while compulsive caregiving may confer desirable strengths in a caring occupation, nursing staff may benefit from supervision and reflective practice to counter the additional occupational stress associated with this attachment style (Thompson, 2000). Targeting this reflective support at teachers in training may be particularly effective, as Riley (2009, 2013) argues that initial motivation to join the teaching profession is predicted by attachment insecurity, possibly in search of a corrective emotional experience.

One possible method for helping teachers to become more aware of their relationships with students is mindfulness training. There is growing evidence that training teachers in open-focused mindful meditation is effective in reducing burnout and improving emotional wellbeing (e.g., Jennings, Frank, Snowberg, Coccia & Greenberg, 2013; Roeser et al., 2013; see Evans, Butterworth, Jones, Surtees & Law, 2016, for a review). Although mindfulness training is unlikely to increase teachers' ability to manage relationships per se, it may enable teachers to cultivate an awareness of their momentary emotional experiences in student interactions.

The relational perspective on teacher wellbeing also raises questions about the linear and potentially blaming assumptions inherent in language used to describe problematic student behaviour (including this term itself). Within the fields of learning disability and dementia, there has been a social-constructionist movement in recent years to reframe the discourse of "challenging behaviour" to be more person centred, recognising the role of societal values in constructing client behaviour as "challenging" and "problematic" (Goodley, 2001; James, 2011). In educational research and practice, however, the prevailing view is still focused on students being the problem, evidenced by the terms used to discuss this issue (e.g., "misbehaviour"). The relational account supported by the current study implies that the link between students' behaviour and teachers' emotions is more transactional in nature. Here, the problematic nature of a student's behaviour is in the degree to which teachers perceive it as indicating relational conflict. Consulting professionals, including psychologists, should be mindful, when discussing student behaviour with teachers, not to reinforce these oppressive assumptions, while also validating the real emotional experience of the teacher.

Limitations. In addition to methodological issues discussed above, there are several further potential limitations to the present study that need to be evaluated. Firstly, as acknowledged above, the cross-sectional design means that firm causal conclusions about the interplay of student behaviour and teachers' internal mental representations of the TSR cannot be drawn. Although previous longitudinal research has established that perceptions of student behaviour causally precede the development of teachers' relational representations, this work has also demonstrated that these associations are reciprocal (Doumen et al., 2008). Although the mediational model tested in the present study is consistent with previous theoretical and empirical research, more work with alternative study designs needs to be done to establish support for the *causal* mediation proposed in the theoretical model (cf. Hayes, 2013).

Secondly, it has been argued that the term "teacher wellbeing" is too ambiguous (Bricheno, Brown & Lubansky, 2009). The measure of general wellbeing used in this study, although psychometrically valid, is somewhat vague in terms of its underlying construct. Specific aspects of wellbeing that have been measured in other work include job satisfaction (Travers & Cooper, 1993), physical health (Bartholomew et al., 2014) and sick days (Manas, Justo & Martinez, 2011). Using a general measure of wellbeing such as the WEMWBS brings a more positive focus and captures a range of concepts, but possibly at the cost of specificity.

Thirdly, the view of teachers' relationships taken in the present study is narrow, in that it neglects considerations of teachers' relationships with their classes and schools as a whole. Measures were taken to assess perceptions of global student behaviour, but not mental representations of teachers' wider relationships. Although the majority of research has focused on dyadic TSRs or attachment IWMs (e.g., Milatz et al., 2015), the hierarchical model of internal relational representations of Sibley and Overall (2008) contains intermediate levels of relationship domains, which might include relationships with the class or school. These wider relationships may be an important factor in shaping teachers' emotional experiences.

A fourth limitation was the population of trainee teachers in the present study. All trainee teachers were identified through Teach First. It is possible that these trainees are different from trainees who choose to gain their qualified teacher status elsewhere (e.g., post-graduate certificate in education). Although recruitment for the current study aimed to produce a broad sample to increase generalisability, further work should aim to identify individual differences in teachers' experience of student relationships. Further, the high correlation between qualification status and the study variables (see Table 2.2) indicates possible systematic differences between trainee and qualified teachers. This question was beyond the scope of the current study.

Future directions. To be more certain about the causal nature of the dynamics discussed in the present study, future work would helpfully include studies specifically designed to address causal hypotheses, such as longitudinal (e.g., Doumen et al., 2008) or experience sampling (e.g., Keller et al., 2014) methodologies. Although these approaches are more time- and resource-consuming and often necessitate smaller sample sizes as a result, the additional explanatory power that such designs afford is invaluable. If future studies using these alternative designs and methods are consistent with the present findings, a logical next step would be to evaluate whether relational training and reflective practice interventions (discussed above) are beneficial for the wellbeing of school teachers.

Additionally, although the processes and issues discussed in the present study are aimed at understanding the impact on teachers of building relationships with students in their class, there is nothing in the underlying theoretical model that is unique to the domain of teaching. Potentially similar patterns of relational dynamics may also exist in the experiences of other helping professions including social workers, psychologists, nurses and care staff. Future work could examine the role of mental representations of client relationships as a source of emotional sustenance and strain for professionals in these occupations.

Conclusion. In summary, teachers' mental representations of their dyadic relationships with students had a significant role in mediating teachers' negative affective responses to perceived student misbehaviour. Representations of conflict had a negative impact on teachers' affect, which was ameliorated by representations of closeness. Broader relational representations, specifically a compulsive caregiving IWM, had no impact on dyadic relationships but strengthened the negative association between general perceptions of problem behaviour and wellbeing. These findings are consistent with the relational model of teacher wellbeing proposed by Spilt et al. (2011) and argue for the implementation of reflective practice focusing on teacher-student relationships in the training of teachers.

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Chapter Three – Public Dissemination Document:

Understanding and addressing stress and wellbeing in school teachers

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Understanding and addressing stress and wellbeing in school teachers

Introduction

The mental wellbeing of teachers is currently a major concern for schools and teacher-training organisations. A report by the UK Health and Safety Executive concluded that teaching is one of the most stressful occupations in terms of physical and mental wellbeing (HSE, 2015), while 84% of UK teachers in a recent survey reported that they had experienced some degree of difficulty with their mental health in the past two years (Education Support Partnership, 2015). Stress can impact on a teacher's ability to teach, cause them to leave the profession and even take their life (NUT, 2013). This report summarises two pieces of research, which aim to better understand how teachers' mental wellbeing can be supported. The first, a review of existing studies, brings together all of the available evidence on a promising approach to reduce stress and improve the mental wellbeing of teachers: mindfulness training. The second is a primary research study looking at how teachers' relationships with their students might affect teacher wellbeing.

Literature Review: How effective is mindfulness for improving teacher wellbeing?

Background. Mindfulness training aims to encourage people to become more aware of their moment-to-moment experience: thoughts, feelings, urges, actions. It uses techniques such as focusing attention on the breathing and promotes a non-judgemental attitude. Mindfulness has been shown to be very effective in reducing stress, anxiety and depression in the wider population (Khoury, Sharma, Rush, Fournier, 2015), but recently researchers have been interested in finding out if teachers might benefit from learning mindfulness.

Method. Research databases were used to identify all of the published studies that have tested how effective mindfulness is for teachers. To collate the available findings and summarise the evidence for whether mindfulness is an effective approach to improve teacher wellbeing, a statistical technique called *meta-analysis* was used. A total of 17 studies

compared the benefits of mindfulness training for teachers against the benefits of not intervening.

Main results. The reviewed studies tested the effectiveness of different types of mindfulness training. There were three main types:

1. *Open-meditation* – where the focus of attention is anything in awareness including breath, thoughts and feelings. Examples include Mindfulness Based Stress Reduction (e.g. Flook, Goldberg, Pinger, Bonus & Davidson, 2013), Mindfulness Based Cognitive Therapy (e.g. Beshai, McAlpine, Weare & Kuyken, 2015) and yoga-based mindfulness training (Ancona & Mendelson, 2014).
2. *Focused-mediation* – where the focus of attention is something specific such as a set phrase or a physical object. Examples include Mantra Meditation (Anderson, Levinson, Barker & Kiewra, 1999) or Transcendental Meditation (Elder, Nidich, Moriarty & Nidich, 2014).
3. *Acceptance-based* – includes techniques from a therapy called Acceptance and Commitment Therapy (Hayes, Strosahl & Wilson, 1994), which encourages committed action towards valued goals.

Taking into account the variable quality of studies, the meta-analysis results showed outcomes for open-meditation mindfulness training were promising, including medium – large reductions in teachers' stress, burnout, anxiety and depression. For focused-meditation and acceptance-based mindfulness training, the evidence was less promising. While mindfulness training has been delivered differently across the existing research (i.e., through using experts; using CDs to deliver to whole classes, including teachers and students), this review found evidence that both methods were effective. A number of limitations were found across the reviewed studies (e.g. small number of teachers in some studies).

Conclusions. There is an increasing amount of evidence that open-meditation mindfulness training is effective for improving the mental wellbeing of school teachers. Schools and teacher training organisations could benefit from introducing this approach to supporting their teachers, in particular those teachers who are motivated and keen to take part in mindfulness training. There may also be other benefits to introducing mindfulness in schools, including improving classroom atmosphere (Jennings & Greenberg, 2009). It may be possible to implement mindfulness training relatively cheaply by using pre-recorded audio guides rather than investing in expert consultant trainers.

Primary Research Study: The role of teacher-student relationships in teacher wellbeing

Background. One of the most commonly reported sources of stress for teachers is the behaviour of students in their classes (e.g. Kyriacou, 2001). One theory that might explain this was put forward by Spilt, Koomen & Thijs (2011), who suggested that problematic student behaviour is stressful because it shapes a teacher's ideas about their relationship with the student in such a way that hampers the teacher's goal of feeling close to their students. This research study aimed to test the theory of Spilt et al. (2011). In addition, it looked at the role of teachers' general style of relating to others. Specifically, the role of *"compulsive caregiving"* was examined. Compulsive caregiving is a style of relating that involves a focus on meeting the needs of other people and downplaying one's own needs (Crittenden, 2008). Like other general styles of relating to others, compulsive caregiving is thought to be learnt through early life experiences. It was predicted that teachers who reported a compulsive caregiving style would be more prone to feeling in conflict with students whose behaviour was problematic and would experience reduced wellbeing in the face of widespread problematic behaviour. Understanding these issues is important as it may point to new ways to support the wellbeing of teachers in their dealings with problematic behaviour.

Method. 243 trainee and qualified teachers completed a survey. The questionnaires in the survey were designed to measure: problematic behaviour of a specific student as well as more generally across a teachers' experience; teachers' views of their relationship with the specific student: how much conflict and how close they felt, as well as the negative emotions they felt when interacting with the student; teachers' general levels of wellbeing; and the extent to which a teacher had a compulsive caregiving style of relating to others.

Main results. Predictions were supported by the data, including:

1. Teachers felt negative emotions in response to problematic behaviour of students and these negative emotions were explained by the degree to which teachers experienced their relationship with the student as conflictual.
2. The negative impact of conflict was lessened by feelings of closeness. If the teacher felt close to the student, then conflict was less of a problem. However, if conflict was low, then feelings of closeness were linked to more negative emotions.
3. There was no evidence that compulsive caregiving affected teachers' experiences of their relationships with specific students. However, teachers who had a compulsive caregiving style of relating to others experienced reduced general wellbeing when there were widespread behaviour problems in their school.

Conclusions. These findings support the theory that student relationships are important in the emotional experiences of teachers. Such relationships can endanger and protect teachers' mental wellbeing. The findings indicate that teachers' closeness with students is not necessarily a helpful goal per se, but can be useful in counteracting the negative impact of conflict between teachers and students. Encouraging teachers to reflect on their experiences of student relationships and their relationships more generally – either through training or reflective practice (Sabol & Pianta, 2012) – may be an effective way of supporting staff and improving their wellbeing. Mindfulness training, for example, may be a

particularly effective way of encouraging teachers to become more self-aware, which might help them to reflect on their interactions with students.

Further, this study indicated that student behaviour alone is not sufficient for causing stress. Rather, the interplay between patterns of student behaviour (specific and general) and a teacher's own internal view of their professional relationships with their students is important. This should go some way to dispelling some of the blame attached to students (e.g. "misbehaviour") and teachers (e.g. "over-sensitive") for reduced teacher wellbeing.

Summary

Teachers can experience high levels of occupational stress and as a result face reduced mental wellbeing. There is growing evidence that approaches that encourage self-reflection and an accepting awareness of one's own experiences – through the medium of mindfulness training – is effective in reducing this stress. The results from the research study reported here suggest that such reflection for trainee and qualified teachers might focus on experiences of the teacher-student relationship.

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Appendices

Appendix One: Studies excluded from literature review

A number of excluded studies were felt to have some relevance to the research question, despite not meeting the inclusion criteria. Those that conducted an MBI intervention study with teachers but were excluded from the review are presented in Table A1.1, including author names, year of publication and reason for exclusion.

Table A1.1

Pertinent but excluded studies

Reason for exclusion	Study
Study reports only qualitative, not quantitative results of intervention.	Akiva, Arel & Benn (2012)
	Glogowski (2013)[a]
	Hraha (2012)[a]
	King (2005)[a]
	Klein (2008)[a]
	Mulvaney (2006)[a]
	Napoli (2004)
	Sessa (2007)
	Soloway (2011)[a]
Study does not use a control group.	Gold (2010)
Study uses an active control group, as opposed to a wait-list control group.	Franco, Mañas, Cangas, Moreno & Gallego (2010)
	Poulin (2007)[a]
	Poulin, MacKenzie, Soloway & Karayolas (2007)
	Poulin (2008)
Mindfulness comprises only a minor part of intervention.	Bertoch Nielsen, Curley & Borg (1989)
	Stuck, Rigotti & Mohr (2004)
Study is a dissertation duplicating results in a published article also included in the review.	Anderson (1996)[a]
Raw data required for meta-analysis is not available in published study or through contact with corresponding author.	Benn, Akiva, Arel & Roeser (2012)
	Biglan, Layton, Jones, Hankin & Rusby (2013)
	Jennings, Foltz, Snowberg, Sim & Kemeny (2011)
	Jennings, Frank, Snowberg, Coccia & Greenberg (2011)
	Kemeny et al. (2012)

Notes: [a] Study is a dissertation or thesis

List of References for Appendix One

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