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University of Southampton

Faculty of Environmental Science

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**Teacher burnout and student outcomes: is there a link and are student-teacher
relationships a predictor?**

by

Jasmine Janet Field

Thesis for the degree of Doctorate in Educational Psychology

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University of Southampton

Abstract

Faculty of Environmental Life Science

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Psychological theory suggests that the quality of positive relationships teachers have with children could act as a resource to support their wellbeing by increasing the quality of intrinsic motivation to engage in teaching (Bakker & Demerouti, 2007b; Deci & Ryan, 2000) On the other hand, negative relationships may elicit negative emotions and eventually trigger a burnout cascade. Appraisal of the literature suggests there is a link between teacher wellbeing and student-teacher relationships (STR), with more consistent findings indicating a relationship between burnout and stress and conflict in the STR. This finding is of importance as positive STR have been shown to form the basis for much learning in education. Consequently, it was proposed that teacher wellbeing may indirectly have an impact on student outcomes through the STR. Therefore, the aim of this research was to explore the association between teacher burnout and student outcomes, specifically wellbeing and academic self-concept. Further, it explored if this relationship was predicted by the quality of STR. Cross-sectional data was analysed from 596 children (aged 9 and 10) and their 31 teachers. The results demonstrated teachers' depersonalisation and personal accomplishment significantly predicted student physical wellbeing but not psychological wellbeing or academic self-concept. In addition, significant class differences were found for school satisfaction, with STR and psychological wellbeing accounting for this difference. Whereas, the dimensions of teacher burnout, did not improve model fit or account for a significant proportion of variance. Furthermore, post-hoc results showed that teacher burnout and academic self-concept account for some variance in the STR. Overall, this research indicates the importance of intervening not only directly at the student level, but also at the contextual level, to support whole school wellbeing.

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Research Thesis: Declaration of Authorship

Print name:	Jasmine Janet Field
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Title of thesis:	Teacher burnout and student outcomes: is there a link and are student-teacher relationships a predictor?
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I declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. None of this work has been published before submission

Signature:	Date:
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Definitions and Abbreviations

<i>B</i>	B-value from linear regression
BDI	Beck Depression Inventory
CES-D	Center for Epidemiologic Studies Depression Scale
χ^2	Chi square statistic
CCW-JSI	Child Care Worker Job Stress Inventory
CLASS	Classroom Assessment Scoring System
R^2	Coefficient of determination
CI	Confidence interval
α	Cronbach's Alpha
DP	Depersonalisation
EP(s)	Educational Psychologist(s)
EE	Emotional Exhaustion
<i>F</i>	F statistic
<i>f</i>	Female participants
ITS	Index of Teaching Stress
ICC	Intraclass correlation coefficient
JCQ	Job Content questionnaire
JD-RM	Job Demand-Resources Model
K6	Kessler Psychological Distress Scale
MBI	Maslach Burnout Inventory
MBI-ES	Maslach Burnout Inventory – Educators survey
<i>m</i>	Mean

Definitions and Abbreviations

<i>r</i>	Pearson's correlation test statistic
PA	Personal Accomplishment
PANAS	Positive and Negative Affect Schedule
<i>p</i>	Probability statistic
RCT(s)	Randomised Control Trial(s)
<i>N</i>	Sample size
SDT	Self-determination theory
SEL	Social and emotional learning
<i>SE</i>	Standard Error
SATs	Statutory Assessment Tests
STR	Student-teacher relationship(s)
STRS	Student Teacher Relationship Scale
TPI	The Teacher Pupil Interaction Scale
TRI	The Teacher Relationship Interview
TSI	Teacher Stress Inventory
TTI	Teacher Treatment Inventory Scale
USA	United States of America
PHQ-8	Warwick Edinburgh Mental Wellbeing Scale, Patient Health Questionnaire

Chapter 1 Literature review: Teacher wellbeing and the student-teacher relationship

1.1 Introduction

Teaching has been considered as having one of the highest stress-related outcomes in comparison to a range of other occupations (Johnson et al., 2005). A frequent consequence of prolonged stress is burnout and decreased wellbeing (Brown & Nagel, 2004; Maslach, Schaufeli, & Leiter, 2001). Teachers occupational wellbeing is of concern, firstly because of the high turn-over, within the first five years of joining the profession, it is estimated that 30 to 50% of teachers in England and the US leave (Chang, 2009; Cooper & Alvarado, 2006; Kyriacou & Kunc, 2007) and because wellbeing and burnout are associated with intent to leave (Goddard & Goddard, 2006; Weisberg & Sagie, 1999). This is therefore causing a shortage of well-qualified teachers (Ingersoll, 2001). Additionally, Spilt, Koomen, and Thijs, (2011) note that teacher wellbeing is important to understand because an insight into teachers' views and beliefs about educational policy and reform can be gained from understanding what they value about the role and causes of job satisfaction. Furthermore, recent research has started to explore the negative association between teacher wellbeing and pupil's social and emotional development (Harding et al., 2019; Milkie & Warner, 2011; Oberle & Schonert-Reichl, 2016) and academic achievement (Briner & Dewberry, 2007; Klusmann, Richter, & Lüdtke, 2016; Pakarinen et al., 2010; Shen et al., 2015). For these reasons; teacher wellbeing should be considered an important element within education.

Defining wellbeing is a challenge, a variety of definitions and explanations are used within the literature, with several researchers omitting an explicit description of the concept (Acton, James, & Glasgow, 2015). One way of conceptualizing wellbeing is,

“optimal psychological functioning and experience” (Ryan & Deci, 2001 p141). Subjective wellbeing is another conceptualisation that believes wellbeing encompasses positive elements such as life satisfaction and positive affect while simultaneously being without negative affect such as guilt, sadness and anxiety (Aldrup, Klusmann, Lüdtke, Göllner, & Trautwein, 2018; Diener, Suh, Lucas, & Smith, 1999). However, typically within the teacher literature, wellbeing has only been described and studied from the negative perspective (Acton et al., 2015; Roffey, 2012). Acton et al. (2015) identified that negative affect and managing these emotions is often regarded as vital to teacher wellbeing, with numerous studies prioritising this component of wellbeing at the expense of the positive element. Despite the recent increase in the use of positive psychological principles in both research and education, studies still appear to use the term wellbeing as a synonym for stress, burnout and mental health. Stress in this review is defined as the result of teachers inability to meet the role demands placed on them (Wisniewski & Gargiulo, 1997), overtime the cumulative effect of stress may lead to burnout. This is described as a loss of energy and purpose due to exhausting ones resources (Schaufeli, Maslach, & Marek, 2018). This review uses Maslach’s three dimensional conceptualisation of burnout: emotional exhaustion, depersonalisation and personal accomplishment (Maslach et al., 2001). This review will focus on these elements of wellbeing, as this is what has predominantly been researched.

Theories and models that discuss potential antecedents and consequences of teacher wellbeing will now be discussed. Firstly, an organisation framework will be outlined, which explains the potential effects of demands and resources on occupational wellbeing.

1.1.1 The Job Demand-Resources model

The Job Demand-Resources model (JD-RM) outlines different working conditions and considers both the positive and negative elements that contribute to employee

wellbeing (Bakker & Demerouti, 2007b). This model classifies risk factors into two categories: job demands and job resources. Job demands are defined as aspects of the job that involve continued effort or skills and are linked with physiological or psychological costs (Bakker & Demerouti, 2007b). Job resources refer to elements of the job that support the achievement of work goals, decrease job demands and inspire individual learning and development (Bakker & Demerouti, 2007b). The JD-RM also describes two underlying psychological processes. One is a ‘strain’ process, where excessive demands can exhaust employees’ mental and physical resources affecting wellbeing and the second is a ‘motivational’ process, whereby “job resources have motivational potential and lead to high work engagement, low cynicism, and excellent performance” (Bakker & Demerouti, 2007b, p313). This model has been applied to teachers where job resources such as supervisor support and appreciation and positive work climate buffered the job demands of negative student interactions (Bakker & Demerouti, 2007a).

Another relevant organisational theory is the Transactional Model of Stress and Coping (Lazarus, 1991). This theory suggests that stress is triggered by repeated exposure to unpleasant emotions that are caused through incidents that are appraised as being incongruent to the individual’s goals or values. This model therefore assumes a causal relationship between teacher wellbeing and STR with STR causing teacher stress if having positive relationships is valuable and a goal to the teacher. The JD-R model was therefore discussed in more detail as this is aligned with the exploratory nature of the review question rather than predicting a causal relationship as the transactional model does.

1.1.2 Self-determination theory

Self-determination theory (SDT) can be thought of as a ‘resource’ in the JD-R model (Bakker & Demerouti, 2007b). SDT comprises of three elements that boost intrinsic

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motivation: competence, autonomy and relatedness (Ryan & Deci, 2000). We are more motivated when we have a sense of safety and belonging (relatedness), believe that we have the skills and knowledge to succeed, or manage if things go wrong (competence), and see the value and choice in doing so (autonomy). Having these three needs fulfilled has been shown to relate positively to wellbeing and work motivation, where the job is largely carried out for enjoyment, satisfaction and interest (Van den Broeck, Vansteenkiste, Witte, & Lens, 2008). SDR has widely been applied to both occupational and educational psychology (Spilt et al., 2011). In relation to teaching, studies have shown the importance of teachers' experience of autonomy and self-perceived competence (Klusmann, Kunter, Trautwein, & Lu, 2008) and support from colleagues (Bakker & Demerouti, 2007a; E. M. Skaalvik & Skaalvik, 2011) in burnout. In terms of relatedness, support from supervisors and colleagues is not the only resource teachers have, it is also possible that teachers' relationships with students also act in this way (Klassen, Perry, & Frenzel, 2012; Spilt et al., 2011). A large amount of teacher's working time is spent with students rather than colleagues, which makes the student-teacher relationship (STR) a possible contributing factor to the teachers sense of belonging (Spilt et al., 2011; Taxer, Becker-Kurz, & Frenzel, 2018).

Together, these two theories highlight the importance of STR in teacher wellbeing. Research on one hand suggests that the emotional involvement required of teachers and the nature of the relationships with their students are job demands and associated with high stress and turnover rates (Ingersoll, 2001; S. Johnson et al., 2005). On the other hand, positive STR could be seen as a resource and therefore a protective factor for teachers (Klassen et al., 2012; Spilt et al., 2011; Taxer et al., 2018).

1.1.3 The importance of student-teacher relationships

The importance of STR for students been demonstrated in numerous longitudinal studies. Trusting, positive and respectful relationships between students and teachers have been shown to underpin the development of academic skills and learning in education (Early et al., 2007; Lee, 2012; Valiente, Lemery-chalfant, & Reiser, 2011). The quality of STR is associated with several other outcomes including children's school adjustment (Baker, Grant, & Morlock, 2008; Birch & Ladd, 1997), peer relationships and social skills (Hughes, Cavell, & Willson, 2001) and behaviour engagement (Hughes, 2011). A meta-analysis has shown that STR plays a role in both engagement and achievement but is more strongly associated with engagement (Roorda, Koomen, Spilt, & Oort, 2011). Furthermore, the effect of STR is thought to be long-lasting. Research has shown that a negative STR at age 5 to 7 is associated with behavioural and academic outcomes at the age of 13 (Hamre & Pianta, 2001). It could therefore be argued that STR may be a better predictor of student outcomes and classroom quality than other factors such as, teacher qualification (Early et al., 2007).

The importance of STR in student outcomes also indicates the relevance of attachment theory. Attachment can be defined as “a deep and enduring emotional bond that connects one person to another across time and space” (Ainsworth, 1973; Bowlby, 1969). However, attachment theory has a number of additional accepted tenets, (i) attachment involves a bond with a specific person(s) and an emotional response related to their presence or absence; and (ii) between the ages of six months and four years, separation from the attachment figure(s) produce child distress in the short-term and mourning in the long-term (Mercer, 2011). This review will focus on the quality of the relationship between teachers and students without encompassing the other tenets and therefore the term relationship will be used throughout.

1.1.4 Burnout cascade

It is hypothesised that for teachers to form positive STR that foster social-emotional competence and academic achievement teachers must manage their own emotions, model

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positive behaviours, and be sensitive and predictable (Whitaker, Dearth-Wesley, & Gooze, 2015). These behaviours are likely to be difficult if teachers are experiencing difficulties with their own wellbeing.

An alternative explanation for the link between STR and teacher wellbeing can be explained using the prosocial classroom model. Jennings and Greenberg, (2009) have proposed a 'burnout cascade' where wellbeing has an impact on a teacher's ability to form relationships rather than the relationship being the other way around.

Findings suggest that teachers who have difficulty managing their emotions may eventually develop the first element of burnout, emotional exhaustion, which when prolonged generates a "burnout cascade" (Jennings & Greenberg, 2009). This cascade proposes that as teachers become stressed, they may become uncaring, insensitive and show less empathy towards students. The next part of the teacher "burnout cascade" described by Jennings & Greenberg (2009) is that of depersonalisation, which for educators is defined as: discounting the qualities of children which make them individual (Maslach et al., 2001). This is thought to create distance between the teacher and child as demands are thought to be more manageable when children are considered impersonal parts of the role (Gastaldi, Pasta, Longobardi, Prino, & Quaglia, 2014). This therefore suggests that teacher wellbeing may have an effect on STR.

1.1.5 Aims of current review

It is clear that emotional involvement from teachers is needed in order to form personal and supportive relationships with their students (Spilt et al., 2011). The JD-R model (Bakker & Demerouti, 2007b), self-determination theory (Ryan & Deci, 2000) and the burnout cascade (Jennings & Greenberg, 2009) provide underpinning theories that explain how STR and teacher wellbeing may be linked. Therefore, the aim of this systematic literature review is to explore the association between student-teacher relationships and

teacher wellbeing. Although a shift is occurring to focus on the positive elements of wellbeing, which are beyond just alleviating the presence of negative elements such as stress and depression (Huppert, 2009), research and media on teacher wellbeing are still deficit focused (Acton et al., 2015). Therefore, this review will focus on the negative elements of teacher wellbeing, but the term ‘wellbeing’ will be used throughout. Whilst a previous review has been carried out that has explored some research linking STR and teacher wellbeing and a hypothetical model been described (Spilt et al., 2011), to the author’s knowledge no systematic review has explored this relationship. Furthermore, additional research has been published in the past decade that has explored this association. Therefore, this review aims to gain a clearer understanding of this relationship.

1.2 Method

1.2.1 Search strategy

The databases, ERIC, MEDLINE and PsychINFO were used to carry out systematic searches. The author created a list of key words to use as search terms, these were self-generated and chosen from relevant articles. Search terms included the following combination of key terms: teacher n3 burnout OR teacher n3 stress OR teacher n3 wellbeing OR teacher n3 well-being OR teacher n3 "mental health" OR "workplace stress" OR teacher n3 "emotional exhaustion" OR teacher n3 "personal accomplishment" OR teacher n3 depersonalization AND "teacher-student relationship*" OR "teacher student interaction OR "student teacher relationship*" OR "teacher child* relationship*" OR "teacher child* interaction". During the search, articles were filtered using the database settings for language (English) and publication type (peer review). In addition, Spilt et al's., (2011) review was examined for any missed studies. Systematic searches were completed on the 3rd February 2019.

1.2.2 Inclusion and exclusion criteria

Articles identified through the search were screened according to the inclusion and exclusion criteria by the author as shown in Table 1. Studies were excluded if the study met any of the exclusion criteria.

Table 1 *Inclusion and Exclusion Criteria of Research*

Study item	Inclusion criteria	Exclusion criteria
Participants	Teachers Those in education aged 2- 18 such as school or nursery. Any country	Any other educational staff member Children with a clinical diagnosis or those in special education (due to higher levels of stress)
Outcome measures	A measure of wellbeing, stress, burnout, anxiety, depression for the teachers. A separate measure of the quality of the teacher-student relationship. For these two measures to be statistically compared.	University level. No measure of wellbeing and teacher-student relationship. Teacher self-efficacy Work absence
Publication requirement	Published in English Peer reviewed articles	Any other language other than English. Book chapters, dissertations and unpublished research
Type of research	Empirical studies looking at the relationship between teacher wellbeing and the teacher-student relationship. Quantitative data	Review studies. Case studies Qualitative data

1.2.3 Reviewed articles

The search terms and database filters, for only peer reviewed and English articles, resulted in 286 articles and 248 after duplicates had been removed. 248 title and abstracts were screened using the inclusion and exclusion criteria leaving 43 articles. For those that

could not be included or excluded from information in the title or abstract, the full-text article was screened. At this point 23 articles were excluded (see Appendix A for exclusion reasons), leaving 20 articles (21 studies) remaining that met the inclusion and exclusion criteria and are therefore included in this review (see Figure 1, flow diagram that identifies the results at each stage of the search). Information regarding the year of publication, country, participants, study design, STR measure, teacher wellbeing measure and relevant findings from these 20 articles were extracted into a table (see Appendix B).

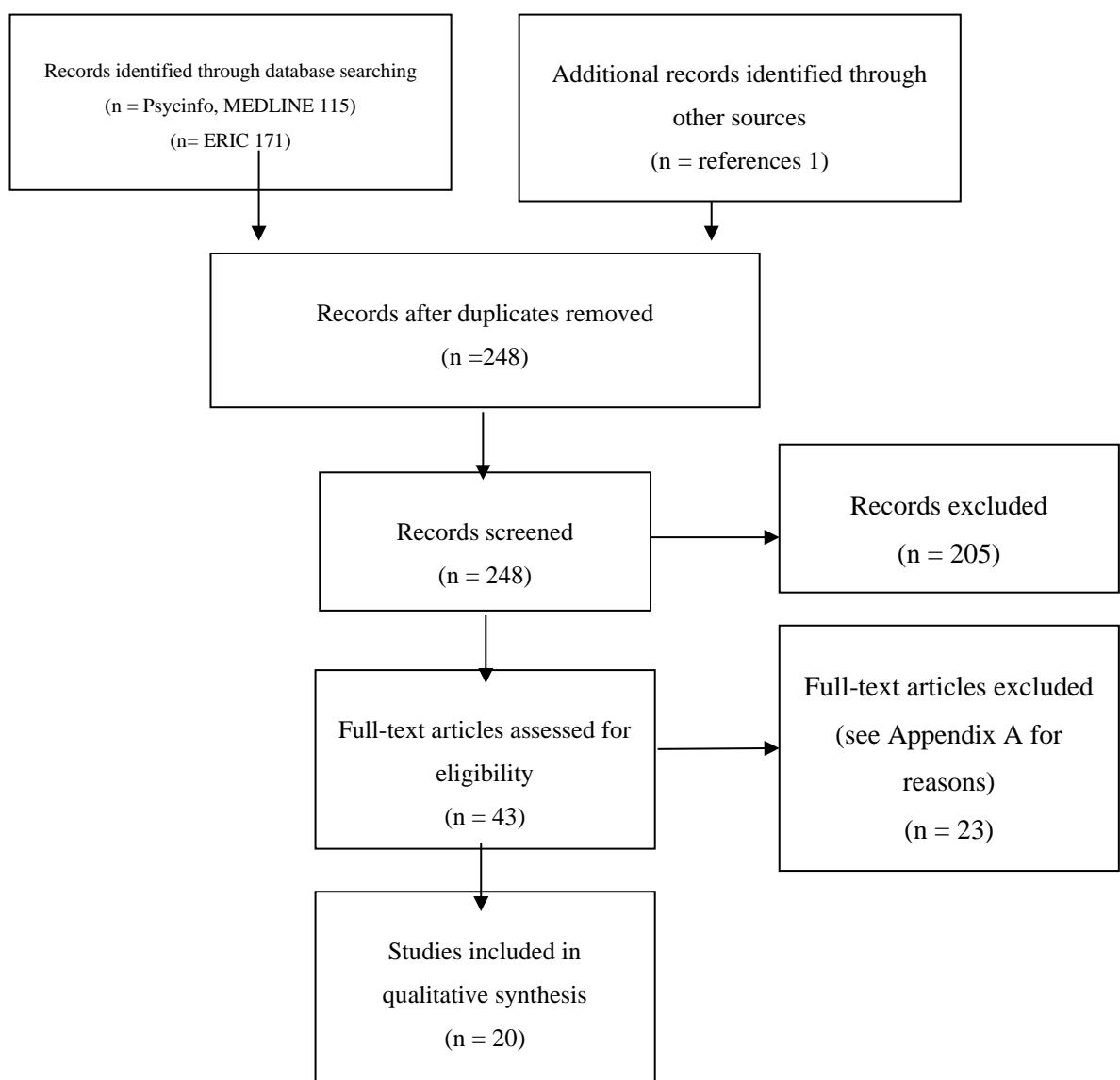


Figure 1: PRISMA Flow Diagram of Selected Articles

1.2.4 Appraisal

The quality of the articles was assessed and guided by the Quality Index (Downs & Black, 1998), which is a checklist of questions that provides an overall score for the research. The index calculated varied from 7 to 16 and is reported in the result table (see Appendix B). It is important to note that in checklists, some questions are more important to the quality of the research than others and most tools including the Quality index do not recognise this (Coughlan, Cronin, & Ryan, 2007). Furthermore, some questions were not relevant to all studies as most studies were non-experimental, therefore it could be misleading to compare this score between studies. Therefore, appraisal of the research was also guided by a report on critiquing quantitative research (Coughlan et al., 2007), elements of a quality assessment tool for quantitative studies (Effective Public Health Practice Project, 1998) and an article outlining tips to interpret scientific claims (Sutherland, Spiegelhalter, & Burgman, 2013). From these sources, the following elements were examined and appraised for each study: validity and reliability of measures, sample size and the representativeness of the sample, generalisability of the results, inferring of causation, reporting of effect size, data dredging and replication of findings between studies. These elements were inputted into a table to compare the research quality between studies (see Appendix C).

1.3 Results

The review starts by reporting some of the main characteristics of the studies (Appendix B). These main characteristics encompass four categories: year of study, sample, study design and measures. The statistical significance of each study has not been reported, as the relationship between STR and teacher wellbeing was often not the main aim of the research and therefore significance values were not always reported. Furthermore, a number of studies explored models of wellbeing and therefore 'model fit' measures were

used rather than a probability value. Therefore, an interpretation of the finding has been reported in the results table (see Appendix B). This results section will be followed by the main body of the review that discusses key findings relevant to the association between teacher wellbeing and the quality of the student teacher relationship.

1.3.1 Year of study

Most of the research in this review has been carried out recently, of the 21 studies, ten were conducted within the past two years, 18 were carried out over the past decade, with the remaining 3 being published in 2008 and 2002.

1.3.2 Sample

All of the studies had a teacher sample and in total, across the 21 studies, 5970 teachers were recruited. Whitaker, Dearth-Wesley, and Gooze, (2015) and Becker, Gallagher, and Whitaker, (2017) used the same sample, therefore these teachers have only been counted once. The sample ranges from 33 (Neuenschwander, Friedman-Krauss, Raver, & Blair, 2017) to 1182 (Harding et al., 2019). Twelve studies also had a student sample, this includes, students answering questionnaires or teachers or parents completing questions regarding specific children. In total 23,237 students were recruited, samples ranged from 72 (Gagnon, Huelsman, Kidder-Ashley, & Lewis, 2018) to 7863 (Arens & Morin, 2016). Eight studies recruited in preschool or prekindergarten settings with five of these being Head Start Programmes. Head Start is a US based programme designed to address the discrepancy in school readiness between children who are living in poverty and their peers from more economically-advantaged families (Whitaker, Dearth-Wesley, & Gooze, 2015). One study recruited a Kindergarten, six studies were carried out in a primary setting and another six in secondary schools. The teachers recruited across the studies were highly experienced with the mean length of experience being 9 to 12 years in three studies, 12 to 15 years in seven studies, 15 to 18 years in three studies and 18 to 22

years in three studies. There were five articles that did not report the mean length of experience of the teachers. In terms of location, most studies were carried out in the US (11 studies). Three took place in Germany, and one study was in: Romania, Austria and Germany, the Netherlands, Italy, England and Wales, Canada and Spain.

1.3.3 Study Design

The vast majority of studies were cross-sectional in design, reporting self-reported findings at one particular time-point (14 studies). Five studies were longitudinal where data was collected at different timepoints and two studies were randomised control trials (RCTs) exploring teacher-based interventions to improve the STR.

1.3.4 Teacher wellbeing measures

Teacher wellbeing was measured using a self-report measure in all 21 studies in this review. A variety of measures were used resulting in some variation of how wellbeing was conceptualised, for example 11 studies explored burnout, six measured stress, two measured general wellbeing and eight measured depression. The majority of studies used the Maslach Burnout Inventory (MBI; eight studies) or Friedman's (1993) adapted version of the MBI (one study) as a measure of teacher wellbeing. A further 12 measures were also used, in addition to two studies using their own questions to measure emotional exhaustion (Arens & Morin, 2016) and stress (Yoon, 2002). The next popular wellbeing measure was the Center for Epidemiologic Studies Depression Scale (CES-D; four studies). Two studies used the Job Content questionnaire (JCQ) and Kessler Psychological Distress Scale (K6). The remaining studies individually used the Teacher Stress Inventory (TSI), the Index of Teaching Stress (ITS), the Beck Depression Inventory (BDI), Positive and Negative Affect Schedule (PANAS), the Warwick Edinburgh Mental Wellbeing Scale, Patient Health Questionnaire (PHQ-8), the Child Care Worker Job Stress Inventory (CCW-JSI) and the

Measuring Instrument for Burnout Syndrome in Teachers (reliability statistics for these measures are reported later).

1.3.5 Student-teacher relationship measures

A number of different teacher and student outcomes were used to measure the student-teacher relationship. Most studies used a self-report questionnaire however, interviews and observations were also used. The most popular measure, was the Student Teacher Relationship Scale (STRS; nine studies) which was used in a variety of ways across the studies. Pianta, (2001) developed this as a teacher self-report questionnaire to explore the student-teacher relationship for individual children on subscales of closeness (extent to which the teacher feels warmth and affection in the relationship), conflict (extent to which a teacher perceives the relationship to be negative and difficult) and dependence (teacher's perception of the child being overly reliant on the relationship). Used in this way Pianta (2001) has shown good test-retest reliability for all three subscales and principle component analysis indicates evidence for construct validity. Some studies used a modified version of this questionnaire as a global measure of the student-teacher relationship for all children in the class. Other teacher self-report questionnaires include the climate measurement instrument in secondary schools (Rodríguez-Mantilla & Fernández-Díaz, 2015; one study) and Taxer, Becker-Kurz, & Frenzel, (2018) asked teachers four items, that were not a validated measure. Yoon, (2002) used quantity as a measure of student-teacher relationships by asking teachers to report the number of children in their class that they had a positive and negative relationship with.

The classroom assessment scoring system (CLASS) was also a popular measure in this sample, with seven studies using this observation tool. This is a well validated observational measure that assesses classroom quality in three domains: instructional, organisational and emotional support (Pianta & Hamre, 2009). The findings from the

emotional support domain were extracted in this review as this explores the quality of the classroom interactions and the teachers sensitivity to children's emotions and interests (Pianta & Hamre, 2009).

Jennings (2015) used The Teacher Relationship Interview (TRI) which is a semi-structured interview that explores nine aspects of teachers narratives about their interactions and emotional responses to a specific student (Stuhlman & Pianta, 2002). However, this study only used two of the domains: sensitivity of discipline and perspective-taking.

Five studies asked students to complete self-report questionnaires as a measurement of their relationship with the teacher. These measures included the Teacher Treatment Inventory Scale (TTI; one study) and The Teacher Pupil Interaction Scale (TPI; one study). The final three studies used the researchers' own independent questions to measure teacher support, with 11 items (Arens & Morin, 2016); "the extent that students trusted, liked and felt accepted by their teacher", with eight items (Taxer et al., 2018, p.217) and one item asking students to rate the teacher and student relationships at school (Harding et al., 2019)

1.4 Review

Almost all of the studies in this review found an association between teacher wellbeing and the quality of STR. Burnout was the most frequently used measure of teacher wellbeing and a number of the studies found an association between the quality of student teacher relationships and Maslach, Schaufeli, and Leite's (2001) three dimensions of burnout. Emotional exhaustion is the most commonly used of the three dimensions in this sample of studies and this has been found to be associated with a variety of STR measures (Aldrup, Klusmann, Lüdtke, Göllner, & Trautwein, 2018; Arens & Morin, 2016; Hoogendijk et al., 2018; Jennings, 2015; Milatz, Lüftenegger, & Schober, 2015; Rodríguez-Mantilla & Fernández-Díaz, 2017; Taxer et al., 2018). A relationship also exists

between STR and the two other burnout dimensions, personal accomplishment and depersonalisation (Gastaldi et al., 2014; Hoglund, Klingle, & Hosan, 2015; Jennings, 2015). Other teacher wellbeing constructs: depression (Becker et al., 2017; Jennings, 2015; Mashburn et al., 2008) and stress (Gagnon et al., 2018; Neuenschwander, Friedman-Krauss, et al., 2017; Sandilos, Goble, Rimm-Kaufman, & Pianta, 2018; Whitaker et al., 2015; Yoon, 2002) were also found to be associated with STR variables. There are however, three studies, out of the 21, that did not find a significant association between teacher wellbeing and student-teacher relationships (Roberts, LoCasale-Crouch, Hamre, & DeCoster, 2016; Sandilos et al., 2015; Sava, 2002). These studies explored emotional support and depression (Roberts et al., 2016; Sandilos et al., 2015) and burnout and teacher attitudes towards pupils, which was a single construct derived from a principle component analysis of five variables exploring STR (Sava, 2002). The evidence presented in this section suggests that there is an association between teacher wellbeing and the quality of student-teacher relationships as 18 of the studies reported significant associations. Given that most of these studies investigated more than one variable for teacher wellbeing and student teacher relationship, it is important to explore patterns in results between these different measures to gain a richer understanding of this association. Exploration of the findings of these studies illustrated two key findings. The first to be explored is the mixed evidence for an association between depression and STR, which has briefly been outlined above. Following this, two dimensions of STR will be discussed, conflict and closeness.

1.4.1 Teacher Depression

There were eight studies that measured teacher depressive symptoms and mixed findings were reported in terms of the relationship with STR. For example, increased depressive symptoms was significantly correlated with an increase in conflict (Hamre, Pianta, Downer, & Mashburn, 2008; Whitaker et al., 2015); decrease in closeness (Whitaker et al., 2015) and decrease in emotional support (Jennings, 2015). Hamre et al.

(2008) found that the relationship between depression and conflict remained after controlling for the teachers ratings of behavioural problems.

Becker, Gallagher and Whitaker (2017) and Whitaker et al., (2015) used the same data set collected from Head Start programmes and both studies scored 11 from the questions on the quality index scale , which is relatively high in this collection of studies. Although a key weakness is that the data is not representative as it focused only on Head Start staff and was collected for a purpose other than the aims of these two studies, which may increase the chance of error. Interestingly, Becker, Gallagher and Whitaker (2017) found the association between mindfulness and lower conflict was mediated by depressive symptoms and this relationship was even stronger when levels of workplace stress were low. Whereas, Whitaker et al. (2015) found that the association between workplace stress and conflict was still significant when depression was added to the model and claim that they were unable to test if depression acts as a mediator or confounding variable due to the cross-sectional nature of the study design. These findings could suggest that workplace stress plays a bigger role in the relationship with STR.

Teacher depression has been found to predict children's problem behaviour and social skills (Roberts, LoCasale-Crouch, Hamre, & DeCoster, 2016); classroom organisation and instructional support (Sandilos et al., 2015). However, an association with classroom emotional support was not found (Neuenschwander, Friedman-Krauss, Raver, & Blair, 2017; Roberts et al., 2016; Sandilos et al., 2015). This last finding contrasts with Jennings (2015), as this paper reports a significant correlation between depression and emotional support. There are several limitations in Jennings' (2015) research which may explain the difference in findings. For example, the research had a limited sample size of 35, which is small in comparison to other studies in this review. In addition, Jennings had a large number of measures, which is a limitation as this increases the chances of error, especially with a small sample size.

Overall, there seems to be some evidence to indicate that depression may play a role in the closeness and conflict of STR, but workplace stressors may be even bigger. In addition, there is limited support for the relationship between depression and teachers' emotional support. Together these studies highlight that more research is needed before the association between depression and STR can be determined.

1.4.2 Closeness vs conflict (STR measure)

The most common measure of STR was the Student Teacher Relationship Scale (STRS; Pianta, 2001). The original version of this instrument consists of three subscales; closeness, conflict and dependency (defined above). A short version has also been developed that only includes closeness and conflict. The majority of studies used the short version, with some using the longer original questionnaire and others only used one subscale. Furthermore this questionnaire is designed to be used for individual children and some studies have adapted the wording to make a global measure (Aldrup et al., 2018; Becker et al., 2017; Whitaker et al., 2015). This section will report the differences found between these subscales.

In terms of closeness, some results found that emotional exhaustion (Aldrup et al., 2018; Milatz, Lüftenerger, & Schober, 2015), depersonalisation (Milatz et al., 2015), loss of satisfaction in teaching and frustration of working with parents (Glover Gagnon, Huelsman, Kidder-Ashley, & Lewis, 2019) were lowest when teachers rated high closeness with students. Although, contrasting findings have also been found, for example, Hoogendijk et al., (2018) found no evidence that a close relationship with a specific student plays a role in the development of emotional exhaustion. But this study did not measure the closeness of relationships between the teacher and the whole class, which means that the beneficial effect of closeness with the whole class might have counteracted

that of one student. Further contrasting findings for closeness are now discussed in comparison to conflict.

Although Glover Gagnon et al. (2019) found closeness predicted two of the four domains on the Index of Teaching Stress (loss of satisfaction in teaching and frustration of working with parents), conflict significantly predicted all four (sense of competence/need for support; loss of satisfaction with teaching; disruption of teaching process and frustration with parents), while dependency predicted none. Furthermore, they found that together STR accounted for 43% of the variance in teaching stress but, only conflict was a significant predictor. The authors therefore conclude that conflict seems to play an important part in teaching stress. The finding, that conflict appears to be more influential, is consistent across the studies in this review. For example, the association between mindfulness and conflict was mediated by depressive symptoms (Becker et al., 2017), personal accomplishment and depersonalisation were correlated with conflict (Gastaldi et al., 2014) and overall stress is significantly associated with greater conflict in teacher–children relationships (Whitaker et al., 2015). These findings were not replicated with the closeness subscale in any of these studies. In addition, Hamre et al. (2008) found a significant correlation between levels of depression and levels of conflict and they did not measure closeness data due to conflict being the primary aim of the study.

The studies presented thus far indicate that the findings between teacher wellbeing and closeness are mixed. A possible reason for this inconsistency is that studies were only included if they measured a negative element of teacher wellbeing, such as burnout or stress. Whereas findings here show that loss of satisfaction and working with parents were associated with closeness. This could indicate that more positive elements of wellbeing are more reliably linked to closeness. This hypothesis cannot be explored in this review as studies that may have exclusively explored positive elements of wellbeing have been excluded. To conclude this section, it appears that STR using the STRS is associated with

teacher wellbeing although, the findings appear to be more reliable for conflict in the STR rather than closeness or dependency.

The evidence presented above suggests that there is a relationship between teacher wellbeing and student-teacher relationships, yet this association varies based on the measure used. A substantial amount of evidence concludes a link between teacher stress and burnout with student teacher relationships but, the findings are mixed for depression. Furthermore, in terms of STR measures, conflict appears to be more reliably associated with teacher wellbeing than closeness or dependency (as measured by the STRS). This conclusion only shows that there is an association between the two variables, a range of analysis and designs have been used among the studies, in an attempt to provide more information about this relationship. Wunsch, Russo, and Mouchart (2010) argue that in some examples cause and effect can be established using a cross sectional design, such as when there is implicit information about the temporal ordering of the variables. In this case theories suggests that the cause could be both teacher wellbeing and STR and therefore there is not implicit information that can help determine the temporal ordering. This means that the research designs need to explore beyond associations to understand the cause and effect between teacher wellbeing and student-teacher relationships. The next section will discuss findings that explore beyond just the association between these two variables.

1.4.3 The role of a third variable

The use of mediation was a common analysis among the research, eight studies used this method. Mediation is useful as it considers the impact of a third variable in the relationship between two other variables (Mackinnon, Fairchild, & Fritz, 2007). This section will describe three designs that these eight studies can be categorised into: teacher wellbeing as a mediator, STR as a mediator and a third variable as mediator between wellbeing and STR.

Teacher wellbeing as a mediator between STR and another variable was analysed in two studies. The additional variable were misbehaviour (Aldrup et al., 2018) and dispositional mindfulness (Becker et al., 2017). Emotional exhaustion was not found to mediate the relationship between student-teacher closeness and misbehaviour despite finding a link between STR and emotional exhaustion (Aldrup et al., 2018). On the other hand Becker et al., (2017) found that lower depressive symptoms mediated the relationship between dispositional mindfulness and conflict in the STR but, this finding was not replicated with closeness. Both studies indicate a relationship between wellbeing and STR although, wellbeing as a mediator was only significant in one of the studies. This could be due to the difference in the third variable or due to Aldrup et al. (2018) only measuring closeness as Becker et al. (2017) only found a mediation with conflict rather than closeness.

Four studies explored the STR as a mediating variable between teacher wellbeing and another variable. Harding et al., (2019) found that the association between teacher and student wellbeing remained but was weakened with the addition of STR in the model. The authors concluded that this indicates that STR may be a mediating factor although, this model was not statistically tested. The remaining three studies did not find STR to be a statistically significant mediator between teacher wellbeing and a relationship intervention for teachers (Hoogendijk, Tick, Hofman, Holland, Severiens, Vuijk, & Veen, 2018), child executive functioning (Neuenschwander, Friedman-krauss, Raver, & Blair, 2017) and problem behaviour and social skills (Roberts, LoCasale-Crouch, Hamre, & DeCoster, 2016). Therefore, no significant findings have shown STR as a mediating variable between teacher wellbeing and another variable.

Taxer et al. (2018) in two studies explored the role of teachers emotions anger and enjoyment as mediators in the relationship between scores on the MBI subscale emotional exhaustion and STR. The first study found a significant indirect effect of STR on

emotional exhaustion for both enjoyment and anger though, it is worth noting that the direct effect of anger as the mediation between STR and emotional exhaustion was significant, but this was not found for enjoyment. Nonetheless, the authors conclude that enjoyment and anger were indirect mediators as having a positive STR was associated with feeling more enjoyment and less anger which results in less emotional exhaustion for teachers. Taxer et al's (2018) second study replicated some of the initial findings while using a longitudinal design and using students perceptions of the STR. In this study however, both anger and enjoyment were not found to show a significant direct effect of the mediation, only the indirect effects were significant.

To summarise, the majority of studies that have explored STR and teacher wellbeing using a mediational analysis have not found a statistically significant mediation. The findings that have been shown to be significant are that teacher depression plays a role in the relationship between mindfulness and conflict and teachers' emotional experiences of anger and enjoyment play a role in teacher emotional exhaustion and STR. A limitation of mediation is the statistical assumption that the independent variable is the only cause of both the mediator and the dependant variable, which has been argued cannot be established within a single study (Bullock & Green, 2010; Smith, 2012). This is a limitation as it is unlikely to be only one variable in the real world that is the cause of other variables. Therefore, due to minimal findings and the limitation of mediation, more research is needed to further our understanding of the relationship between teacher wellbeing and STR.

1.4.4 Patterns over time

From the 20 studies five used a longitudinal design, it is important to compare the findings of these studies because a benefit of using a longitudinal design is that it helps determine patterns over time, which can provide more information regarding cause and

effect. One of these five studies had a third variable as the dependant variable. Roberts, LoCasale-Crouch, Hamre, and DeCoster, (2016) despite having a longitudinal design, measured depression and emotional support cross sectionally. Depression was measured at both time points, but the scores were averaged to give one score, and emotional support was only measured in the spring, therefore cause and effect between STR and teacher wellbeing cannot be established in this study. Similarly, Hoglund et al. (2015) measured burnout and emotional support across a term at three time points but due to the measures not significantly changing over time, causal inference cannot be established. They found that burnout predicted significantly less growth in the teacher-child relationship quality but due to the limited change, the authors conclude that burnout is a process that takes longer to develop. Burnout is defined as a response to prolonged chronic stressors at work (Maslach & Leiter, 2016), therefore by definition burnout would take longer than a term to develop.

Neuenschwander, et al. (2017), in their longitudinal study, measured teacher stress at the first time point and STR at the second. They found that teacher stress and emotional support showed a linear relationship. It is often presumed that temporal priority of the cause is a required condition for causality, however Wunsch et al., (2010) argue that this is not the case. The issue in this study is that temporal priority of the cause cannot be determined as the researchers did not measure both outcomes at each time point. These studies suggest that future long-term studies of burnout are needed to measure all outcomes at the various timepoints.

Aldrup et al. (2018) measured STR and emotional exhaustion over two time points and controlled for the initial levels of both variables in the mediation. The authors explain that this allowed them to explore predictors of change in the dependent variable, which in this study was student misbehaviour. They were therefore able to see if teachers who perceive more misbehaviour, experience a change in emotional exhaustion over time,

in comparison to their colleagues, who do not perceive as much misbehaviour. They did not find support for a mediation model, but STR was statistically and negatively associated with EE after controlling for teacher's wellbeing at an earlier point. Despite this being longitudinal in design, the relationship is still correlational in nature which means that cause and effect cannot be established. To establish the cause, it would be expected that over time one variable would remain stable while the other would change and this has not been found in this research. This could indicate a dynamic relationship between the two variables where neither are the cause or effect but affect each other. This hypothesis is supported by the background theory.

Finally, Taxer et al. (2018) used a longitudinal design in their second study and found that teachers' emotions at one time point during the school year indirectly mediated the effect of student reported STR at the start of the year and the teachers' emotional exhaustion midterm, while controlling for teachers' emotional exhaustion at the start of the year. This possibly indicates that STR is the cause and emotional exhaustion the effect. However, similar to most longitudinal studies only rudimentary temporal information was measured rather than continuous time basis measures. This increases the chance of confounding variables and longitudinal studies are unable to control for all possible confounds and future changes in events or behaviour cannot be foreseen, which may have had an impact on both STR and EE.

Wunsch et al. (2010) claim another limitation of longitudinal studies is the potentially high dropout rates in long-term studies. This is an issue because it can cause groups to be underrepresented and therefore increasing the chance of sampling bias. Another limitation is that often studies do not take a measurement of expectations or intention and it is this belief that can have an impact on both the cause and effect. Such as the intention to leave teaching or the expectation that teachers should or should not have a

good relationship with their class. These limitations of longitudinal studies highlight the importance of randomised control trials for understanding causal relationships.

1.4.5 Interventions

A Randomised Control Trial (RCT) was used in two studies, experimental research is often deemed to be of better quality as cause and effect can be established. These studies therefore, scored the highest quality index (Downs & Black, 1998) of all the studies included in the current review. Both studies explored an intervention that was designed to improve student-teacher relationships; Key2Teach (Hoogendijk et al., 2018) and a 14-week professional development course (Sandilos et al., 2018).

Sandilos et al. (2018) found professional development appeared to protect teachers from the negative association between professional investment stress (defined as general displeasure with their career) and emotional support (measured using the CLASS observation, that measures emotional support as the quality of the classroom interactions and the teachers' sensitivity to children). 'Business as usual' control participants who scored high in investment stress showed limited development in their emotional support for pupils throughout the year, in comparison to the control teachers reporting lower investment stress, whereas this effect was not observed in teachers involved in the professional development course. Teachers in the experimental group who scored high in investment stress, made similar improvements in emotional support as their less stressed colleagues. This could indicate that some elements of stress have an impact on a teacher's ability to develop emotionally supportive relationships with their students although, there are a few issues that make causality difficult. Firstly, teacher stress was only measured at the first time point and therefore it is unknown how this changed throughout the intervention period. Additionally, only the subtest, professional investment stress showed the association with emotional support. Another subtest, work-related stress, which relates

to feelings of having too much work to complete, did not relate to change in teacher-student interactions in either condition. Another limitation with this study is that the intervention included specific teaching on the key domains used in the CLASS observation tool, which in effect could mean the intervention ‘taught to the test’ rather than actually improving STR. Therefore, further research is needed to establish the role of teacher wellbeing in the beneficial effects this intervention has on STR.

Hoogendijk et al. (2018) found that emotional exhaustion decreased at follow-up for those in the Key2Teach condition. However, closeness with a student did not mediate the effect of course condition on emotional exhaustion. In addition, the authors found no evidence that close STR with a specific student with externalizing behaviour problems had a role in the development of emotional exhaustion. This finding makes it difficult to conclude that it is the STR element of the Key2Teach intervention that improved teacher wellbeing. Previous findings have suggested, this could be due to closeness being used as a measure of STR rather than conflict.

1.5 Discussion

Teacher wellbeing and student-teacher relationships are both important elements of education that have been shown to impact children’s learning (Early et al., 2007; Klusmann, Richter, & Lüdtke, 2016b; Lee, 2012). Yet to the author’s knowledge, an up-to-date systematic literature review, that draws together the research linking teacher wellbeing and STR, has not been carried out. Therefore, the present review aimed to present an overview of what the existing literature suggests about this association.

The review found that this association seems to vary depending on how teacher wellbeing and STR are defined and measured. The research shows a reliable link between stress and burnout on conflict in STR whereas, the association with closeness was not as clear. Furthermore, there was limited evidence that depression plays a role in the STR.

1.5.1 Limitations of the studies

In terms of quality, there was an extensive range between the studies. The Quality Index Score (Downs & Black, 1998) varied from 7 to 16, which highlights the array of methods used. It is, however, important to draw together some limitations of the studies collectively.

A key difference between the studies is the variety in outcome measures used, this makes comparison between the studies more difficult. Furthermore, the validity and reliability of some of these measures can be questioned. Most of the studies report their own internal reliability scores, (two studies did not; Gastaldi et al., 2014; Harding et al., 2019). Most Cronbach alpha scores are in the excellent, good or acceptable range with just a few scores being in the questionable category. Whereas, Hoglund, Klingle, & Hosan, (2015) had a few scores in the poor range, despite using validated measures. Yoon's (2002) measures are also worth noting, as this research only used questions that the author created rather than already validated measures and all measures in this study had questionable reliability scores, which calls the findings of this study into question. Other studies also used their own measures (Arens & Morin, 2016; Rodríguez-Mantilla & Fernández-Díaz, 2017; Taxer et al., 2018), though the reliability scores of these were acceptable. Furthermore, Harding et al's, (2019) STR measure consisted of a single-item, which could be considered a strength as it would have been less onerous for the students to complete but, it may have been difficult to rate the global statement “teachers and students generally have good relationships at this school” (Harding et al., 2019 p182). This question would have required the student to consider all elements of the STR at school, to evaluate appropriate parts and then conclude with a single rating (de Boer et al., 2004). STR in their study was used as a confounding variable and was not an important main aim of the research, but, the validity of this measure needs to be considered when interpreting Harding et al's (2019) findings in this review.

Another limitation of these measures was that they relied on self-report.

Triangulation has been used in some studies for the STR by gaining both the children and teacher's views and some studies also used CLASS which is an observational tool to measure emotional support. The heavy reliance on self-report could have implications for the reliability and validity of the measures, for example Hamre et al. (2008) report the test-retest reliability to be .57 for the CES-D, the depression measure they used. This is in line with research on the reliability of other subjective wellbeing measures, which shows they are typically lower than those found for education, income etc (Krueger & Schkade, 2008). Yet, they have been argued to be high enough to support the research that is utilising them (Krueger & Schkade, 2008). It would also be difficult to measure constructs such as wellbeing without using self-report measures.

A relative strength of several of the studies is the large sample size. However, none of the studies can be described as truly representative of the whole population of teachers because all studies had a sample from one or two countries, this means that studies cannot be generalised across countries. This is because of the difference in political and cultural factors that may affect education in the different countries, it is therefore important that more studies are carried out, so conclusions can be drawn for individual countries. Another difficulty with generalising the findings is the different settings recruited which means, there was a range across studies with preschool, primary and secondary schools, this is a limitation as research has shown that there is age-specific differences in the STR (Košir & Tement, 2014).

Most studies report the details of participants such as the age, gender and experience though, there were a few studies that did not. From the information reported, the sample of teachers used across the studies were highly experienced with means ranging from nine to 22 years' experience. The findings of these studies can therefore not be generalised to teachers in the early part of their careers. This is a concern as less experienced teachers are

of interest due to the current difficulty in retaining teachers in the profession (Chang, 2009). Furthermore, very few studies report their recruitment process, which means the possibility of selection bias cannot be eliminated.

A large number of studies used data that was collected for another purpose, 12 of the 21 studies did not collect the data for the primary purpose of exploring their research aims. This is not necessarily a limitation, as most studies make use of large-scale evaluations. But this does need to be considered as there is the possibility of data dredging. Furthermore, two studies in the review (Becker et al., 2017; Whitaker et al., 2015) use the same data from the Pennsylvania Head Start Staff Wellness Survey (SWS). They have explored teacher wellbeing and STR with different variables, which is why both have been included, though it is expected that they will find the same overall association between these two variables.

A number of data analysis methods were used, which means it was not always appropriate for the researchers to report effect sizes. Approximately half of the studies reported an effect size, or an appropriate alternative based on the analysis method used. The variability in analyses also made comparison between studies difficult. Most studies made use of a cross-sectional study design, while only a few were longitudinal or RCTs. This has made it difficult for cause and effect in the association to be established, which is a limitation of the studies. Despite cause and effect not being able to be established, several studies have reported the findings in a way that suggests that a causal relationship can be demonstrated.

1.5.2 Suggestions for future research

The majority of articles in this review used self-report measures or observation. To further develop our understanding of the association between teacher wellbeing and STR more experimental approaches would help to disentangle this relationship. This review

discussed two RCTS (Hoogendijk et al., 2018; Sandilos et al., 2018). These studies presented several limitations in the exploration of teacher wellbeing and STR and therefore, it would be useful for experimental research that aims to improve STR and wellbeing to be carried out with pre and post measures of both variables, so a clear cause can be established.

Furthermore, as discussed in the limitations section, none of the current studies are representative of all teachers. It would therefore be important for research in the future to recruit random and wider samples, so the findings can be generalised.

This review has highlighted that the findings between depression and STR were less reliable than teacher stress or burnout. Furthermore, a limitation of this review is only the negative elements of wellbeing has been used and from the search terms, this produced studies that explored teacher stress, burnout and depression. These concepts have been appraised as being vague (Arens & Morin, 2016) and research has shown that the concepts are associated but particularly stress and burnout have different causes and consequences (Pines & Keinan, 2005). It would be beneficial for future research to explore the exclusive variance each of these concepts has on STR and find out if one is more imperative in the relationship. Additionally, an exploration of the literature that has studied the positive elements of wellbeing and the association to STR, would be interesting as positive wellbeing components may possibly show a more reliable relationship with closeness in the STR.

1.5.3 Limitations of review

The current review has various limitations. Firstly, the author of the paper solely selected the articles to be included and carried out the appraisal of the research. This may have led to bias regarding the choice of inclusion and exclusion criteria. Furthermore, only peer reviewed papers have been included in this review and this has led to a risk of

publication bias. Grey literature (such as theses and dissertations) was omitted, and this research may have included nonsignificant results and other useful information that is more likely to be excluded from published articles.

Only quantitative studies were included. This is a limitation as qualitative studies could have provided more exploration and detail into the direction of the relationship. Furthermore, only articles published in English were included, this means that culturally different studies were likely to be excluded and there could potentially be different findings when diverse populations are included.

A final limitation is the restrictive definition of wellbeing that this review used. Only the negative elements of wellbeing were included in the search terms, with positive elements of wellbeing such as life satisfaction being excluded. This may have led the author to have greater clarity over the concept of wellbeing that was discussed, however, it will also have led to a narrower range of literature. This could explain the finding that conflict in the student teacher relationship was a more reliable finding, a possibility is that closeness is linked to the positive elements of wellbeing. This highlights a need for future research to explore the similarities and differences in the positive and negative elements of wellbeing and the STR.

1.5.4 Implications

Of all the resources and interventions available for improving education and attainment, the use of the relationship between the teacher and student to support and increase learning and development is currently limited (Pianta, Hamre, & Allen, 2012). This review has highlighted that teacher wellbeing and STR are linked and research has suggested that both elements are important for children's outcomes, yet schools are not currently placing importance on this as a tool to aid learning and development. A conclusion though to which of these factors is the cause and which is the effect cannot be

established. Underpinning theories such as the JD-R model (Bakker & Demerouti, 2007b), self-determination theory (Ryan & Deci, 2000) and the burnout cascade (Jennings & Greenberg, 2009) suggest that this relationship could be causal in both directions. Therefore, it is important in school contexts to find effective interventions to improve both.

Several interventions have been shown to improve teacher wellbeing and STR. Pianta et al., (2012) suggest four factors for lasting change in STR: (1) teaching the relevant knowledge to positive interactions with students, (2) continuing social support themselves, (3) regular feedback on their interactions with students and (4) having a focused target on changing one element within their STR. These principles within an intervention have been shown to improve emotional support in comparison to control groups (Early, Maxwell, Ponder, & Pan, 2017). In terms of teacher wellbeing, yoga and mindfulness have shown numerous positive effects including, depersonalisation as well as positive classroom effects such as classroom management (Gray, Wilcox, & Nordstokke, 2017; Harris, Jennings, Katz, Abenavoli, & Greenberg, 2016; Jennings et al., 2017). It is important to note that these beneficial effects are not found with all participants and therefore it is important for schools to consider the best tool to support their teachers' wellbeing. Research has demonstrated that numerous elements of the school environment plays a role in teacher wellbeing, with social conditions such as leadership and relationships among colleagues strongly predicting teacher satisfaction (Johnson, Kraft, & Papay, 2012). Therefore, planning interventions with knowledge of the school environment is important rather than implementing universal ones.

The key themes drawn from the review suggest an association between conflict in the STR and teacher stress and burnout. The most effective way for schools to support social and emotional development, including wellbeing and relationships is for interventions to be embedded in a broader whole school and community approach (Lee, Partt, Weidberg, & Davis, 2018). Therefore, it is imperative for schools to target both teacher wellbeing and

STR systemically (Naghieh, Montgomery, Bonell, Thompson, & Aber, 2015; Pianta et al., 2012) by developing a school culture that fosters both. These factors are something that Educational Psychologists (EPs) can actively promote in the schools in which they work in.

1.5.5 Conclusion

The present review examined a systematically searched body of literature to explore if there is an association between teacher wellbeing and the student-teacher relationship. The literature demonstrates that there is a relationship between teacher wellbeing and STR, with 18 of the 21 studies finding a relationship between the two variables. More reliable findings indicate an association between teacher burnout and stress and conflict in the STR in comparison to other measures such as depression (4 out of 8 studies) and closeness (3 out of 7 studies). Currently, cause and effect in this relationship cannot be established due to the methodology of the research and it would be important for future research to further explore the nature of this relationship. Despite not finding a causal relationship, this research highlights the importance for schools to consider both staff wellbeing and relationships between teachers and students. Therefore, educational implications have been suggested; including systemic school factors that foster wellbeing and relationships and interventions that have been shown to be effective.

Chapter 2 Empirical paper: teacher burnout, student outcomes and the student-teacher relationship.

2.1 Introduction

Teaching has been described as being one of the six most stressful professions due to higher than average physical and psychological health problems reported by teachers (S. Johnson et al., 2005). This stress reported by teachers has been associated with intent and motivation to leave the professions (Skaalvik & Skaalvik, 2011; Leung and Lee 2006). This is causing a shortage of qualified teachers (Ingersoll, 2001) as within 5 years nearly 40% of newly qualified teachers leave the profession (Chang, 2009). This research suggests that burnout is a widespread difficulty within the profession.

To understand teacher stress, it is important to define what this constitutes. Stress can be defined as the discrepancy in the demands placed on an individual and the individual's perceived capability to manage those demands (Kyriacou, 2001). Occupational stress as experienced by teachers can be conceptualized as a physical, emotional or cognitive reaction due to an individual's response to certain pressures and how well the individual believes they can manage those pressures (Brown & Nagel, 2004). Specifically, Wisniewski and Gargiulo (1997) defined teacher stress as the result of teachers abilities to meet demands placed upon them in their roles. When teachers experience chronic stressors and perceive the demands to be unmanageable this may result in burnout (Brown & Nagel, 2004; Maslach, Schaufeli, & Leiter, 2001). Maslach and Jackson's (1986) work is the most widely accepted conceptualisation of Burnout. The three key dimensions in a burnout response are feelings of overwhelming exhaustion (emotional exhaustion), detachment from various aspects of the role and feelings of cynicism, particularly the interpersonal elements of the job (depersonalization) and feelings of

ineffectiveness and limited competence (personal accomplishment) (Maslach & Leiter, 2016; Maslach et al., 2001).

Teacher stress and burnout has been extensively researched and reported in many countries (Aloe, Amo, & Shanahan, 2014). Previous research has predominately focused on areas such as antecedents of teacher stress (Kyriacou, 2001), the outcomes of burnout for teachers, such as attrition (Leung & Lee, 2006) and interventions to reduce teacher stress (Taylor et al., 2016). However, there is a paucity of research that has examined the relationship between teacher burnout and student wellbeing. Psychological theories relevant to this association will be discussed, followed by an exploration of the current literature that has directly explored the association between teacher burnout and student outcomes.

2.1.1 Stress-Contagion Theory

A relationship between teacher burnout and student wellbeing is probable in the context of stress-contagion theory (Wethington, 2000 as cited in Oberle & Schonert-Reichl, 2016). Stress-contagion theory is the belief that stressful experiences can transfer from one stressed individual to another within a shared social environment (Milkie & Warner, 2011). For example, research has shown that stress in the family context can be transferred from one family member to another (Milkie, 2010). Extending this Milkie & Warner, (2011) suggest that school morale may spill over to the students as a stressed teacher may become less motivated to create a positive classroom climate.

2.1.2 The Prosocial Classroom

The theory of stress-contagion therefore suggests a plausible link between teacher burnout and student wellbeing. Jennings and Greenberg, (2009) have developed a model

that describes the way in which teacher wellbeing can affect the classroom environment and student outcomes (Figure 2).

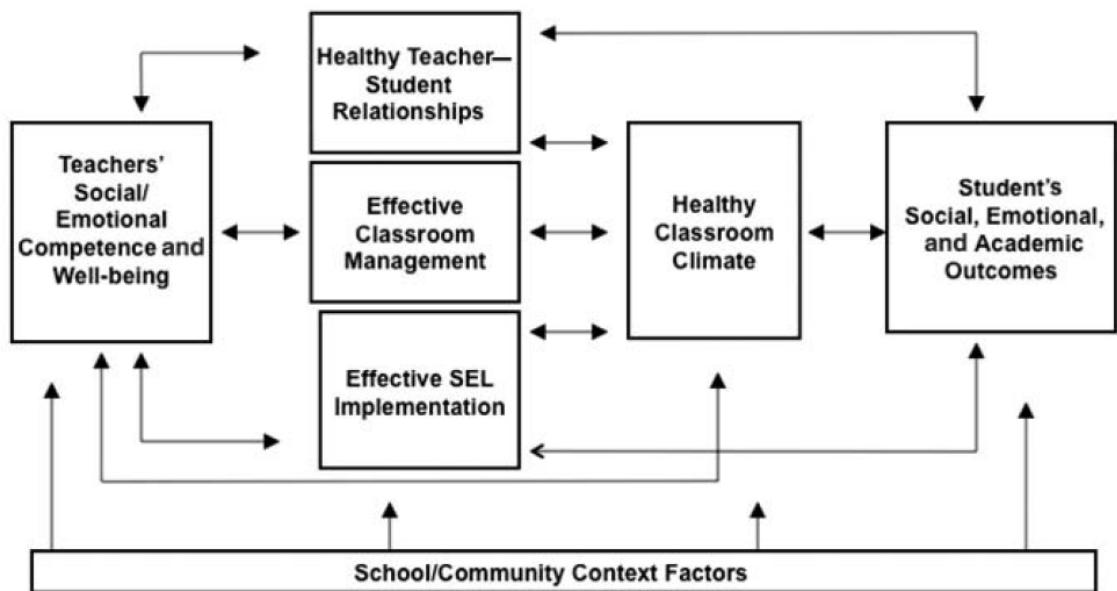


Figure 2: The Prosocial Classroom.

Reprinted from "The Prosocial Classroom: Teacher Social and Emotional Competence in Relation to Student and Classroom Outcomes", by Jennings, P. A., & Greenberg, M. T, 2009, Review of Educational Research, 79(1).

This model proposes that teachers play a vital role in the development of a healthy classroom environment, which in turn contributes to positive student social, emotional and academic outcomes. Jennings and Greenberg (2009) believe teachers who are emotionally competent, and have good wellbeing, are more capable of developing positive STR, manage the classroom and encourage social and emotional learning (SEL), which means the opposite is true for teachers who have poor wellbeing. These factors in turn impact the classroom climate and precipitates student's poor social, emotional and academic outcomes.

Findings suggest that teachers who have difficulty managing their emotions may subsequently develop emotional exhaustion generating a "burnout cascade" (Jennings & Greenberg, 2009). This cascade connects student and teacher stress in a cyclic manner

(Oberle & Schonert-Reichl, 2016). Specifically, as teachers become stressed, they may develop an uncaring and insensitive attitude toward students (depersonalization) (Farber & Miller, 1981). This could trigger a decline in the classroom environment where students' emotional needs are not met. This leads to a decline in student outcomes, which contributes further to the teacher's burnout as they develop feelings of ineffectiveness (lack of personal accomplishment).

2.1.3 Teacher Stress and Student Outcomes

Despite the relationship between teacher burnout and student outcomes being plausible based on the stress-contagion theory and the prosocial classroom model, only a few studies have explored the link to student wellbeing (Harding et al., 2019; Oberle & Schonert-Reichl, 2016; Roffey, 2012; Milkie & Warner, 2011).

Firstly Roffey (2012) carried out a small-scale qualitative study and found numerous commonalities in factors that support teacher and student wellbeing. Due to the exploratory nature of this research teacher wellbeing and student wellbeing was not directly linked nevertheless, the authors concluded that "what is in students' best interests is also likely to be in the interests of teacher wellbeing" (Roffey, 2012, p15).

Milkie and Warner (2011), Oberle and Schonert-Reichl (2016) and Harding et al., (2019) directly explored the link between teacher wellbeing and child wellbeing. Teachers who do not feel respected by their colleagues report higher internalising problems of anxiety, loneliness, low self-esteem and sadness in the students they teach (Milkie & Warner, 2011). It needs to be noted that there is an issue with this research as teachers measured student internalising problems rather than the students. In further support of this association, research has shown that children's morning cortisol levels can be predicted by their teacher's burnout (Oberle & Schonert-Reichl, 2016). Although, perceived stress is only thought to be moderately associated with salivary cortisol (Hellhammer, Wüst, &

Kudielka, 2009) due to the complexity of the biological response of stress. Due to the methodological limitations of this previous research the current study will investigate perceived stress in a self-report manner. More recently Harding et al. (2019) found, through self-report, that teacher wellbeing is associated with student wellbeing and this relationship was weakened by the addition of student-teacher relationships and disappeared with the addition of teacher presenteeism, suggesting that these two variables may be mediating factors.

More research studies have investigated the association between teacher wellbeing and student educational outcomes. Specifically, it has been found that teacher burnout and stress is negatively associated with students' mathematics achievement (Klusmann et al., 2016a), SATs results (Briner & Dewberry, 2007), phonological awareness (Pakarinen et al., 2010), achievement of long-term IEP outcomes, (Wong, Ruble, Yu, & McGrew, 2017), academic achievement as measured by school grades and standardised tests (Arens & Morin, 2016) and autonomous motivation (Shen et al., 2015). However, this research is based on association and therefore causation cannot be assumed. Currently limited research has explored the association between teacher wellbeing and student academic self-concept. Academic self-concept is an important measure as increases in self-concept lead to increases in other desirable outcomes such as academic achievement (Marsh & Craven, 2006). This research will therefore add to the literature by exploring academic self-concept as an educational outcome rather than imposing additional testing on the children in the sample.

Despite the limited number, these studies are the start of an empirical evidence base that emphasises the association between teachers' well-being and student outcomes. The nature of this relationship needs further exploration. Currently, most research has explored the indirect link between these two elements through other variables such as student-teacher relationships (STR)

It is worth noting that emotional regulation is a salient and frequent occurrence for teachers (Sutton, 2004). It has been argued that there are implicit but clear rules for teachers with regards to displaying emotion in the classroom (Zembylas, 2003). For example, qualitative studies have shown that teachers regularly use a variety of emotional regulation strategies as they believe this improves their teaching effectiveness (Sutton, 2004). Research has also identified that teachers frequently express genuine desirable emotions whilst hiding undesirable emotions from their students (Taxer & Frenzel, 2015). It is possible that limited research has investigated the impact of teacher burnout on student outcomes due to knowledge that teachers hide their negative emotions from students and therefore the impact on students has not been considered. However, research with teachers has highlighted an association between frequently hiding negative emotions with poor mental and physical health (Taxer & Frenzel, 2015), which may therefore impact on students.

2.1.4 The Role of Student Teacher Relationships

Part of the teacher “burnout cascade” described by Jennings & Greenberg (2009) is that of depersonalisation. Maslach, Schaufeli, and Leiter (2001) describe depersonalisation for educators as ignoring the qualities of children that make them unique. This is to create distance between the teacher and child as demands are thought to be more manageable when they are considered impersonal parts of the role. Therefore, it is important to consider teacher burnout and the relationships teachers develop with students in their class.

Research has shown that teachers who report higher levels of workplace stress also express more conflict in the relationships with their students (Whitaker et al., 2015). STR are imperative as the quality of this relationships has been associated in numerous longitudinal studies with children’s emotional development and academic performance (Burchinal, Peisner-Feinberg, & Pianta, 2002; Roorda & Koomen, 2011).

Research highlights that there is a clear connection between teacher burnout, STR and student outcomes. However, there is a lack of research that has directly investigated this relationship. Therefore, this research aims to replicate the link between teacher burnout and student outcomes and expand this finding by investigating STR as a predictive factor. This research consequently will explore if there is direct empirical support for some of the associations made in the Prosocial Classroom Model (Jennings & Greenberg, 2009). Due to the scope of work, only one pathway of Jennings and Greenberg's (2009) conceptual framework will be explored.

2.2 Research questions and hypotheses

The overarching research question 'is there a link between teacher burnout and student outcomes and are student-teacher relationships a predictive factor?'

Based on the above research and to answer the research question, the following hypotheses will be examined:

1. High teacher burnout will predict low student wellbeing.
2. High teacher burnout will predict low student academic self-concept.
3. Student-teacher relationships will predict these associations.

2.3 Method

2.3.1 Participants

Thirty-four, year four and five teachers were recruited from seven primary schools from a London borough. Primary school teachers were chosen as they spend more time with the same students than secondary school teachers and therefore it is likely that student-teacher relationships will have a stronger impact on primary aged children (Roorda & Koomen, 2011). The upper end of primary school was chosen as the children completed self-report and the measures chosen required children to be over the age of nine due to the literacy

ability required. Year 6 teachers and pupils were not included due to the additional variable of test anxiety from the SATs (McDonald, 2010). An opportunity sample was used as schools were recruited from the Local Authority where the researcher was on placement as a Trainee Educational Psychologist. Seventeen primary schools with at least a three-form entry were contacted by email and followed up with a phone conversation. If the headteacher was interested in taking part a meeting took place between the teacher and the headteacher, where the procedure was explained, and the headteacher consent form was signed.

There were two teachers who were excluded from the data as in two cases, two teachers for one class completed the questionnaire and, in both cases, the more experienced teacher was included. Another teacher was excluded from the analysis as their class did not complete the questionnaires. This left a remaining sample of 31 teachers (5 males and 26 females) who had a mean of 6.28 years' experience, ranging from less than a year to 35 years.

There were 647 children who participated in the study. Of these, 48 children were excluded due to their teacher not completing the questionnaire. Two children were excluded due to being below the age of 9 and one child was excluded due to missing data. Leaving a remaining sample of 596 children.

2.3.2 Design

A cross-sectional survey design was used to explore the relationship between teacher burnout (independent variable) and student subjective wellbeing, academic self-concept and quality of life measures (dependent variables), all data was collected at one time-point. The relationship between teachers and students was also measured to explore if this predicts the relationship between teacher burnout and student outcomes. A post-positivist,

critical-realist prospective was employed, which adopts a critical perspective of our ability to know reality with certainty.

2.3.3 Measures

In addition to questions about their age and class children completed scales that measured wellbeing and quality of life, academic self-concept and their student-teacher relationship. The teachers in addition to questions about the name of their class, their gender and the length they have been teaching completed scales that measured their burnout level and the relationship they have with their class. The reliability scores reported below, were calculated with the sample in this study.

2.3.3.1 Child self-report wellbeing measures

Child wellbeing was measured using the KIDSCREEN-27 Quality of life screening instrument (KIDSCREEN Group Europe, 2004; Ravens-Sieberer et al., 2007; see Appendix D). This questionnaire is for children aged between 8 and 18 years and contains 27 questions that are divided across five dimensions: physical wellbeing ($\alpha = .71$; explores the child's physical activity, energy, fitness and perceived health), psychological wellbeing ($\alpha = .76$; explores positive emotions, satisfaction with life, feelings of loneliness and sadness), autonomy & parent relations and home life ($\alpha = .81$; explores the perceived quality of communication between the child and their parents and feelings of love and support), peers and social support ($\alpha = .79$; explores the child's relationship with their peers and their perceived social support) and school environment ($\alpha = .73$; explores the child's perception of their cognitive capability, learning, concentration and attitude to school).

2.3.3.2 Child self-report academic self-concept measure

Child academic self-perception was measured through the Myself As a Learner Scale (MALS, Burden, 1998; see Appendix D). This questionnaire is for children between the ages of 9 and 16. It contains 20 items in which the participant responded to statements

in either a positive, neutral or negative way. Including statements such as “learning is easy”, “I like having problems to solve” and “I need lots of help to do my work”. This questionnaire produced an overall score of academic self-concept between 20 and 100. In this study the Cronbach alpha indicated that the scale demonstrated good internal reliability ($\alpha = .89$).

2.3.3.3 Teacher burnout measure

Teacher burnout was measured using the Maslach Burnout Inventory – Educators survey (MBI-ES, Maslach, Jackson & Schwab, 1996; see Appendix E). This questionnaire contains 22 items. The questions are divided into three dimensions: emotional exhaustion ($\alpha = .88$), depersonalisation ($\alpha = .58$) and personal accomplishment ($\alpha = .74$). The emotional exhaustion subscale specifically measures fatigue, frustration, and stress. The subscale of depersonalization contains items that measure a lack of feeling and impersonal response towards students. The personal accomplishment subscale measure feelings of effectiveness and self-efficacy.

2.3.3.4 Student-teacher relationship; teacher self-report

Teachers also completed a questionnaire that measured their relationship with the whole class. The most commonly used measure to assess the quality of the relationship between a teacher and a child is the Student Teacher Relationship Scale short form (STRS, Pianta, 2001; see Appendix E). In this research the questionnaire was modified in accordance with Whitaker, Dearth-Wesley, and Gooze, (2015) to allow each teacher to provide one global assessment of their relationships with all children in the class. This questionnaire contains 15 items that are grouped into two subscales: conflict ($\alpha = .66$) and closeness ($\alpha = .87$). Statements in this questionnaire included items such as: “I share warm affectionate relationships with the children” and “the children easily become angry with me”.

2.3.3.5 Student-teacher relationship; student self-report

All students completed a questionnaire to measure the relationship they have with their teacher. This was measured through the Classroom life instrument (Johnson, Johnson, Buckman, & Richards, 1985; see Appendix D), which in comparison to other student self-report measures has been shown to have good face validity (Barch, 2015). This measure contains 12 comprehensive subscales on classroom life. For the basis of this study only two of these subscales was used: teacher social support ($\alpha=.85$) and teacher academic support ($\alpha =.86$). Therefore, only eight questions from this scale were used. The children responded to statements in either a positive, neutral or negative way, such as “My teacher cares about how much I learn” and “My teacher cares about my feelings”.

2.3.4 Procedure

Ethical approval was granted from the University of Southampton’s Ethics Committee and the Research Governance Office (See Appendix F). Headteacher and teacher consent and child assent was gained for each participant. Parents were given opt-out letters that needed to be return to the school if the parent did not want their child to take part. Participants were aware that their responses were confidential and no identifiable information was collected. All participants were debriefed, and parents were given a debrief letter that explained how to withdraw their child’s data.

Once a school agreed to take part in the study and the headteacher had completed a consent form, a letter and information pack (see Appendix G for consent forms, information and instructions given to the participants) were given to the year 4 and 5 teachers to introduce the study and provide them with information sheets and consent forms. Once the teachers consented to take part an information pack, that included a letter, information sheet and opt-out form was sent to the parents of the students in the consenting teachers’ class that were aged 9 and above (see Appendix H for process of recruitment flow

chart). Once the deadline for opt-out passed the children completed online questionnaires during an ICT lesson. Either the researcher, or class teacher, introduced the study to the students and explained that there are no right or wrong answers. The students then gave assent on the online system (see Appendix D), agreeing to take part. Once students agreed to take part, they completed the questionnaires on the computer. The teachers were also then asked to complete the questionnaire, some teachers completed this at the same time as the children others had the link emailed to them and completed the questionnaire after. Once the questionnaire was completed debrief information was displayed on the computer and children were given a debrief sheet to give to their parents that explained how to withdraw their children's results from the analysis of the study (see Appendix D & G).

2.3.5 Data analyses

The data in this study is nested, this refers to participants being clustered into high order groups, with the assumption that participants that belong to the same group are more similar than participants that belong to other groups. In this case it is assumed that children in the same class are more similar than those in a different class. Therefore, due to the nested nature of the data, a suitable analysis to explore the hypotheses is multilevel modelling. Multilevel modelling is useful as it splits the variance of a variable into two elements: between and within the classroom. Variance that is between-classes is due to membership of that classroom and within-classroom variance is due to individual differences in the students. Multilevel modelling is then able to provide a tool to calculate the amount of variance (both within and between classrooms) that dependent and predictor variables can account for in an independent variable. Furthermore, these dependent and predictor variables can be at both level one (child-related factors, within-level predictors) and level two (environmental-related factors, between-level predictors).

Following Hox's (1995) steps for multilevel modelling, initially the data was analysed to explore the degree to which classrooms differed for each level 1 variable (wellbeing scales, STR and academic self-concept). This was analysed through the intraclass correlation coefficient (ICC) which determines the proportion of variance due to classroom membership (Heck, 2001). Second, regression analyses were carried out with any variables that were of interest but did not reach a statistically significant ICC, as this shows the variance in scores is not due to classroom membership and therefore a single level data analysis is more appropriate. Finally, different multilevel models were carried with the child level one variables that had a significant ICC. These models demonstrate the extent to which teacher burnout, the student-teacher relationship and other level 1 variables predicted these classroom differences.

The analyses were performed using SPSS. Participants were only completely excluded if they had no useable data on any of the variables. Missing data was imputed, for individual items, using the item mean across the sample if there was less than 10% of the data missing for that variable. This imputation method assumes data is missing at random, which was the case, therefore this approach is appropriate (Saunders et al., 2006). This approach has been argued to cause bias however, mean imputation has been shown to produce similar correlations to original and imputed data if there is less than 10% of missing data (Cheema, 2014). A further advantage of using this method is the results remain internally consistent. All continuous variables were centred on the grand mean (Luke, 2004). Full information maximum likelihood and chi-squared tests were used to evaluate the models goodness of fit (Heck, Thomas and Tabata, 2014).

2.4 Results

2.4.1 Intraclass correlations

Classroom differences were explored in student wellbeing and academic self-concept using the intraclass correlations. Using the classrooms to cluster the data, variance between and within levels were calculated as shown in Table 2. The variables that have significant variance between-classroom were school environment and teacher personal support. For teacher personal support the variation due to classroom membership was 6.7% and 8.9% for school environment. The intraclass correlations for all other variables were below 5% and this has been identified as an appropriate cut off point for using multilevel modelling (Heck, Thomas and Tabata, 2014).

Table 2: *Intraclass correlations and class (between) and individual level (within) variances (standard error) classes as a clustering variable*

Variable	ICC	Within-variance (Standard error)	Between-variance (Standard error)
Physical	0.008 0.012	11.62 (.71) ***	.14 (.19)
Psychological	0.008	18.56 (1.57)***	.15 (.27)
Parents	0.011	31.61 (1.94)***	.34 (.52)
Peers	0.041	7.54 (.47)***	.32 (.18)
School	0.089	8.70 (.52)***	.85 (.33)**
Academic self-concept	0.021	189.41 (11.58)***	4.06 (3.50)
Teacher personal support	0.067	16.44 (1.02) ***	1.19 (.53)*
Teacher academic support	0.016	10.53 (.65)***	.17 (.20)

Note. ICC= Intraclass correlation coefficient; * p<.05. **p<0.01 ***p<.001.

2.4.2 Predictive relationships between teacher burnout, student-teacher relationship, children's wellbeing and academic self-concept.

Before conducting the multi-level analysis, simple bivariate correlations among all predictor and outcome variables were calculated. The purpose of exploring the relationships between all variables, was to identify which variables to include in the multi-level models. There were a number of statistically significant associations among the student level variables (Table 3), among the teacher level variables (Table 4), and between the student (mean variables) and teacher level variables (Table 4). Most correlations were in the predicted direction. None of the predictor variables were significantly correlated with child psychological wellbeing or academic self-concept. However, there was a significant relationship between the children's perceived relationship with their teacher and their academic self-concept. Finally, other than school environment and teacher personal support, teacher burnout was significantly associated with the children's perceptions of their physical wellbeing. This is therefore further explored through regression.

Table 3 *Correlations Between Level 1 Predictor Variables*

	1	2	3	4	5	6	7	8
1.Physical	-							
2.Psychological	.46**	-						
3.Parents	.40**	.52**	-					
4.Peers	.38**	.47**	.45**	-				
5.School	.38**	.48**	.38**	.39**	-			
6.MALS	.26**	.31**	.27**	.17**	.29**	-		
7.Teacher personal support	.15**	.26**	.25**	.22**	.45**	.17**	-	
8.Teacher academic support	.18**	.17**	.20**	.18**	.34**	.15**	.64**	-

Note. *p<.05. **p<.001 at a 1 tailed significance level

2.4.3 Regression analysis – hypothesis 1

Hypothesis 1 predicted that teacher burnout would predict classroom differences in child wellbeing and academic self-concept. As there was not a significant amount of between classroom variance for these dependant variables, a single level analysis that does not take the context into account is suitable. Therefore, a regression analysis was carried out to further explore the positive correlations found. A regression in which teacher depersonalisation predicted student physical wellbeing was significant, $F(1, 29) = 5.11, p = .03$. We can conclude that depersonalisation is a significant predictor of physical wellbeing, $\beta_1 = -.39$ $t(3) = -2.26, p = .03$, $R^2 = .15$. With one standard unit increase in depersonalisation, the predicted value of physical wellbeing decreases by .39 units.

Furthermore a second regression was carried out in which another measure of teacher burnout - teacher personal accomplishment predicted student physical wellbeing was significant, $F(1, 29) = 5.73, p = .02$. It can therefore be concluded that personal accomplishment is also a significant predictor of physical wellbeing, $\beta_1 = .41$ $t(3) = 2.39, p = .02$, $R^2 = .17$. With one standard unit increase in personal accomplishment, the predicted value of physical wellbeing increases by .41 units.

Table 4 *Correlations Between Level 2 Variables*

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Physical	-												
2. Psychological		.44**	-										
3. Parents		.36*	.46**	-									
4. Peers		.58**	.48**	.52**	-								
5. School		.49**	.47**	.56**	.55**	-							
6. MALS		.42*	.48**	.54**	.42*	.48**	-						
7. Academic support		.31	.32	.39*	.47**	.52**	.21	-					
8. Personal support		.30	.17	.55**	.43*	.67**	.37*	.61**	-				
9. EE		-.11	.30	.20	.01	-.13	.08	-.05	-.03	-			
10. DP		-.39*	-.17	.10	-.22	-.21	-.03	-.29	-.23	.52**	-		
11.PA		.41*	.09	.31	.34	.41*	.09	.53**	.52**	-.47**	-.57**	-	
12. Closeness		.26	.21	.04	.26	.37*	.07	.56**	.44*	-.33	-.40*	.71**	-
13. Conflict		-.22	-.07	-.02	-.25	-.38*	-.09	-.42*	-.32	.56**	.60**	-.53**	-.44*

Note. p>.05. *p<.05. **p<.001 at a 1 tailed significance level.

As no other student dependant variables were significantly correlated with teacher burnout measures, regression analysis was not carried out with any other variables. Therefore, it is worth noting that in this study, teacher burnout does not appear to influence other factors of student wellbeing or student academic self-concept, so hypothesis 2 was not supported.

2.4.4 Mediation analysis - hypothesis 3

To extend the finding that teacher burnout, as measured by the personal accomplishment subscale, predicts student physical wellbeing and to explore hypothesis 3, a mediation analysis tested if student-teacher relationships play a mediating role in this relationship. Student perception of their teachers' academic support was used as the

mediating variable between teacher personal accomplishment and physical wellbeing as this variable is significantly correlated with personal accomplishment and student physical wellbeing at the individual level. (see Table 3 and 4).

PROCESS (Model 4; Hayes 2013) was used to test whether student perception of their teacher's academic support mediated the effect of teacher personal accomplishment on student physical wellbeing. As expected from the above regression, the total effect of PA on student physical wellbeing was positive and significant, $b = .06$, $SE = .02$, 95% CI [0.01, 0.11] $p=0.02$; the higher teacher's personal accomplishment, the higher student physical wellbeing. The direct effect, when teacher personal support was included in this model, was not significant, $b = .05$, $SE = .03$, 95% CI [-0.01, 0.11]. The indirect effect was also not significant, which suggests that the effect of teacher personal accomplishment on student physical wellbeing is not via the STR, $b = .01$, bootstrapped $SE = .01$, BC95% CI [-0.03, 0.03] (see Figure 3).

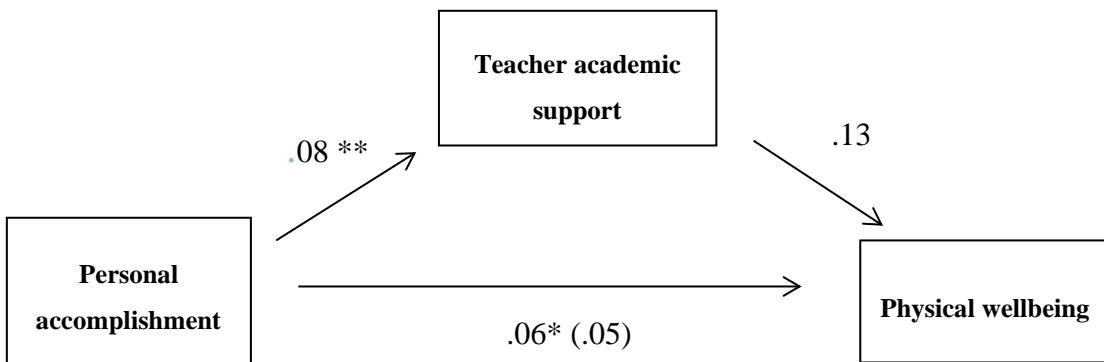


Figure 3: Path model of the relations among teacher personal accomplishment, teacher academic support, and student physical wellbeing. Path coefficients are unstandardised regression coefficients. The value in parentheses is the direct effect (c') of personal accomplishment on physical wellbeing. * $p < .05$, ** $p < .005$, *** $p < .001$.

2

Despite not being directly linked to the specific hypotheses, school environment and teacher personal support were used in further analyses as dependant variables. These variables are, of interest to the overarching research question as children's perceptions of

their school environment as a factor of their quality of life is an outcome and has been shown to have unique variance in psychological wellbeing (Casas, Baltatescu, Bertran, Gonzalez, & Hatos, 2013; Karatzias et al., 2002). Furthermore, it is likely that school environment is closely relationship based and associated with school climate as opposed to the other variables on the KidScreen being more associated with outside school factors, therefore this variable could be seen as an indirect measure of wellbeing. In addition, teacher personal support was explored to see if the quality of the student-teacher relationship is affected by teacher burnout, as previous research has shown.

Multilevel models were run to determine whether the student-teacher relationship, teacher burnout and psychological wellbeing would predict class differences in children's school satisfaction scores.

2.4.5.1 The role of the student-teacher relationship and psychological wellbeing in children's school environment quality of life.

Student-teacher relationship and psychological wellbeing provide an important explanation of the between-class differences in school quality of life scores. Unlike, teacher burnout which did not account for any of this variance. Table 5 shows the different models run, with the estimate and standard error for the fixed effects of the different covariates. The ICC and log likelihood are also reported

Table 5 *The Null, Interim and Final Model for Student School Environment Scores*

Variables	Model		
	Null	1	2
<i>Fixed effect</i>			
Personal teacher support^a	.32(.03)**	.32(.02)**	.31(.03)**
Psychological wellbeing^b		.54(.14)**	.53(.13)**
Conflict^b			-.04(.02)
ICC	8.91%	6.77%	2.67%
			2.03%

Log likelihood	2927.4	2916.36	2607.57	2493.03
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Note. ICC= Intraclass correlation coefficient; * p<.05. **p<0.01; standard errors are given in parentheses

^a Within level variable,

^b Between-level variable.

Table 5 shows that model 3 is a better fit than the null model as the deviance from the log likelihood is approximately 434.37 points lower. A chi-square test of goodness-of-fit was performed to determine if there is a difference between the models. The deviation between the models was significant χ^2 (3df) = 434.37 p < .01.

Adding these variables separately to the model shows how much variance that covariant is explaining. Percentages were calculated by comparing the ICC between models and also by looking at the overall variance and the individual variance and the change in this variance between the models. Controlling for perceived teacher personal support results in a 2.14% reduction in the ICC, therefore controlling for perceived teacher personal support reduces the between-class effect by about 24%. The difference in the between-group variance component in the null model and in the first random intercept model is 37.6% of that in the null model. On this basis we may say that controlling for student perceived teacher personal support accounts for 37.6% of the between-group variability in student school quality of life scores.

Controlling for the psychological wellbeing mean of the class results in a 4.1% reduction in the ICC, therefore controlling for student psychological wellbeing reduces the between-class effect by 60.6% and controlling for teacher perceived conflict with their class reduced the effect by 24%. Furthermore, we may say that controlling for student psychological wellbeing accounts for 62.3% and teacher-student conflict accounts for 25% of the between-group variability in student quality of life scores.

2.4.5.2 The role of teacher burnout and academic self-concept on student's perceptions of the student-teacher relationship

Academic self-concept and a component of teacher burnout provide an important explanation of the between-class differences in student perceived student-teacher relationship. Table 6 shows the different models run, with the estimate and standard error

Table 6 *The null, interim and final model for teacher personal support*

Variables	Model		
	Null	1	2
Fixed effect			
Myself as a learner ^a		05 (.01)**	05 (.01)**
Teacher personal accomplishment ^b			12 (.04)**
ICC	6.75%	6.4%	3.84%
Log likelihood	3109.1	3001.84	2992.97

Note. ICC= Intraclass correlation coefficient; * p<.05. **p<0.01; standard errors are given in parentheses

^a Within level variable,

^b Between-level variable.

for the fixed effects of the different covariables. The ICC and log likelihood are also reported.

Table 6 shows that model 2 is a better fit than the null model as the deviance from the log likelihood is approximately 116.13 points lower. A chi-square test of goodness-of-fit was performed to determine if there is a difference between the models. The deviation between the models was significant χ^2 (2df) = 116.13 p < .01.

Controlling for academic self-concept results in a 0.35% reduction in the ICC, therefore controlling for this reduces the between -class effect by 5% and controlling for teacher personal accomplishment reduced the effect by 40%. Furthermore, we may say that controlling for student academic self-concept accounts for 15% and teacher burnout for

37.6% of the between-group variability in students' perception of their relationship with their teacher.

2.5 Discussion

The current study explored the relationship between teacher burnout and year 4 and 5 primary children's academic self-concept and wellbeing measures. Three hypothesis were explored:

1. that high teacher burnout will predict low student wellbeing
2. that high teacher burnout will predict low student academic self-concept
3. that student-teacher relationships will predict these associations

Therefore, the relationship between teacher burnout and year 4 and 5 primary children's academic self-concept, wellbeing measures and STR were examined. Classroom differences were not found for student wellbeing or academic self-concept. Furthermore, a direct relationship between teacher burnout and academic self-concept and student psychological wellbeing was not found. However, hypothesis 1 could be described as partly supported as regression analysis revealed an association between teacher personal accomplishment and depersonalisation and students' physical but not psychological wellbeing. Furthermore, there was no evidence that this relationship was mediated by the STR and therefore hypothesis 3 was not supported. The remaining discussion will explore these findings in more detail.

Correlational analysis showed a significant, positive and weak correlation between academic self-concept and the STR. Furthermore, at a group level, teacher burnout, specifically depersonalisation, and student physical wellbeing showed a significant, negative correlation. Personal accomplishment showed a significant, positive correlation with physical wellbeing, school environment and STR. After testing the existence of the relationship, regression analysis was carried out between wellbeing and teacher burnout. The results of the regression analysis found that teacher burnout predicted student physical

wellbeing, negatively with depersonalisation and positively for personal accomplishment. In other words, as was hypothesised (hypothesis 1) the results showed that teachers low personal accomplishment predicted lower physical wellbeing in pupils and high depersonalisation scores also predicted lower physical wellbeing in pupils. However, in terms of classroom differences the only quality of life measure that showed a significant difference was school environment which explored children's feelings about school.

In comparison to previous research (Harding et al., 2019; Milkie & Warner, 2011; Oberle & Schonert-Reichl, 2016), children's psychological wellbeing was not predicted by teacher burnout and nor were significant classroom differences found. Previous research found that teacher burnout predicted children's anxiety, loneliness, self-esteem and sadness (Milkie & Warner, 2011) and morning cortisol as a biological measure of stress (Oberle & Schonert-Reichl, 2016). This research study used a global measure of psychological wellbeing that was measured via questions exploring, mood, fun, sadness and loneliness. It is possible that this measure was not specific enough and that burnout is predictive of specific elements of psychological wellbeing such as anxiety. It is also possible that the wording of some questions was a barrier for the children in this study. For example, questions included: "have you felt so bad that you didn't want to do anything?" This caused a number of children in this sample to ask for help with the understanding of the questions. In addition to reading comprehension, the questionnaire required children to have an understanding of emotional literacy. Therefore, the subscale of physical wellbeing may have been a predictor due to children being more easily able to identify their level of physical activity, energy, fitness and perceived health rather than their psychological wellbeing.

This research also examined if teacher burnout predicted classroom differences in children's academic self-concept. The results showed that there were not significant classroom differences in academic self-concept and teacher burnout was not associated

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with academic self-concept. Therefore, hypothesis 2 was not supported and previous research that has shown a link between a range of academic outcomes and teacher burnout (Arens & Morin, 2016b; Briner & Dewberry, 2007; Gray et al., 2017; Klusmann et al., 2016a; Pakarinen et al., 2010; Shen et al., 2015; Wong et al., 2017) was not replicated. A key difference is that the previous research explored quantifiable educational outcomes such as maths achievement (Klusmann et al., 2016a), SATs results (Briner & Dewberry, 2007) and phonological awareness (Pakarinen et al., 2010), whereas this study explored student self-perceptions, specifically academic self-concept. Research has shown that increases in self-concept lead to increases in other desirable outcomes such as academic achievement (Marsh & Craven, 2006). Other research has replicated this relationship but academic achievement on self-concept is a stronger relationship than that of the other direction (Muijs, 1997). The idea that academic achievement is a stronger predictor is supported by Arens and Morin's (2016), who found that teacher emotional exhaustion was negatively associated with student's school grades and standardised assessment results but not with a student self-perception measure of their competence. Therefore, the lack of support for teacher burnout impacting on educational outcomes may be due to the measurement of academic self-concept rather than a measure of educational achievement.

This research found a significant class difference in school satisfaction. Previous research has shown that the STR plays an important role in influencing student's level of school satisfaction (King, Huebner, Suldo, & Valois, 2006). Student perceived teacher personal support, class average of psychological wellbeing and teacher-student conflict have all been shown to account for the differences in class variance in school environment scores, in this study. Controlling for student perceived teacher personal support accounts for 37.5% of the between-group variability in student school quality of life scores. Furthermore, it was found that controlling for student psychological wellbeing accounts for 62.3% and teacher-student conflict accounts for 25% of the between-group variability in

student quality of life scores. These results partly support hypothesis 3 by showing that controlling for STR and children's psychological wellbeing accounts for some of the variance in class difference of school environment. However, despite school environment being significantly correlated with teacher personal accomplishment, teacher burnout did not significantly improve the model fit, therefore both hypothesis 3 and the prosocial classroom model (Jennings & Greenberg, 2009) are not fully supported.

Furthermore, post-hoc results also indicated that teacher personal accomplishment and academic self-concept account for some of the variance in classroom differences in perceived teacher personal support. Support for this finding comes from indirect research that highlights the importance of burnout on STR (Whitaker et al., 2015a) and the association between STR and academic self-concept (Olsson, 2009). These findings further highlight the importance elements of burnout in the STR, as this study found that 37.6% of the between-group variability in students' perception of their relationship with their teacher is due to teacher personal accomplishment.

2.5.1 Limitations and directions for further research

As already discussed above a key limitation of this study is the measures that were used. From scoping searches, it appeared that there are limited measures of global student psychological wellbeing aimed at the age of the population used within this study. Therefore, a quality of life measure was used and it is possible that a more specific measure of wellbeing would have found a link to teacher burnout, as shown by previous research (Milkie & Warner, 2011; Oberle & Schonert-Reichl, 2016) Furthermore, it would be interesting for future research to investigate the relationship between teacher burnout and both academic self-perceptions and academic achievement, to explore if teacher burnout is more predictive of one than the other.

Another limitation of these measures was that they relied on self-report.

Triangulation was used to gain both the children and teacher view of their relationship nonetheless it would have been beneficial to triangulate this further with the use of observation. Due to the scope of the current research project this was not possible although, the use of both self-report and observational methods could be used in future research. Another difficulty with using self-report methods is that it relied on the children having a certain reading ability. Those that did not have the required reading ability were unable to take part or possibly answered the questions without comprehending them, leaving a potentially biased sample. Although, the readability of the questionnaire is within the age range for this sample, it is a German questionnaire that has been translated which could have led to some of the questions being awkwardly phrased. In addition the sample in this study were from a London Borough with high child poverty rates, which has been linked to reading under? achievement (Bhattacharya, 2010) so it might be assumed that more than the average number of children could have had difficulty accessing the text

Additionally, a drawback of this research is the number of different variables measured. Specifically, this is of concern due to the number of correlations which were run, as this increases the chance of a type 1 error, known as the family wise error rate. Significance was interpreted for a one-tailed hypothesis and a more stringent probability value of $p<0.01$ was reported (known as the Bonferroni correction) and some important associations did not reach this level of significance and therefore must be interpreted with caution, especially as the Bonferroni correction method has been criticised (Sherman & Funder, 2009).

Burnout and stress have been described as vague concepts (Arens & Morin, 2016b). Research suggests that the two concepts are likely to be associated however, they may have different causes and outcomes (Pines & Keinan, 2005). The current study only explored teacher burnout and therefore failed to compare the effects of burnout to other

related constructs. The failure to find any other significant predictors, beyond that of physical wellbeing, could be due to not measuring similar constructs, such as teacher stress or wellbeing for example. Therefore, further research is needed to clearly define these related constructs by exploring what their unique contribution is and to identify the significant correlates.

Furthermore, the impact of teachers' burnout on student wellbeing and academic self-concept might differ depending on student factors such as their gender or age or environmental factors such as their school experiences. For example, it could be possible that teacher burnout has a stronger effect for some students compared to others. It would have therefore, been interesting to gather student demographic information and consider the possibility of a moderated relationship. It would be important for further research to consider this.

Although a large sample was used, the study remains limited by its cross-sectional design which means the direction of the observed relationships cannot be disentangled and causality cannot be assumed. It is often misinterpreted that there is a substantial body of evidence that shows that teacher burnout affects students, although, this relationship and the link to teacher wellbeing and classroom activity is still not clearly understood. Therefore, further investigation is needed to explore the direct relationship of teacher stress, wellbeing and burnout on a variety of student outcomes including their emotional wellbeing. It would be beneficial for this future research to be longitudinal or have experimental conditions that aim to improve teacher wellbeing so that causality can be assumed.

Psychology is currently moving away from focusing predominately on pathology and exploring "positive features that make life worth living" (Seligman & Csikszentmihalyi, 2000, p.5). Positive psychology aims to promote positive traits that encourage individuals and organisations to thrive and flourish by focusing on optimal

functioning (Seligman & Csikszentmihalyi, 2000). Whereas, this research explored teacher wellbeing from a deficit perspective. It would be beneficial for future research to explore the opposite end of the spectrum, such as work engagement (Maslach, 2011), and explore those teachers that demonstrate resilience despite the demands of their work. It would also be interesting for future research to explore a range of positive student outcomes such as, motivation, engagement and enjoyment of learning in relation to teacher behaviour.

2.5.2 Practical implications

The findings of this study have important practical implications for Educational Psychologists (EPs). Firstly, EPs are increasingly becoming a service that is used reactively, to jointly plan with school staff for children already identified as having difficulty in school. Although important, this is reducing the amount of time EPs are working in preventative and systemic ways. This research supports the benefits of working in a systemic way to support school environment. EPs can play a role in many ways to increase teacher and student wellbeing such as being agents of change in negative conversations with school staff, by sharing good practice with schools and encouraging schools to implement strategies to improve wellbeing of teachers that are already burnout and applying preventative strategies.

There are also implications for schools, both at an individual level, and school level. It is important that schools recognise the early signs of burnout if they are aiming to prevent difficulties (Maslach 2011). EPs could play a role in raising awareness for teachers regarding the signs and consequences of teacher burnout and provide support with the demands of the role, when early warning signs are detected in individual teachers.

To aim to prevent burnout, schools need to go beyond the individual by also implementing school wide interventions. Maslach (2011) describes two organisational interventions that can be applied to schools. The first, aim is to improve engagement, in

teachers. Self-determination theory (competence, autonomy and relatedness; Ryan & Deci, 2000) could be used as a framework to support engagement, as research has shown that teacher autonomy and self-efficacy are predictors of emotional exhaustion and engagement (Skaalvik & Skaalvik, 2014). Maslach's (2011) second suggestion is schools monitoring their own workplace stress. This empowers schools to further understand their own strengths and weaknesses and to implement customised strategies to support their areas of development rather than using a universal approach.

Finally, the findings of this study are important at a policy and government level. This is because policy makers can more explicitly encourage schools to have a greater focus on teacher wellbeing. This would be beneficial as it is important that staff wellbeing is considered when planning strategically to increase teaching quality and student outcomes (Wong et al., 2017). Some examples of what policy development could consider include: reasonable workloads for teachers (Hakanen, Bakker, & Schaufeli, 2006), positive school climates (Grayson & Alvarez, 2008) and other burnout contributors such as fairness and control (Maslach, 2011). EPs could play a role in supporting policy makers with developing appropriate policies and offering support to schools with effective implementation.

Importantly, this research adds further weight to the importance of positive student teacher relationships on student outcomes. There is a role for EPs to encourage schools to create a school climate where positive relationships are developed and fostered.

2.5.3 Conclusion

Previous research has explored the antecedents and causes of teacher burnout along with the associated negative outcomes for teachers (Leung & Lee, 2006). This study has extended this by exploring the relationship between teacher burnout and outcomes for students. It was found that burnout as measured by Maslach and Jackson's (1986) three

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dimensions: personal accomplishment, depersonalisation and emotional exhaustion, teacher personal accomplishment and depersonalisation significantly predicted student physical wellbeing but not psychological or academic self-concept. This suggests that it is important to intervene in student wellbeing not only directly at the student level, but also at the school and organisational level, identifying systems to help improve student wellbeing and school satisfaction. In addition, this research did not find STR was a predictor, but further evidence was found for the association between STR and teacher burnout and student outcomes. Educational Psychologists are in a key place to support schools to become aware of the association that teacher burnout has on STR and student outcomes and therefore support schools with interventions in order for both teachers and students to flourish.

Appendix A excluded articles

Following the searches 286 papers were identified, 38 were duplicates and therefore removed. Following abstract and title screening, 205 papers were excluded. Following accessing the full-text for 43 articles, a further 23 were excluded. The reasons for exclusion are listed below:

No specific measure of the quality of the student-teacher relationship (n=9)

Not linking the two variables (n=6)

No measure of teacher wellbeing (n=5)

Qualitative (n=1)

Special education teachers (n=2)

Appendix B results table

Authors	Quality Index	Sample	Country	Design	STR measure	Wellbeing measure	Other Variables	Relevant findings
Aldrup, Klusmann, Lüdtke, Göllner, & Trautwein, (2018)	10	Secondary teachers: N=222 homeroom teachers Gender: 30% males Experience: 21.17 Students: N=4111 from two cohorts Age: 6 th grade (m=12.11) and the other cohort were 9 th grade (m=15.21)	Germany	Longitudinal	The student-teacher relationship scale (STRS; Pianta, 2001) only the closeness scale. ($\alpha=.85$)	German version of the Maslach Burnout Inventory (MBI; Enzmann & Kleiber, 1989) to assess Emotional Exhaustion (EE) ($\alpha=.81$)	Teachers and students perceived student behaviour (paying attention and obeying teacher) Teachers' enjoyment of teaching (Kunter, Tsai, Klusmann, Brunner, & Krauss, 2008)	Student misbehaviour was associated with reduced STR quality, which in turn was associated with higher EE and lower work enthusiasm. Suggesting misbehaviour has an indirect effect on burnout and work enthusiasm. However, a significant direct mediation was only found with work enthusiasm.
Arens & Morin, (2016)	9	Primary teachers: N=380 Gender: 338 (f)	Germany	Cross sectional	Students' perceptions of teacher support	Teachers provided ratings of their level of emotional	Students' perceptions regarding their academic competence.	EE was negatively associated with students' perceptions of teacher support.

Gastaldi, Pasta, Longobardi, Prino, & Quaglia, (2014)	8	Primary teachers: N=37 Gender: 97.3% female Experience: m=22 years	Italy	Cross sectional survey	STRS (R. C. Pianta, 2001) for 12 individual children from the class that were randomly drawn.	Italian version of the MBI (Talamo, 1989): Personal Gratification (PG), Depersonalisation (DP) and Emotional Exhaustion (EE)	Self-efficacy Personal variables: age, marital status, number of children. Professional variables: years of teaching experience, qualifications, type of contract, whether class teacher or support teacher, subjects taught, class size.	Low levels of burnout were found in the sample generally. PG and DP were associated with conflict. However, there were no other significant results for the variables EE, closeness or dependency.
Glover Gagnon, Huelsman, Kidder-Ashley, & Lewis, (2019)	9	Preschool teachers: N=44 Experience: 9.41 years Children reported: N=72 Age: m=51.7 months	US	Cross sectional survey	STRS for individual children (unsure how the children were picked)	Index of teaching stress (ITS; Abidin, Greene,& Konold, 2004). Competence ($\alpha = 0.95$) Conflict ($\alpha = 0.91$), Closeness ($\alpha = 0.85$), and Dependency ($\alpha = 0.70$)	Disruption of teaching process ($\alpha = 0.91$), and Frustration working with parents ($\alpha = 0.90$)	Regression analyses showed that conflict predicted all subscales of the index of teaching stress whereas closeness only predicted 2 (Loss of Satisfaction with Teaching and frustration Working with Parents) and none for dependency.

Hamre, Pianta, Downer, & Mashburn, (2008)	11	Pre-kindergarten teachers: N=597 Experience: 13.4 years	US	Cross sectional survey	STRS (R. C. Pianta, 2001) – only the conflict scale. ($\alpha = 0.79$)	CES-D (Radloff, 1977) ($\alpha = .79$)	teacher-child rating scale (TCRS) measures problem behaviours.	Correlation showed an association between self-efficacy and depression with conflict.
		Children: N=2282 Age: m=5.05			The classroom assessment scoring system (CLASS; Pianta et al., 2008). Emotional support - ($\alpha = .84$)		Teachers' adult-centered beliefs about children were measured with the modernity scale. teacher self-efficacy scale (TSES)	With one standard unit increase in depression, the predicted value of conflict increases by .01 units. The findings remained significant after controlling for problem behaviours.
Harding et al., (2019)	9	Secondary teachers: N= 1182 Experience: Not reported Students: N=3216 Age: year 8	England and Wales	Cross sectional	Students were asked to rate the following statement, “teachers and students generally have good relationships at this school.” The score ranged from 0 (strongly disagree)	The Warwick Edinburgh Mental Wellbeing Scale (WEMWBS) – students also completed Patient Health Questionnaire (PHQ-8) to measure depressive symptoms	The Warwick Edinburgh Mental Wellbeing Scale (WEMWBS) – students also completed Strengths and Difficulties Questionnaire (SDQ)	An association between teacher wellbeing and student wellbeing was found and remained but was weakened once STR was added to the model.

				to 3 (strongly agree).	(Kroenke et al., 2009).	Student socio-economic deprivation, Ethnicity, teacher absence, teacher presenteeism, school size, school performance rating, school-level deprivation, school academy status, school region, school attainment		
Hoglund, Kingle, & Hosan, (2015)	11	Primary teachers: N= 65 Experience: 11.78 years Children: N=461 children Age= 6.9 years	Canada	Longitudinal over 1 term - data was collected on three occasions.	CLASS as=.62-.92 (except emotional support at time 3, $\alpha=.52$). STRS – for each individual child	MBI Reliability across the time points as=.60-.94 (except personal accomplishment at time 1, $\alpha=.57$)	Subscales of the Behaviour Assessment System for Children II. Children nominated their three closest friends and then reported their perceived relationship quality using the Friendship Quality Questionnaire. Two subscales of the School Engagement Questionnaire	Teacher burnout predicted significantly less growth in teacher-child relationship quality. An association was found between teacher emotional support and teacher personal accomplishment.

						Children's literacy skills using the Early Childhood Longitudinal Study, Kindergarten Cohort of 1998–1999, 3rd grade assessment.
Hoogendijk et al., (2018)	Primary teachers: N=103 Gender: 77% female Experience: 12.62 years Children: N=103 Age: 9.42 years	The Netherlands	RCT	STRS Closeness ($\alpha = .90$) Conflict ($\alpha = .90$) For specific students	Emotional Exhaustion subscale of MBI ($\alpha = 0.83-0.89$)	Externalizing problem behaviour (SDQ) the short version of the Teachers' Sense of Efficacy Scale (TSES) Demographic information - regarding age at baseline, gender and years of working experience was collected for teachers. Data on age and gender were also collected for students.
Jennings, (2015)	8 Preschool/head start teachers:	US	Cross sectional	CLASS	The Positive and Negative Affect	The Teacher Efficacy Scale (TES) Depression, EE and DP were significantly

Milatz, Lüftenege r, & Schober, (2015)	7	Primary teacher: N=83 Gender: 100% female Experience: 12.43 Students: N=166 Age: m=7.94	Austria & Germany	Cross sectional survey	STRS for 2 students in the class, the student teachers were most attached to and the one they were least. Closeness: Most attached: ($\alpha=.66$) Least attached: ($\alpha=.73$)	Emotional support - ($\alpha=.72$) Teacher Relationship Interview (TRI; Stuhlman and Pianta 2002)	Schedule (PANAS; Watson et al. 1988) The Beck Depression Inventory (BDI; Beck et al. 1961) ($\alpha=.89$) MBI EE - ($\alpha=.91$) DP - ($\alpha=.70$) PA - ($\alpha=.67$)	The Five Facet Mindfulness Questionnaire (FFMQ) The Self-Compassion Scale (SCS) The bipolar attachment security scale measures for teachers. Teachers scoring either high or low in closeness within the STR were less EE than teachers who develop medium quality relationships.	negatively correlated with emotional support. PA was not significantly correlated.

Neuenschwander, Friedman-Krauss, Raver, & Blair, (2017)	Kindergarten teacher: N=33 Gender: 100% female Experience: 15.8 years	US	Longitudinal over 2 terms	CLASS ($\alpha=0.83$)	Modified version of the Child Care Worker Job Stress Inventory (CCW-JSI; Curbow et al., 2000) ($\alpha=0.76$)	Children's EF skills were measured using the Dimensional Change Card Sort, Hearts & Flowers and Fish Flanker.	Teacher stress but not depression was correlated with Emotional Support. This relationship was linear as opposed to curvilinear as hypothesised.
	Children: N=171 Age: m=5.7 (at Time 1)			As a covariate: teachers completed the Kessler Psychological Distress Scale (K6) (Kessler et al., 2002) ($\alpha=0.87$)	School level poverty was measured by the percentage of children in the setting receiving free school meals.	In addition, emotional support did not mediated the association between teacher stress and child executive function.	
Roberts, LoCasale-Crouch, Hamre, & DeCoster, (2016)	Head start teachers: N= 355 Gender: 97.9% female Experience: 13.08 years	US	Longitudinal – CLASS self-report at two time points over half a year.	Teacher depression using the short-form of the CES-D (Radloff, 1977). ($\alpha=.80$)	Teacher demographics Three items from the Chicago School Readiness Project (Raver et al., 2011) - teachers' attributions about the causes of children's behaviour	Teachers rated children's social-emotional development using the abbreviated version of the Personal Maturity Scale and social skills from the Social Skills Rating System and the	No association in teacher reported depression and their emotional supportiveness in the classroom was found. Depression predicted behaviour problems at

		Children: N=2,203 Age: m= 47.63 months (at Time 1)			Personal Maturity Scale.		Time 1 and social skills at Time 2. However, this relationship was not mediated by emotional support.	
					Parents reported problem behaviours and social skills via a 21 question survey.			
					Teachers' also rated a 12-item questionnaire based on the Policy and Program Management Inventory.			
Rodríguez- Mantilla & Fernández- Díaz, (2017)	9	Secondary teachers: N= 794 Gender: 40.1% female Experience: not reported	Spain	Cross sectional	the Climate Measurement Instrument in Secondary Schools (Rodríguez-Mantilla & Fernández-Díaz, 2015) ($\alpha = .84$)	Measuring Instrument for Burnout Syndrome in Teachers (Rodríguez-Mantilla & Fernández-Díaz, 2012) EE- ($\alpha = 0.85$) Cynicism – ($\alpha = 0.77$) Inefficacy – ($\alpha = 0.90$)	The teacher-co-worker relationship and the teacher-superior relationship was also measured,	A direct effect of STR on EE, inefficacy and cynicism was found in differing strengths. Inefficacy was the weakest of the three however, there was an indirect association between STR and inefficacy through cynicism.

Sandilos et al., (2015)	8	Preschool/head start teachers: N= 59 Gender: 78% female Experience: 13.5 years	US	Cross sectional	CLASS ($\alpha = 0.77$)	depressive symptoms were measured using items from the Kessler Psychological Distress Scale (Kessler et al., 2002) ($\alpha = 0.81$)	Demographic items asked about gender, ethnicity, age, teaching experience, and language proficiency in English and Spanish.	Emotional support and depressive symptomology were not significantly correlated.
Sandilos et al., (2018)	16	Preschool/Head start teacher: N= 427 Experience: 11 years.	US	RCT	CLASS: start of the course and at the midpoint – towards the end	Teacher Stress Inventory (TSI; Fimian & Fastenau, 1990). Only measured at the start. Work-related stressors – ($\alpha = 0.8$) Professional involvement - ($\alpha = 0.75$) Discipline and motivation – ($\alpha = 0.8$)	Demographics: race/ethnicity, annual income, years of education, years of teaching experience, teaching efficacy, if they are a Head Start teacher.	A moderation effect was observed for course condition on the relationship between professional investment stress and emotional support. In addition, control participants who scored high in investment stress showed limited improvement in emotional support throughout the year in

							comparison to the control teachers reporting lower investment stress, whereas this effect was not observed in teachers involved in the professional development course.	
Sava, 2002	8	Secondary schools: N= 119 Gender: 83.19% female Experience: 16.5 years Students: N= 946 pupils Age: mean age not reported	Romania	Cross sectional	One factor was found via a principle component analysis from the following scales: (1) Teacher Treatment Inventory Scale (TTI)—Weinstein, Marshall, Brattesani, & Middlestadt, 1982): feedback ($\alpha = .78$) supportive help (this was not included in the PCA) ($\alpha = .81$)	Friedman's (1993) adapted MBI: emotional exhaustion ($\alpha = .72$) job non-accomplishment ($\alpha = .84$) Effects scale (ES) the impact of negative STR on pupils.	Pupil Control Ideology Scale (PCI) school climate questionnaire (CQ): social support, school resources, job accomplishment and prestige and financial security. Teacher misbehaviours checklist (TMC)	The principle component analysis found that one component accounts for 74.3% of the variation in 5 variables. The authors concluded that this factor is therefore a core aspect that influences STR and named it as a co-operative vs. conflict-inducing attitude towards pupils. The correlation matrix for the structured equation modelling, showed that burnout and teacher attitude towards pupils were not correlated.

					(2) The Teacher Pupil Interaction (TPI; Poenaru & Sava 1998) ($\alpha = .97$)		However, when this pathway was removed from the model, this changed the model fit and the author concluded that the initial model was a better fit.
Tixer, Becker- Kurz, & Frenzel, (2018) – study 1	8	Secondary school N= 266 Gender: 65.9% female Experience: 14.86 years	US	Cross sectional	four items were used from Klassen et al. (2012) ($\alpha = .79$)	MBI – only ($\alpha = .89$) EE the Teacher Emotion Scales.	STR had an indirect effect on teachers' EE through teachers' experiences of enjoyment and anger but only anger showed a significant direct effect.
Tixer et al.,(2018) – study 2	8	Secondary school	Germany	Longitudinal,3 time points.	Eight items that measured the STR from the	MBI – EE Time 1 ($\alpha = .6$) Teacher Emotion Scales	There was an indirect mediation of STR on EE at a later point in the

							independently from the JCQ.	
Yoon, (2002)	7	Primary teachers: N=113 Gender: 95% female Experience: 12 years	US	Cross sectional survey	Teachers were asked to report the percentages of students in their class in each level of relationships, ranging from “a very good relationship” to “a very negative relationship.”	Levels of stress was measured using the following three items: (1) rated how stressful they found handling behaviourally challenging students. (2) “Having to deal with behavioural problems in class, I have considered leaving this profession” (3) “I am very satisfied with my teaching career.” ($\alpha=.69$)	Covariates: gender, race/ethnicity, educational level and years of teaching experience. Teachers’ levels of self-efficacy in establishing a positive relationship with a challenging student and managing disruptive and oppositional behaviours. Teachers negative affect.	Teacher stress was significantly correlated with the percentage of negative relationships, furthermore all of the teacher variables accounted for 10% of the variation in negative relationships with teacher stress accounting for most of this variance. Whereas, none of the teacher variables predicted the percentage of positive STR and combined they only account for 2% of the variance.

Appendix C Appraisal table

Authors & quality assessment	Participants; sample and representativeness	Reliability and validity of measures	Design	Method – cause and effect	Effect size	Generalisability	Data dredging/primary data
Aldrup, Klusmann, Lüdtke, Göllner, & Trautwein, (2018) 10	Secondary teachers: N=222 Students: N=4111 from two cohorts 106 schools from two German states, however, does not state details about recruitment.	1 Misbehaviour (T) α .84 2 Misbehaviour (S) α .88 3 Relationship α .85 4 Exhaustion α .81 5 Enthusiasm α .88 Covariates: 6 Relationship (T1) α .84 7 Exhaustion (T1) α .77 8 Enthusiasm (T1) α .88 Good and 1 acceptable reliability. This study did not comment on the validity of the measures.	Longitudinal	Change scores were used between time point one and two, still difficult to establish cause and effect.	The size of the mediation effect, was calculated using the ratio of the indirect effect to the total effect (PM), as suggested by Wen and Fan (2015).	-good use of mediation effect, was calculated using the ratio of the indirect effect to the total effect (PM), as suggested by Wen and Fan (2015).	Used from a larger longitudinal research project (Jonkmann, Rose, & Trautwein, 2013)

Arens & Morin, (2016) 9	Primary teachers: N=380 Gender: 338 (f) Experience: 21.73	EE - α .68 (this is a questionable score) Competence self-perceptions Students: N= 7863 Unsure how the sample were recruited	Cross sectional survey Teacher support – α .88 School satisfaction – α .76	No	Effect size indicators are reported.	Generalisable for German and 4 th grade students.	German data from the PIRLS 2006 study - ensuring representativeness for the German 4th grade student population
Becker, Gallagher, & Whitaker, (2017) 9	Head start teachers: N=1001 Gender: 98% women Experience: Not reported 69% of programmes agreed to take part. 52% of teachers then agreed.	Depression - .91 Conflict .73 Closeness - .72 Mindfulness - .85 demands, control, and support scales were 0.82, 0.72, 0.85,	Cross sectional survey - mediation	No	No reported method of ES for the mediation.	Only head start and only one state in America.	Data was used from the Pennsylvania Head Start Staff Wellness Survey (SWS), which was a one-time web-based survey of all staff working in the state's Head Start and Early Head Start programs.
Gastaldi, Pasta, Longobardi, Prino, & Quaglia, (2014) 8	Primary teachers: N=37 7 schools – sample recruitment was not discussed.	MBI STRS no reliability measures reported	Cross sectional survey	No	No	No small sample	No

Glover Gagnon, Huelsman, Kidder-Ashley, & Lewis, (2019) 9	Preschool teachers: N=44 Experience: 9.41 years	ITS Characteristics domain ranging from $\alpha = 0.71$ to 0.97. Alpha reliability	Cross sectional survey	No	R = variance	No small sample	A post hoc exploratory analysis was performed to see if closeness moderates the relationship between conflict and teaching stress. There was no explanation as to why, this was carried out.
Hamre, Pianta, Downer, & Mashburn, (2008) 11	Pre-kindergarten teachers: N=597 Experience: 13.4 years	TCRS: well-validated measure & Cronbach's alpha of .91	Cross sectional survey	MLM	No, because of model analysis.	Yes, to preschool teachers in the US.	The use of two large studies of state-funded preschool programs were used: the National Center for Early Development and of Learning's multi-state study or pre-kindergarten (multi-state study) and the state-wide early education

		approximately 80% of children in the USA . The study used a stratified and random sample, which is good for generalising.	Test re-test reliability is reported as .57 (which is poor) (Radloff, 1977).			programs study (SWEEP study).
Harding et al., (2019) 9	Secondary teachers: N= 1182 Experience: Not reported Students: N=3216 Age: year 8 The schools were recruited from 4 local authorities in the South-West of England and from 10 local authorities in South-East and South-Central Wales.	The Warwick Edinburgh Mental Wellbeing Scale (WEMWBS) - shown to be reliable (test re-test score=0.83) SDQ – valid and reliable measure.	cross-sectional in design and multi-level as participants were clustered within schools.	No	The effect sizes in this paper were described as being small.	Large sample The data was taken from the 25 schools in the WISE project (Kidger et al., 2016). WISE was a cluster randomised controlled trial with secondary schools. A group of teachers in the intervention schools were given Mental Health First Aid training for students and a further group were given Mental Health First Aid training for colleagues.

collaboration with the school board based on the criteria that they were high needs schools and were not currently engaged in other research projects.	each domain, $\alpha=.62-.92$ (except emotional support at wave 3, $\alpha=.52$).	10 schools out of 14 contacted					
<p>(Hoogendijk, Tick, Hofman, Holland, Severiens, Vuijk, & van Veen, 2018) 15</p> <p>Primary teachers: N=103</p> <p>Gender: 77% female</p> <p>Experience: 12.62 years</p> <p>Children: N=103</p> <p>Age: 9.42 years</p> <p>Opportunity sample, schools within an hour. Doesn't say how many were invited to participate and also unsure how many schools took part.</p>	<p>SDQ - Internal consistency and correlations with other behavioural questionnaires have been evaluated as good in previous studies.</p> <p>STRS – did not report own reliability measures.</p> <p>EE - 0.83-0.89</p>	<p>RCT</p>	<p>Key2Teach seems to reduce emotional exhaustion, although in this study, this effect was only apparent five months after finishing the intervention.</p> <p>Key2Teach on emotional exhaustion through closeness was not significant-suggesting the</p>	Yes	Unsure of how schools were recruited, therefore no.	No	

(Jennings, 2015) 8	Preschool/head start teachers: N=35 Experience: 15 years Unsure how schools were recruited or chosen.	CLASS – 0.72 BDI – 0.89 MBI – EE – 0.91, DP – 0.70, PA -0.67	Cross sectional	interventions effect on EE was not because of the STR.	Correlational – high chance of a type 1 error because of the number of measures.	No, not even exact P values reported.	No – small sample	The data was collected from October through December as the baseline for a randomised controlled pilot study of an intervention.
(Milatz et al., 2015a) 7	Primary teacher: N=83 Gender: 100% female Experience: 12.43 Students: N=166 Age: m=7.94 A convenience sample since teachers were contacted personally by student research	EE – 0.83 DP- 0.65 PA- 0.72 Closeness- 0.66/0.73 (least attached)	Cross sectional survey	No - RSA	R2 & CI	Convince sample but across Germany and Austria	No	

(Neuenschwander, Friedman-Krauss, et al., 2017) 9	Kindergarten teacher: N=33 Gender: 100% female Experience: 15.8 years	CCW-JSI – 0.76 CLASS – ES- 0.83 Children: N=171 Age: m=5.7 (at Time 1)	Longitudinal over 2 terms	HLM – no because STR and stress were measured at different times, no change was measures.	Yes ES	No – not generalisable sample.	This sample was recruited as a part of a larger randomized controlled trial (Blair & Raver, 2014) to assess the effectiveness of the Tools of the Mind curriculum in kindergarten – only control group were included in this study
(Roberts et al., 2016b) 10	Head start teachers: N= 355 Gender: 97.9% female Experience: 13.08 years	CES-D- 0.8 0.81 CLASS – high inter rater reliability -no alpha reported.	Longitudinal – self-report at two time points over half a year	No because they averaged the depression score.	No – mediation.	Large scale survey but only head start teachers.	Data was used from participants in the Head Start Family and Child Experiences Survey (FACES), an ongoing longitudinal evaluation of Head Start conducted by

<p>N=2,203 Age: m= 47.63 months (at Time 1)</p>	<p>the Office of Planning, Research and Evaluation.</p>
<p>Participants from 118 centres/58 programs.</p>	
<p>(Rodríguez-Mantilla & Fernández-Díaz, 2017) 9</p>	<p>Secondary teachers: N= 794 Gender: 40.1% female Experience: not reported</p> <p>Interpersonal relationships, the Climate Measurement Instrument in Secondary Schools (2015) - .84</p> <p>1291 were contacted and 794 agreed – 61.5% - random sampling from the Autonomous Community of Madrid (ACM), composed of a total of 12,770 teachers.</p> <p>Cross sectional No - SEM No Yes, in Madrid 6 hypotheses within one study.</p> <p>Measuring Instrument for Burnout Syndrome in Teachers (Rodríguez 12) EE- 0.85 Cynicism – 0.77 Inefficacy – 0.90</p> <p>Good reliability but they used their own measures when there are already</p>

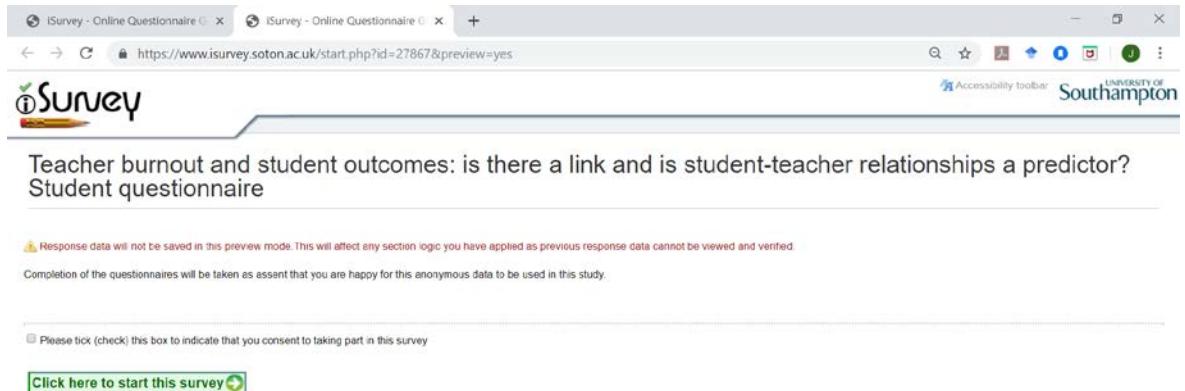
			measures that demonstrate good validity.				
(Sandilos et al., 2015) 8	Preschool/head start teachers: N= 59 Gender: 78% female Experience: 13.5 years Not sure how they were recruited from 31 centres.	K6-demonstrated convergent validity with other mental health screening measures -0.81 Low levels of depression Control – CCW-JSI validated in other research – 0.68	Cross-sectional	No – MLM	R2	Unsure	The data was collected during a larger longitudinal RCT investigating the effects of the Tools of the Mind curriculum (Bodrova & Leong, 2007; different from the one above)
(Sandilos et al., 2018a) 16	Preschool/Head start teacher: N= 427 Experience: 11 years. From 10 sites in the US – schools needed to fulfil 4 criteria but not sure how these 10 were chosen or how	CLASS average reliability for the Reliability test was 84%. TSI Work-related stressors – 0.8 Professional involvement - 0.75	14-week RCT	Measured CLASS before and during but stress was only measured before.	R2	No	The data was drawn from a large RCT (i.e., National Center for Research on Early Childhood Education [NCRECE] Professional Development Study; Downer et

	many were invited to participate.	Discipline and motivation – 0.8		intervention seems to buffer the effect.		al., 2014; Hamre et al., 2012).
(Sava, 2002a) 8	Secondary schools: N= 119 Gender: 83.19% female Experience: 16.5 years Students: N= 946 pupils Age: mean age not reported 15 schools - principles chose the classes (2 from each school) then had to teach one class – 82% agreed - 8 teachers were selected (unsure how or why it was these teachers)	Use of own measures and then PCA them MBI but an adapted version Range from 0.67-0.97 most about 0.8	Cross sectional	No	Path analysis - no	No
(Taxer et al., 2018) – study 1 8	Secondary school N= 266 Gender: 65.9% female Experience: Experienced anger and	Klassen T-SR – 0.79	Cross sectional	Mediators no	Confidence intervals	Unsure how they were recruited No

	14.86 years	enjoyment Frenzel et al.					
	The return rate was 32.8% from anonymised survey.	2016 – E 0.84 A 0.87 (own survey)					
	Not sure how schools or participants were chosen.	EE – 0.89					
(Taxer et al., 2018) – study 2 8	Secondary school N=69 Gender: 76.8% female Experience: mean not reported Students: N=1643 students Age: m= 14.37 All teachers that were invited to participate in the study chose to do so and student participation rate was 90.01%	STR students – own survey based on couple of other studies – 0.89 Teachers anger and enjoyment – e0.81 a0.84 EE – 0.6 T1 0.78 T2	Longitudinal, different time points (Time points were in September, October, February)	Mediation	No	No	The data was part of a larger, longitudinal study on teachers' and students' emotions (Frenzel et al. 2016).
(Whitaker et al., 2015a) 11	Head start teachers: N= 1001	Depression - .91 Conflict .73 Closeness - .72	Cross sectional	No	Yes ES.	Headstart programmes in Philadelphia	Yes – see Becker study above.

	Gender: 98% Experience: not reported	Mindfulness - .85 demands, control, and support scales were 0.82, 0.72, 0.85,					
(Yoon, 2002) 7	Primary teachers: N=113 Gender: 95% female Experience: 12 years	Stress – 3 questions from the author - .69 A questionnaire was distributed to 370 teachers in two school districts and 125 teachers (34%) returned the survey.	Cross sectional survey	No – MLM	R2	No	No

Appendix D student questionnaire



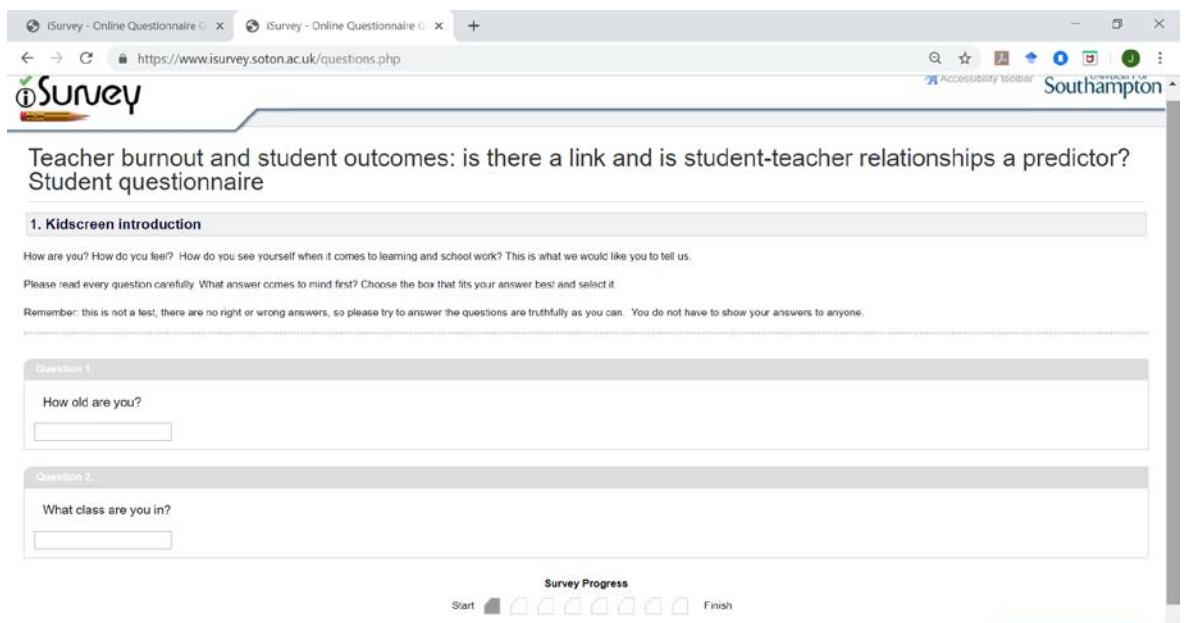
Teacher burnout and student outcomes: is there a link and is student-teacher relationships a predictor?
Student questionnaire

⚠ Response data will not be saved in this preview mode. This will affect any section logic you have applied as previous response data cannot be viewed and verified.

Completion of the questionnaires will be taken as assent that you are happy for this anonymous data to be used in this study.

Please tick (check) this box to indicate that you consent to taking part in this survey

Click here to start this survey



Teacher burnout and student outcomes: is there a link and is student-teacher relationships a predictor?
Student questionnaire

1. Kidscreen introduction

How are you? How do you feel? How do you see yourself when it comes to learning and school work? This is what we would like you to tell us.

Please read every question carefully. What answer comes to mind first? Choose the box that fits your answer best and select it.

Remember: this is not a test, there are no right or wrong answers, so please try to answer the questions as truthfully as you can. You do not have to show your answers to anyone.

Question 1.
How old are you?

Question 2.
What class are you in?

Survey Progress
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Appendices

2. Physical activity and health

Question 1.

In general, how would you say your health is?

Please select ▾

Question 2.

Thinking about the last week...

	Not at all	Slightly	Moderately	Very	Extremely
Have you felt fit and well?	<input type="radio"/>				
Have you been physically active (e.g. running, climbing, biking)?	<input type="radio"/>				
Have you been able to run well?	<input type="radio"/>				

Question 3.

Thinking about the last week...

	Never	Seldom	Quite often	Very often	Always
Have you felt full of energy?	<input type="radio"/>				

Survey Progress

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3. General Mood and Feelings about Yourself

Question 1

Thinking about the last week...

	Not at all	Slightly	Moderately	Very	Extremely
Has your life been enjoyable?	<input type="radio"/>				

Question 2

Thinking about the last week...

	Never	Seldom	Quite often	Very often	Always
Have you been in a good mood?	<input type="radio"/>				
Have you had fun?	<input type="radio"/>				
Have you felt sad?	<input type="radio"/>				
Have you felt so bad that you didn't want to do anything?	<input type="radio"/>				
Have you felt lonely?	<input type="radio"/>				
Have you been happy with the way you are?	<input type="radio"/>				

Survey Progress

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Teacher burnout and student outcomes: is there a link and is student-teacher relationships a predictor?
Student questionnaire

4. Family and Free time

Question 1.

Thinking about the last week...

	Never	Seldom	Quite often	Very often	Always
Have you had enough time for yourself?	<input type="radio"/>				
Have you been able to do the things you want to do in your free time?	<input type="radio"/>				
Have your parent(s) had enough time for you?	<input type="radio"/>				
Have your parent(s) treated you fairly?	<input type="radio"/>				
Have you been able to talk to your parent(s) when you wanted to?	<input type="radio"/>				
Have you had enough money to do the same things as your friends?	<input type="radio"/>				
Have you had enough money for your expenses?	<input type="radio"/>				

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Teacher burnout and student outcomes: is there a link and is student-teacher relationships a predictor?
Student questionnaire

5. Friends

Question 1.

Thinking about the last week...

	Never	Seldom	Quite often	Very often	Always
Have you spent time with your friends?	<input type="radio"/>				
Have you had fun with your friends?	<input type="radio"/>				
Have you and your friends helped each other?	<input type="radio"/>				
Have you been able to rely on your friends?	<input type="radio"/>				

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Survey

Teacher burnout and student outcomes: is there a link and is student-teacher relationships a predictor?
Student questionnaire

6. School and learning

Question 1.

Thinking about the last week...

	Not at all	Slightly	Moderately	Very	Extremely
Have you been happy at school?	<input type="radio"/>				
Have you got on well at school?	<input type="radio"/>				

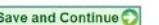
Question 2.

Thinking about the last week...

	Never	Seldom	Quite often	Very often	Always
Have you been able to pay attention?	<input type="radio"/>				
Have you got along well with your teachers?	<input type="radio"/>				

Survey Progress

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Appendices

7. Myself as a learner scale

Question 1.

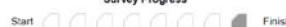
	Definitely agree	Agree a bit	True half the time	Don't agree	Strongly disagree
I'm good at doing tests	<input type="radio"/>				
I like having problems to solve	<input type="radio"/>				
When I'm given new work to do, I usually feel confident I can do it.	<input type="radio"/>				
Thinking carefully about your work helps you to do it better	<input type="radio"/>				
I'm good at discussing things	<input type="radio"/>				
I need lots of help with my work	<input type="radio"/>				
I like having difficult work to do	<input type="radio"/>				
I get anxious when I have to do new work	<input type="radio"/>				
I think that problem-solving is fun	<input type="radio"/>				
When I get stuck with my work I can usually work out what to do next	<input type="radio"/>				
Learning is easy	<input type="radio"/>				
I'm not very good at solving problems	<input type="radio"/>				
I know the meaning of lots of words	<input type="radio"/>				
I usually think carefully about what I've got to do	<input type="radio"/>				
I know how to solve the problems that I meet	<input type="radio"/>				
I find a lot of schoolwork difficult	<input type="radio"/>				
I'm clever	<input type="radio"/>				
I know how to be a good learner	<input type="radio"/>				
I like using my brain	<input type="radio"/>				
Learning is difficult	<input type="radio"/>				

Teacher burnout and student outcomes: is there a link and is student-teacher relationships a predictor?
Student questionnaire

8. Classroom life

Question 1.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
My teacher cares about how much I learn.	<input type="radio"/>				
My teacher really cares about me.	<input type="radio"/>				
My teacher thinks it is important to be my friend.	<input type="radio"/>				
My teacher likes to see my work.	<input type="radio"/>				
My teacher likes to help me learn.	<input type="radio"/>				
My teacher wants me to do my best in school work.	<input type="radio"/>				
My teacher likes me as much as he/she likes other students.	<input type="radio"/>				
My teacher cares about my feelings.	<input type="radio"/>				

Survey Progress
Start  Finish

Teacher burnout and student outcomes: is there a link and is student-teacher relationships a predictor?
Student questionnaire

Thank you for taking part in my research project. I hope you enjoyed answering the questions.

I wanted to find out about your views of school, your health, feelings, friends, family and your teacher.

The aim of this research was to explore if how your teacher is feeling has an impact on you and your feelings and thoughts of school. By taking part, you have contributed to helping myself and others to better understand if there is a link between these things.

If you have any questions about this project, please talk to your teacher.

Thank you for taking part in this project.

Appendix E teacher questionnaire

 Survey

Teacher burnout and student outcomes: is there a link and is student-teacher relationships a predictor?
Teacher questionnaire

⚠ Response data will not be saved in this preview mode. This will affect any section logic you have applied as previous response data cannot be viewed and verified.

You will be asked to respond to different statements of job-related feelings and how you feel about your class. Please read each statement carefully and decide if you ever feel this way. If you have never had this feeling, select never or definitely does not apply. If you have then you need to indicate how often or how much you agree with the statement.

Completion of the questionnaires will be taken as consent that you are happy for this anonymous data to be used in this study.

Please tick (check) this box to indicate that you consent to taking part in this survey

Click here to start this survey

 Survey

Teacher burnout and student outcomes: is there a link and is student-teacher relationships a predictor?
Teacher questionnaire

1. Demographic information

Question 1.
What class do you teach? Please enter the class name.

Question 2.
How long have you been teaching?

Question 3.
What is your gender?

Survey Progress
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 Survey

2. MBI for Educators Survey

Below are 22 statements of job-related feelings. Please read each statement carefully and decide if you ever feel this way about your job. If you have never had this feeling, select the number "0" (zero) for that statement. If you have had this feeling, indicate how often you feel it by selecting the number (from 1 to 6) that best describes how frequently you feel that way.

Question 1.
How often:

	0 never	1 A few times a year	2 Once a month or less	3 A few times a month	4 Once a week	5 A few times a week	6 Every day
I feel emotionally drained from my work.	<input type="checkbox"/>						
I feel used up at the end of the workday.	<input type="checkbox"/>						
I feel fatigued when I get up in the morning and have to face another day on the job.	<input type="checkbox"/>						
I can easily understand how my students feel about things.	<input type="checkbox"/>						
I feel I treat some students as if they were impersonal objects.	<input type="checkbox"/>						
Working with people all day is really a strain for me.	<input type="checkbox"/>						
I deal very effectively with the problems of my students.	<input type="checkbox"/>						
I feel burned out from my work.	<input type="checkbox"/>						
I feel I'm positively influencing other people's lives through my work.	<input type="checkbox"/>						
I've become more callous toward people since I took this job.	<input type="checkbox"/>						
I worry that this job is hardening me emotionally.	<input type="checkbox"/>						
I feel very energetic.	<input type="checkbox"/>						
I feel frustrated by my job.	<input type="checkbox"/>						
I feel I'm working too hard on my job.	<input type="checkbox"/>						

Appendices

I don't really care what happens to some students.	<input type="checkbox"/>					
Working with people directly puts too much stress on me.	<input type="checkbox"/>					
I can easily create a relaxed atmosphere with my students.	<input type="checkbox"/>					
I feel exhilarated after working closely with my students.	<input type="checkbox"/>					
I have accomplished many worthwhile things in this job.	<input type="checkbox"/>					
I feel like I'm at the end of my rope.	<input type="checkbox"/>					
In my work, I deal with emotional problems very calmly.	<input type="checkbox"/>					
I feel students blame me for some of their problems.	<input type="checkbox"/>					

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3. Student-teacher relationship scale - short form

Please reflect on how much each of the statements below currently applies to your relationship with the children in your classroom. All relationships are individual, but in responding, please think about your relationships with the children in your classroom in general. Use the scale below to choose the appropriate response for each item.

Question 1	Definitely does not apply	Not really	Neutral, not sure	Applies somewhat	Definitely applies
I share affectionate, warm relationships with the children.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The children and I always seem to be struggling with each other.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If upset, the children will seek comfort from me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The children are uncomfortable with physical affection or touch from me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The children value their relationship with me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When I praise the children, they beam with pride.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The children share information with me about themselves even if I don't ask.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The children easily become angry with me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is easy to be in tune with what the children are feeling.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The children remain angry or are resistant after being disciplined.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dealing with the children drains my energy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When the children are in a bad mood, I know we're in for a long and difficult day.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The children's feelings towards me can be hard to predict or can change suddenly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The children are sneaky or manipulative with me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The children openly share their feelings and experiences with me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Survey Progress
Start Finish

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[iSurvey](#)

Teacher burnout and student outcomes: is there a link and is student-teacher relationships a predictor? Teacher questionnaire

ERGO Reference: 31786

Dear Teacher,

Thank you for taking part in my research project. The aim of this study was to find out if teacher burnout effects student well-being and their academic concept. The aim was to also investigate if this relationship is linked to the teacher student relationship. Through taking part, we hope to gain a better understanding if there is a link between teacher burnout and student outcomes. This understanding will add to the growing evidence surrounding teacher burnout.

Your data will be analysed along with pupils data and other teachers to form the content for the analysis. The findings from this study will be shared with students and lecturers at the University of Southampton. The findings will develop understanding on the outcomes of teacher burnout.

As stated in the information sheet, your identity, school and students will remain confidential in the final write up of the research as well as any information shared with the school, the University of Southampton and Enfield Educational Psychology Service.

If you have any further questions about the project, please feel free to contact me on the following email addresses:

Jasmine Field: jasmine.field@soton.ac.uk

Thank you for helping with my research.

Jasmine

If you have questions about your rights as a participant in this research, or if you feel that you may have been placed at risk, you may contact the Chair of the Ethics Committee, Psychology, University of Southampton, Southampton, SO17 1BJ. Phone: +44 (0)23 8059 3856, email sts-rso@soton.ac.uk

Appendix F - ethical approval

Approved by Research Integrity and Governance team - ERGO II 31786



ERGO II – Ethics and Research Governance Online <https://www.ergo2.soton.ac.uk>

Submission ID: 31786

Submission Title: Teacher burnout and student outcomes: is there a link and is student-teacher relationships a predictor?

Submitter Name: Jasmine Field

The Research Integrity and Governance team have reviewed and approved your submission.

You can begin your research unless you are still awaiting specific Health and Safety approval (e.g. for a Genetic or Biological Materials Risk Assessment) or external ethics review (e.g. NRES/HRA/MHRA etc).

The following comments have been made:

Appendix G consent, information, debrief and instruction sheets



Headteacher (or delegate) Information Sheet (V.4, 26.04.18)

Study Title: Teacher burnout and student outcomes: is there a link and is student-teacher relationships a predictor?

Researchers: Jasmine Field

ERGO Study ID number: 31786

RGO reference number: 31786

Please read this information carefully before deciding if you want your school to take part in this research. If you are happy to participate you need to sign the consent form.

Who I am?

I am a Trainee Educational Psychologists in my second year of doctoral training at the University of Southampton. I am conducting this study as part of my doctoral training. I would like to invite you to take part in a research study looking at if teacher burnout has an impact on student outcomes. I hope that you find the following information helpful but if you do have any further questions please do contact me via the contact details at the end of this sheet.

What is the research about?

The purpose of this study is to find out about teacher burnout and student outcomes. The teacher measure is burnout, this is defined through three dimensions: emotional exhaustion, depersonalization and lack of personal accomplishment. Student outcomes that will be measures are wellbeing and their academic self-concept. I will also investigate if student-teacher relationship plays a role in this relationship. This is how well the teacher gets on with the class and how well the children get on with the teacher. The aim of gathering this information is to gain an understanding of how teacher burnout can affect children.

Why have I been chosen?

All primary schools in the local area that have year 4 and 5 classes have been invited to take part in this research.

What will happen if the school takes part?

Teachers will be invited to take part and those that consent will send out information sheets and opt-out consent forms to the students in their class. The teacher and the children who consent will answer some questions on a computer during an ICT lesson. The questionnaires will take place at your school during the school day and will take approximately 30 minutes. Example questions for teachers include: "I share affectionate, warm relationships with the children", "I feel very energetic" and "I have accomplished many worthwhile things in this job". Example student questions include: "I like having problems to solve", "my teacher likes to see my work" and "thinking about the last week have you felt sad".

Do I have to take part?

You do not have to take part if you do not wish to. Participation in the study is completely voluntary. If you would like to take part in the study, please sign and return the consent form.

Are there any benefits in taking part?

Schools that take part will be entered into a prize fund. First prize is £200 of book vouchers for the school and second prize is £50 of book vouchers.

Are there any risks involved?

We hope that the questionnaire will be an enjoyable experience for your staff and students. I am aware that teachers and students may find it daunting to be asked questions about burnout and their wellbeing. The data will not be analysed in isolation, I am investigating the concept of teacher burnout and student wellbeing on a wider scale. If they are uncomfortable answering the questions, both teachers and students are free to stop at any point and there will be no consequences for doing so. If staff are concerned about their burnout after they have completed the questionnaire, I have suggested that they speak to their line manager at school.

Will my participation be confidential?

Yes, all data and information collected will be held in line with the Data Protection Act 1988. All information will be coded, password-protected and stored on a university system for 10 years before it is destroyed. The schools, students and teachers information will not be identifiable in any of the analysis or the final write up. The only time confidentiality may be broken is if a specific disclosure is made in cases where there is a concern to the safety of the child, in which case the researcher will follow the schools' safeguarding policy.

What happens if I change my mind?

If you decide you no longer want to participate in the study, you are able to do so without facing any prejudice and without giving reason for doing so. You are able to withdraw your school's participation from the study at any time, (before, during or after data has been collected) up to and including **Friday 13th July 2018**. This can be done by emailing the researcher on the email address below. If you withdraw after data has been collected at your school the data collected from teachers and students will not be included in the analysis. However, after **Friday 13th July 2018**, your school's data will be included in the data analysis and subsequent final write up.

What happens if something goes wrong?

If you have any concerns or questions about this study, please contact Jasmine using the email address below. If you wish to formally complain or speak to someone independent of this study, please contact the Chair of the Ethics Committee:

Chair of the Ethics Committee
School of Psychology
University of Southampton
Southampton
SO17 1BJ

Tel: 02380 594663

Where can I get more information?

If you would like any further information about the study, please do contact Jasmine using the email address below.

Researcher contact details:

Jasmine Field: jasmine.field@soton.ac.uk

HEADTEACHER or DELEGATE CONSENT FORM (V.4, 26.04.18)

Study title: Teacher burnout and student outcomes: is there a link and is student-teacher relationships a predictor?

Researcher name: Jasmine Field

ERGO Study ID number: 31786

RGO reference number: 31786

Please initial the box(es) if you agree with the statement(s):

I have read and understood the headteacher or delegate information sheet (26.05.18/V.4) and have had the opportunity to ask questions about the study.

I give my permission for the school to take part in this study and agree for this data to be used for the purpose of this study.

I understand the school's participation is voluntary and I may withdraw the school from the study at any time without my legal rights being affected. However, data must be withdrawn by Friday 13th July 2018.

I understand that the researcher is using an "opt-out" consent method for parents and am aware that I will take responsibility for any issue that arises as a result of this method being used.

Name (print name).....

Signature

Date.....



Teacher Information Sheet (V.3, 22.03.18)

Study Title: Teacher burnout and student outcomes: is there a link and is student-teacher relationships a predictor?

Researchers: Jasmine Field
ERGO Study ID number: 31786
RGO reference number: 31786

Please read this information carefully before deciding if you want to take part in this research. If you are happy to participate you need to sign the consent form.

Who I am?

I am a Trainee Educational Psychologists in my second year of doctoral training at the University of Southampton. I am conducting this study as part of my doctoral training. I would like to invite you to take part in a research study looking at if teacher burnout has an impact on student outcomes. I hope that you find the following information helpful but if you do have any further questions please do contact me via the contact details at the end of this sheet.

What is the research about?

The purpose of this study is to find out about teacher burnout and student outcomes. The teacher measure is burnout, this is defined through three dimensions: emotional exhaustion, depersonalization and lack of personal accomplishment. Student outcomes that will be measures are wellbeing and their academic self-concept. I will also investigate if student-teacher relationship plays a role in this relationship. This is how well the teacher gets on with the class and how well the children get on with the teacher. The aim of gathering this information is to gain an understanding of how teacher burnout can affect children.

Why have I been chosen?

The headteacher of the school has kindly agreed to support the research. Therefore, all year 4 and 5 teachers who have been teaching since the start of the academic year have been invited to take part in this research. In addition, all primary schools in Enfield have been invited to take part in this research.

What will happen if I take part?

If you choose to take part, your participation will require sending out, supplied information sheets and opt-out consent forms to the parents of children in your class. On a list of names of your class, child who return the opt-out consent forms will be noted. Children whose parents do not opt out of the study will complete a set of computer-based questionnaires, during school time, for approximately 25-25 minutes. Children who opt-out of the study will engage in a computer-based activity, chosen by you. During this time, you will be invited to answer a set of questionnaires that will include direct statements about yourself, your class and your burnout levels. Example questions include: "I share affectionate, warm relationships with the children", "I feel very energetic" and "I have accomplished many worth while things in this job".

Do I have to take part?

Your headteacher has agreed that I can invite you to participate but you are under NO obligation to take part. If you do not wish to participate the children in your class will not be asked to participate. If you would like to take part in the study, please sign and return the consent form to the headteacher by **Tuesday 1st May 2018**.

What if I decide I don't want to take part during the questionnaire?

You are free to withdraw at any time. I will not question your reasoning for withdrawing and you are free to stop answering the questions at any time. If you withdraw during the questionnaire both your data and your classes data will not be included in the analysis.

Are there any benefits in taking part?

There are no direct benefits to individual participants taking part in this study. However, by taking part you will be contributing to the growing research surrounding teacher burnout.

Are there any risks involved?

We hope that the questionnaire will be an enjoyable experience for you. I am aware that you may find it daunting to be asked questions about burnout. Your data will not be analysed in isolation, I am investigating the concept of teacher burnout on a wider scale. If you are uncomfortable answering the questions, you are free to stop at any point and there will be no consequences for doing so. If you are concerned about your burnout after you have completed the questionnaire, please speak to your line manager at school about the concerns you have.

Will my participation be confidential?

The Headteacher of your school will know that you are taking part in the study, however only the researcher will have access to your questionnaire answers and this will not be shared with headteacher or any other staff members. The only time confidentiality may be broken is if a specific disclosure is made in cases where there is a concern to the safety of the child, in which case the researcher will follow the schools' safeguarding policy. Data and information collected will be held in line with the Data Protection Act 1988. All information will be coded, password-protected and stored on a university system for 10 years before it is destroyed. Your information will not be identifiable in any of the analysis or the final write up.

What happens if I change my mind?

If you decide you no longer want to participate in the study, you are able to do so without facing any prejudice and without giving reason for doing so. You are able to withdraw your participation from the study at any time (before, during or after data has been collected), up to and including **Friday 13th July 2018**. This can be done by emailing the researcher on the email address below. If you withdraw after completing the questionnaire the data collected from yourself and your class will not be included in the analysis. However, after **Friday 13th July 2018**, both you and your classes data will be included in the data analysis and subsequent final write up.

What happens if something goes wrong?

If you have any concerns or questions about this study, please contact Jasmine using the email address below. If you wish to formally complain or speak to someone independent of this study, please contact the Chair of the Ethics Committee:

Chair of the Ethics Committee
School of Psychology
University of Southampton
Southampton
SO17 1BJ

Tel: 02380 594663

Where can I get more information?

If you would like any further information about the study, please do contact Jasmine using the email address below.

Researcher contact details:

Jasmine Field: jasmine.field@soton.ac.uk

TEACHER CONSENT FORM (V.3, 22.03.18)

Study title: Teacher burnout and student outcomes: is there a link and is student-teacher relationships a predictor?

Researcher name: Jasmine Field
ERGO Study ID number: 31786
RGO reference number: 31786

Please initial the box(es) if you agree with the statement(s):

I have read and understood the teacher information sheet (22.03.18/V.3) and have had the opportunity to ask questions about the study.

I give my permission to take part in this study and agree for my data to be used for the purpose of this study.

I understand my participation is voluntary and I may withdraw from the study at any time without my legal rights being affected. However, data must be withdrawn by Friday 13th July 2018.

Name (print name).....

Signature

Date.....

Parent/guardian Information Sheet

(V.3, 22.03.18)

Study Title: Teacher burnout and student outcomes: is there a link and is student-teacher relationships a predictor?

Researchers: Jasmine Field

ERGO Study ID number: 31786

RGO reference number: 31786

Please read this information carefully before deciding if you want your child to take part in this research. If you are NOT happy for your child to participate you need to sign the opt-out consent form and return to school.

Who I am?

I am a Trainee Educational Psychologists in my second year of doctoral training at the University of Southampton. I am conducting this study as part of my doctoral training. I would like to invite your child to take part in a research study looking at if teacher burnout has an impact on student outcomes. I hope that you find the following information helpful but if you do have any further questions please do contact me via the contact details at the end of this sheet.

What is the research about?

The purpose of this study is to find out about teacher burnout and student outcomes. The student outcomes that will be measured are well-being and academic self-concept. Academic concept refers to how a student evaluates their own academic abilities, motivation and creativity. I will also investigate if student-teacher relationship plays a role in this relationship. This is how well the teacher gets on with the class and how well the children get on with the teacher. The aim of gathering this information is to gain an understanding of how teacher burnout can affect children.

Why has my child been chosen?

The headteacher of the school and your child's teacher has agreed to take part in this research. All of the children, aged 9 and above, in your child's class have been asked to take part. In addition, all primary schools in Enfield have been invited to take part in this research.

What will happen to my child if they take part?

Children that agree to take part will be invited to answer some questions on a computer during an ICT lesson. Prior to the completion of the questionnaires your child will be read an information sheet that will tell them all of the details of the study and what will happen if they choose to take part. Your child's permission to take part in the study will be sought by them indicating that they are happy to take part via a question on the computer before the questionnaires. The questionnaires will take place at their school during the school day and will last between 25-35 minutes and will include a series of questions asking them about their views and experiences of school, health, family, feelings, friends and their teacher. Example questions include: "I like having problems to solve", "my teacher likes to see my work" and "thinking about the last week have you felt sad".

Does my child have to take part?

Your child does not have to take part if you or he/she does not wish to. Participation in the study is completely voluntary. If you would NOT like your child to take part in the study, please sign and return the consent form to your child's teacher by **xx (this will be added - will be the day before I attend the school for data collection)**. If your child does not take part in the study, they will complete an alternative computer based activity, planned by the teacher.

What if my child decides they don't want to take part during the questionnaire?

All children will be reminded at the beginning of the questionnaire that they are free to withdraw at any time. They will be told that the researcher will not question their reasoning for withdrawing and will be free to stop answering the questions immediately and will be given another computer-based activity.

Are there any benefits in taking part?

There are no direct benefits to individual participants taking part in this study. However, by taking part you will be contributing to the growing research surrounding teacher burnout.

Are there any risks involved?

We hope that the questionnaire will be an enjoyable experience for your child. I am aware that some children may find it daunting to be asked questions in an unfamiliar way. In order to safeguard the participating children, a named and familiar member of school staff will be available to provide support throughout the study. I will be vigilant to all children's needs throughout the duration of the study. If a child looks uncomfortable I will reiterate that they are free to stop at any point and that there will be no consequences for doing so.

Will my child's participation be confidential?

Your child's teacher and headteacher will be aware that your child is taking part in the research. However, only the researcher will have access to your child's questionnaire information, this will not be shared with the school. The only time confidentiality may be broken is if a specific disclosure is made in cases where there is a concern to the safety of the child, in which case the researcher will follow the schools' safeguarding policy. All data and information collected will be held in line with the Data Protection Act 1988. All information will be coded, password-protected and stored on a university system for 10 years before it is destroyed. You and your child's information will not be identifiable in the analysis or the final write up.

What happens if I change my mind or my child changes his/her mind?

If you or your child decide you no longer want to participate in the study, you are able to do so without facing any prejudice and without giving reason for doing so. You are able to withdraw your child's participation from the study at any time (before, during or after data has been collected), up to and including **Friday 13th July 2018**. This can be done by emailing the researcher on the email address below. If you withdraw after your child has completed the questionnaire their data will not be included in the analysis. However, after **Friday 13th July 2018**, your child's data will be included in the data analysis and subsequent final write up.

What happens if something goes wrong?

If you have any concerns or questions about this study, please contact Jasmine using the email address below. If you wish to formally complain or speak to someone independent of this study, please contact the Chair of the Ethics Committee:

Chair of the Ethics Committee
School of Psychology
University of Southampton
Southampton
SO17 1BJ

Tel: 02380 594663

Where can I get more information?

If you would like any further information about the study, please do contact Jasmine using the email address below.

Researcher contact details:

Jasmine Field: jasmine.field@soton.ac.uk

OPT-OUT CONSENT FORM (V.3, 22.03.18)

Study title: Teacher burnout and student outcomes: is there a link and is student-teacher relationships a predictor?

Researcher names: Jasmine Field

ERGO Study ID number: 31786

ERGO reference number: 31786

*This is to be completed by a parent or guardian who **DOES NOT AGREE** to their child taking part in the above study at their child's school. If you **DO NOT** want your child to take part please return this form to your child's teacher by xx - (I will add this - as it needs to be the day before I plan to attend the school to collect the data). If this is the case please initial the box(es) if you agree with the statement(s):*

I have read and understood the parent/guardian information sheet (22.03.18/V.3) and have had the opportunity to ask questions about the study.

I **DO NOT** give permission for my child to take part in this study and **DO NOT** agree for my child's data to be used for the purpose of this study.

Name of child (print name).....

Signature of parent/carer/guardian.....

Date.....

Teacher burnout and student outcomes: is there a link and is student-teacher relationships a predictor?

Who are we?

I am a Trainee Educational Psychologist in my second year of training at the University of Southampton. My

What is the research about?

I would like you to answer some questions about your views on school, family, friends your health, feelings and your teacher.

Do I have to take part?

No. It is up to you to decide whether you want to take part. You may find it helpful to talk to your parents/guardians at home about it before

What happens if I don't want to answer a question?

You do not have to answer any questions that you don't want to. We do not want you to feel uncomfortable at any time. If you do feel uncomfortable, please let the researcher know and you will be able to

What will happen if I do decide to take part?

You will answer some questions on a computer at school. These questions will be about different things such as your health, family, feelings, friends, school and your teacher, you can answer as freely as you wish to. There are no right or wrong answers to these questions. This will last for about half an hour. Only the researchers will be able to see your answers.



Teacher burnout and student outcomes: is there a link and is student-teacher relationships a predictor? (V.1, 04.02.18)

ERGO Reference: 31786

To be read to the class at the end of the study:

Thank you for taking part in my research project. I hope you enjoyed answering the questions.

I wanted to find out about your views of school, your health, feelings, friends, family and your teacher.

The aim of this research was to explore if how your teacher is feeling has an impact on you and your feelings and thoughts of school. By taking part, you have contributed to helping myself and others to better understand if there is a link between these things.

If you have any questions about this project, please talk to your teacher
Thank you for taking part in this project.

Jasmine

Teacher burnout and student outcomes: is there a link and is student-teacher relationships a predictor? (V.1, 04.02.18)

ERGO Reference: 31786

Dear Parent/Guardian,

Thank you for allowing your child to part in my research project. The aim of this study was to find out if teacher burnout affects student wellbeing and their academic-concept. The aim was to also investigate if this relationship is linked to the teacher-student relationship. Through your child taking part, we hope to gain a better understanding if there is a link between teacher burnout and student outcomes. This understanding will add to the growing evidence surrounding teacher burnout.

Your child's data will be analysed along with other pupils' data and their teachers to form the content for the analysis. The findings from this study will be shared with students and lecturers at the University of Southampton. The findings will develop understanding on the outcomes of teacher burnout.

As stated in the information sheet, your child's identity, school and teacher will remain confidential in the final write up of the research as well as any information shared with the school, the University of Southampton and Enfield Educational Psychology Service.

If you have any further questions about the project, please feel free to contact me on the following email addresses:

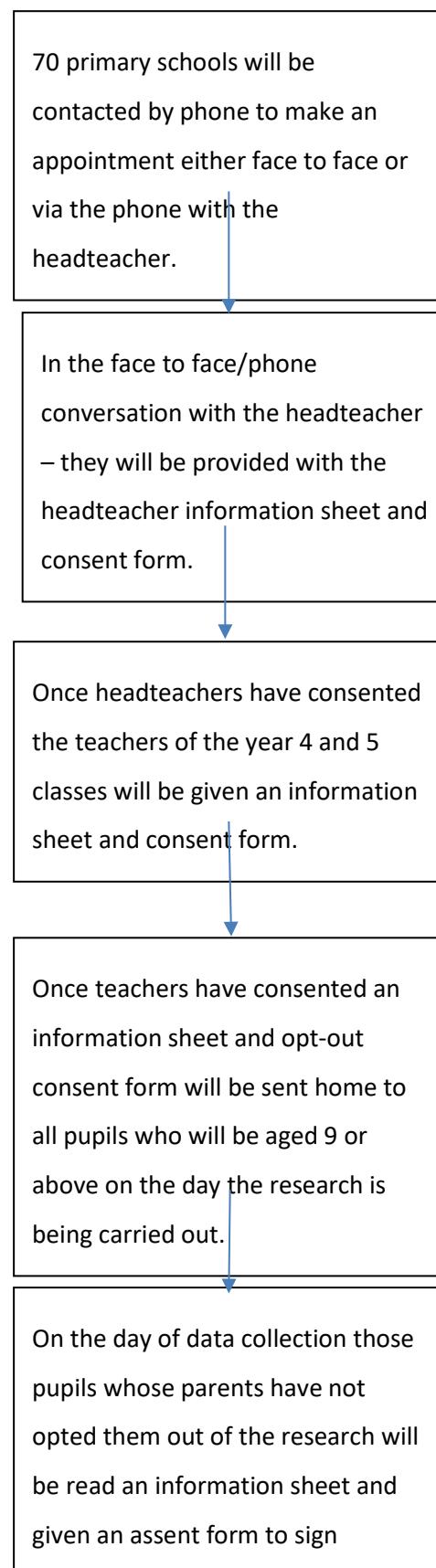
Jasmine Field: jasmine.field@soton.ac.uk

Thank you for helping us with my research.

Jasmine

If you have questions about your rights or your child's rights as a participant in this research, or if you feel that your child may have been placed at risk, you may contact the Chair of the Ethics Committee, Psychology, University of Southampton, Southampton, SO17 1BJ. Phone: +44 (0)23 8059 3856, email fshs-rso@soton.ac.uk

Appendix H recruitment flow chart



References

Abidin, R. R., Greene, R. W., & Konold, T. R. (2004). Index of teaching stress: Professional manual. Lutz, FL: Psychological Assessment Resources, Inc.

Acton, R., James, C., & Glasgow, P. (2015). Teacher Wellbeing in Neoliberal Contexts : A Review of the Literature. *Australian Journal of Teacher Education*, 40(8), 99–114.

Aldrup, K., Klusmann, U., Lüdtke, O., Göllner, R., & Trautwein, U. (2018). Student misbehavior and teacher well-being: Testing the mediating role of the teacher-student relationship. *Learning and Instruction*, 58, 126–136. <https://doi.org/10.1016/j.learninstruc.2018.05.006>

Aloe, A. M., Amo, L. C., & Shanahan, M. E. (2014). Classroom Management Self-Efficacy and Burnout: A Multivariate Meta-analysis. *Educational Psychology Review*, 26(1), 101–126. <https://doi.org/10.1007/s10648-013-9244-0>

Arens, A. K., & Morin, A. J. S. (2016a). Relations between teachers' emotional exhaustion and students' educational outcomes. *Journal of Educational Psychology*, 108(6), 800–813. <https://doi.org/http://dx.doi.org/10.1037/edu0000105>

Arens, A. K., & Morin, A. J. S. (2016b). Relations Between Teachers ' Emotional Exhaustion and Students ' Educational Outcomes, 108(6), 800–813.

Baker, J. A., Grant, S., & Morlock, L. (2008). The teacher-student relationship as a developmental context for children with internalizing or externalizing behavior problems. *School Psychology Quarterly*, 23(1), 3–15. <https://doi.org/10.1037/1045-3830.23.1.3>

Bakker, A. B., & Demerouti, E. (2007a). Job resources boost work engagement , particularly when job demands are high. *Journal of Educational Psychology* *Journal of Educational Psychology*, 99(2), 274–284. <https://doi.org/10.1037/0022-0663.99.2.274>

Bakker, A. B., & Demerouti, E. (2007b). The Job Demands-Resources model: state of the art. *Journal of Managerial Psychology*, 22(3), 309–328. <https://doi.org/10.1108/02683940710733115>

Becker, B. D., Gallagher, K. C., & Whitaker, R. C. (2017). Teachers' dispositional mindfulness and the quality of their relationships with children in Head Start classrooms. *Journal of School Psychology*, 65, 40–53. <https://doi.org/10.1016/j.jsp.2017.06.004>

Bhattacharya, A. (2010). Children and adolescents from poverty and reading development: A research review. *Reading & Writing Quarterly*, 26(2), 115–139. <https://doi.org/10.1080/10573560903547445>

References

Birch, S. H., & Ladd, G. W. (1997). The Teacher-Child Relationship and Children ' s Early School Adjustment, 35(1), 61–79.

Briner, R., & Dewberry, C. (2007). *Staff well-being is key to school success. London: Worklife Support Ltd/Hamilton* Retrieved from [http://tss.custhelp.com/ci/fattach/get/370/0/filename/BirkbeckWBPerfSummaryFinal\[1\].pdf](http://tss.custhelp.com/ci/fattach/get/370/0/filename/BirkbeckWBPerfSummaryFinal[1].pdf)

Brown, S., & Nagel, L. (2004). Preparing Future Teachers to Respond to Stress: Sources and Solutions. *Action in Teacher Education*, 26(1), 34–42. <https://doi.org/10.1080/01626620.2004.10463311>

Bullock, J. G., & Green, D. P. (2010). Yes, but what's the mechanism? (Don't expect an easy answer). *Journal of Personality and Social Psychology*, 98, 550–558.

Burchinal, M. R., Peisner-Feinberg, E., & Pianta, R. (2002). Development of academic skills from preschool through second grade: family and classroom predictors of developmental trajectories. *Journal of School Psychology*, 40(5), 415–436.

Casas, F., Baltatescu, S., Bertran, I., Gonzalez, M., & Hatos, A. (2013). School satisfaction among adolescents: testing different indicators for its measurement and its relationship with overall life satisfaction. *Social Indicators Research*, 111(3), 665–681. <https://doi.org/10.1007/s11205-012-0025-9>

Chang, M. (2009). An appraisal perspective of teacher burnout: Examining the emotional work of teachers. *Educational Psychology Review*, 21, 193–218. <https://doi.org/10.1007/s10648-009-9106-y>

Cheema, J. R. (2014). Some general guidelines for choosing missing data handling methods in educational research. *Journal of Modern Applied Statistical Methods*, 13(2), 53–75. <https://doi.org/10.22237/jmasm/1414814520>

Cooper, J. M., & Alvarado, A. (2006). *Preparation, recruitment and retention of teachers*.

Coughlan, M., Cronin, P., & Ryan, F. (2007). Step-by-step guide to critiquing research. Part 1: quantitative research. *British Journal of Nursing*, 16(11), 658–663.

de Boer, A., van Lanschot, J., Stalmeier, P., van Sandick, J., Hulscher, J., de Haes, J., & Sprangers, M. (2004). Is a single-item visual analogue scale as valid , reliable and responsive as multi-item scales in measuring quality of life? *Quality of Life Research*, 13(2), 311–320.

Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: three decades of progress. *Psychological Bulletin*, 125(2), 276–302.

Downs, S. H., & Black, N. (1998). The feasibility of creating a checklist for the assessment of the

methodological quality both of randomised and non-randomised studies of health care interventions, 377–384.

Early, D. M., Maxwell, K. L., Burchinal, M., Alva, S., Ebanks, R., Henry, G. T., ... Zill, N. (2007). Teachers' education, classroom Quality, and Young Children's Academic Skills: Results from Seven Studies of Preschool Programs. *Child Development*, 78(2), 558–580. <https://doi.org/10.1111/j.1467-8624.2007.01014.x>

Early, D. M., Maxwell, K. L., Ponder, B. D., & Pan, Y. (2017). Improving teacher-child interactions : A randomized controlled trial of Making the Most of Classroom Interactions and My Teaching Partner professional development models &. *Early Childhood Research Quarterly*, 38, 57–70. <https://doi.org/10.1016/j.ecresq.2016.08.005>

Effective Public Health Practice Project. (1998). *Quality assessment tool for quantitative studies dictionary*.

Friedman, I. A. (1993). Burnout in teachers: the concept and its unique core meaning. *Educational and Psychological Measurement*, 53(4), 1035–1045.

Gagnon, S. G., Huelsman, T. J., Kidder-Ashley, P., & Lewis, A. (2018). Preschool student-teacher relationships and teaching stress. *Early Childhood Education Journal*. <https://doi.org/10.1007/s10643-018-0920-z>

Gastaldi, F. G. M., Pasta, T., Longobardi, C., Prino, L. E., & Quaglia, R. (2014). Measuring the influence of stress and burnout in teacher-child relationship. *European Journal of Education and Psychology*, 7(1), 17–28. <https://doi.org/10.30552/ejep.v7i1.99>

Glover Gagnon, S., Huelsman, T. J., Kidder-Ashley, P., & Lewis, A. (2019). Preschool student-teacher relationships and teaching stress. *Early Childhood Education Journal*, 47(2), 217–225. <https://doi.org/10.1007/s10643-018-0920-z>

Goddard, R., & Goddard, M. (2006). Beginning teacher burnout in Queensland schools: associations with serious intentions to leave. *The Australian Educational Researcher*, 33(2), 61–75.

Gray, C., Wilcox, G., & Nordstokke, D. (2017). Teacher mental health, school climate, inclusive education and student learning: a review. *Canadian Psychology*, 58(3), 203–210. <https://doi.org/10.1037/cap0000117>

Grayson, J. L., & Alvarez, H. K. (2008). School climate factors relating to teacher burnout: A mediator model. *Teaching and Teacher Education*, 24(5), 1349–1363. <https://doi.org/10.1016/j.tate.2007.06.005>

References

Hakanen, J. J., Bakker, A. B., & Schaufeli, W. B. (2006). Burnout and work engagement among teachers, 43, 495–513. <https://doi.org/10.1016/j.jsp.2005.11.001>

Hamre, B. K., & Pianta, R. C. (2001). Early teacher-child relationships and the trajectory of children's school outcomes through eighth grade. *Child Development*, 72(2), 625–638.

Hamre, B. K., Pianta, R. C., Downer, J. T., & Mashburn, A. J. (2008). Teachers' perceptions of conflict with young students: Looking beyond problem behaviors. *Social Development*, 17(1), 115–136. <https://doi.org/10.1111/j.1467-9507.2007.00418.x>

Harding, S., Morris, R., Gunnell, D., Ford, T., Hollingworth, W., Tilling, K., ... Kidger, J. (2019a). Is teachers' mental health and wellbeing associated with students' mental health and wellbeing? *Journal of Affective Disorders*, 242, 180–187. <https://doi.org/10.1016/j.jad.2018.08.080>

Harding, S., Morris, R., Gunnell, D., Ford, T., Hollingworth, W., Tilling, K., ... Kidger, J. (2019b). Is teachers' mental health and wellbeing associated with students' mental health and wellbeing? *Journal of Affective Disorders*, 242, 180–187. <https://doi.org/10.1016/j.jad.2018.08.080>

Harris, A. R., Jennings, P. A., Katz, D. A., Abenavoli, R. M., & Greenberg, M. T. (2016). Promoting stress management and wellbeing in educators: feasibility and efficacy of a school-based yoga and mindfulness intervention, 143–154. <https://doi.org/10.1007/s12671-015-0451-2>

Hellhammer, D. H., Wüst, S., & Kudielka, B. M. (2009). Salivary cortisol as a biomarker in stress research. *Psychoneuroendocrinology*, 34(2), 163–171. <https://doi.org/10.1016/j.psyneuen.2008.10.026>

Hoglund, W. L. G., Klingle, K. E., & Hosan, N. E. (2015a). Classroom risks and resources: Teacher burnout, classroom quality and children's adjustment in high needs elementary schools. *Journal of School Psychology*, 53(5), 337–357. <https://doi.org/10.1016/j.jsp.2015.06.002>

Hoglund, W. L. G., Klingle, K. E., & Hosan, N. E. (2015b). Classroom risks and resources: Teacher burnout, classroom quality and children's adjustment in high needs elementary schools. *Journal of School Psychology*, 53(5), 337–357. <https://doi.org/10.1016/j.jsp.2015.06.002>

Hoogendijk, C., Tick, N. T., Hofman, W. H. A., Holland, J. G., Severiens, S. E., Vuijk, P., & van Veen, A. F. D. (2018). Direct and indirect effects of Key2Teach on teachers' sense of self-efficacy and emotional exhaustion, a randomized controlled trial. *Teaching and Teacher*

Education, 76, 1–13. <https://doi.org/10.1016/j.tate.2018.07.014>

Hoogendijk, C., Tick, N. T., Hofman, W. H. A., Holland, J. G., Severiens, S. E., Vuijk, P., & Veen, A. F. D. Van. (2018). Direct and indirect effects of Key2Teach on teachers' sense of self-efficacy and emotional exhaustion, a randomized controlled trial. *Teaching and Teacher Education*, 76, 1–13. <https://doi.org/10.1016/j.tate.2018.07.014>

Hughes, J. N. (2011). Longitudinal effects of teacher and student perceptions of teacher-student relationship qualities on academic adjustment. *Elementary School Journal*, 112(1), 38–60. <https://doi.org/10.1086/660686>.Longitudinal

Hughes, J. N., Cavell, T. A., & Willson, V. (2001). Further support for the developmental significance of the quality of the teacher – student relationship. *Journal of School Psychology*, 39(4), 289–301.

Huppert, F. A. (2009). Psychological well-being: evidence regarding its causes and consequences. *Applied Psychology: Health and Well-Being*, 1(2), 137–164. <https://doi.org/10.1111/j.1758-0854.2009.01008.x>

Ingersoll, R. (2001). Teacher turnover and teacher shortages: an organizational analysis. *American Educational Research Journal*, 38(3), 499–534.

Jennings, P. A., & Greenberg, M. T. (2009). The Prosocial Classroom: Teacher Social and Emotional Competence in Relation to Student and Classroom Outcomes. *Review of Educational Research*, 79(1), 491–525. <https://doi.org/10.3102/0034654308325693>

Jennings, Patricia A. (2015). Early childhood teachers' well-being, mindfulness, and self-compassion in relation to classroom quality and attitudes towards challenging students. *Mindfulness*, 6(4), 732–743. <https://doi.org/10.1007/s12671-014-0312-4>

Jennings, Patricia A, Brown, J. L., Frank, J. L., Doyle, S., Oh, Y., Davis, R., ... Greenberg, M. T. (2017). Impacts of the CARE for Teachers program on teachers' social and emotional competence and classroom interactions. *Journal of Educational Psychology*, 109(7), 1010–1028. <https://doi.org/10.1037/edu0000187>

Jennings, Patricia A, & Greenberg, M. T. (2009). The prosocial classroom: Teacher social and emotional competence in relation to student and classroom outcomes. *Review of Educational Research*, 79(1), 491–525. <https://doi.org/10.3102/0034654308325693>

Johnson, S., Cooper, C., Cartwright, S., Donald, I., Taylor, P., & Millet, C. (2005). The experience of work-related stress across occupations. *Journal of Managerial Psychology*, 20(2), 178–187. <https://doi.org/10.1108/02683940510579803>

References

Johnson, S. M., Kraft, M. A., & Papay, J. P. (2012). How context matters in high-need schools: The effects of teachers' working conditions on their professional satisfaction and their students' achievement. *Teachers College Record, 114*(10), 1–39.

Karasek, R., Brisson, C., Kawakami, N., Houtman, I., Bongers, P., & Amick, B. (1998). The Job Content Questionnaire (JCQ): An Instrument for Internationally Comparative Assessments of Psychosocial Job Characteristics. *Journal of Occupational Health Psychology, 3*(4), 322–355.

Karatzias, A., Power, K. G., Flemming, J., Lennan, F., Swanson, V., Power, K. G., ... The, V. S. (2002). The role of demographics, personality variables and school stress on predicting school satisfaction/dissatisfaction: review of the literature and research findings. *Educational Psychology, 22*(1), 33–50. <https://doi.org/10.1080/01443410120101233>

KIDSCREEN Group Europe. (2004). *KIDSCREEN-27 Health Questionnaire for Children and Young People Child and Adolescent Version*.

King, A. L. D., Huebner, S., Suldo, S. M., & Valois, R. F. (2006). An ecological view of school satisfaction in adolescence: linkages between social support and behavior problems. *Applied Research in Quality of Life, 1*, 279–295. <https://doi.org/10.1007/s11482-007-9021-7>

Klassen, R. M., Perry, N. E., & Frenzel, A. C. (2012). Teachers' relatedness with students: an underemphasized component of teachers' basic psychological needs. *Journal of Educational Psychology, 104*(1), 150–165. <https://doi.org/10.1037/a0026253>

Klusmann, U., Kunter, M., Trautwein, U., & Lu, O. (2008). Teachers' occupational well-being and quality of instruction: the important role of self-regulatory patterns, *100*(3), 702–715. <https://doi.org/10.1037/0022-0663.100.3.702>

Klusmann, U., Richter, D., & Lüdtke, O. (2016a). Teachers' emotional exhaustion is negatively related to students' achievement: Evidence from a large-scale assessment study. *Journal of Educational Psychology, 108*(8), 1193–1203. <https://doi.org/10.1037/edu0000125>

Klusmann, U., Richter, D., & Lüdtke, O. (2016b). Teachers' Emotional Exhaustion Is Negatively Related to Students' Achievement: Evidence from a Large-Scale Assessment Study. *Journal of Educational Psychology, 108*(8), 1193–1203. <https://doi.org/10.1037/edu0000125>

Košir, K., & Tement, S. (2014). Teacher–student relationship and academic achievement: A cross-lagged longitudinal study on three different age groups Article. *European Journal of Psychology of Education, 29*(3), 409–428. <https://doi.org/10.1007/s10212-013-0205-2>

Krueger, A. B., & Schkade, D. A. (2008). The reliability of subjective well-being measures.

Journal of Public Economics, 92(8–9), 1833–1845.

Kunter, M., Tsai, Y., Klusmann, U., Brunner, M., & Krauss, S. (2008). Students ' and mathematics teachers ' perceptions of teacher enthusiasm and instruction, 18. <https://doi.org/10.1016/j.learninstruc.2008.06.008>

Kyriacou, C. (2001). Teacher stress: directions for future research. *Educational Review*, 53(1), 27–35. <https://doi.org/10.1080/0013191012003362>

Kyriacou, C., & Kunc, R. (2007). Beginning teachers ' expectations of teaching. *Teaching And*, 23, 1246–1257. <https://doi.org/10.1016/j.tate.2006.06.002>

Lee, J. (2012). The effects of the teacher – student relationship and academic press on student engagement and academic performance. *International Journal of Educational Research*, 53, 330–340. <https://doi.org/10.1016/j.ijer.2012.04.006>

Lee, K., Partt, K., Weidberg, F., & Davis, R. (2018). *Supporting the emotional and mental health of your school community*.

Leung, D. Y. P., & Lee, W. W. S. (2006). Predicting intention to quit among Chinese teachers : differential predictability of the components of burnout. *Anxiety, Stress and Coping*, 19(2), 129–141. <https://doi.org/10.1080/10615800600565476>

Mackinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation Analysis. *Annual Review of Psychology*, 58, 593–614. <https://doi.org/10.1146/annurev.psych.58.110405.085542>

Marsh, H. W., & Craven, R. G. (2006). Reciprocal Effects of Self- Concept and Performance From a Multidimensional Perspective, 133–163.

Mashburn, A. J., Pianta, R. C., Barbarin, O. A., Bryant, D., Hamre, B. K., Downer, J. T., ... Early, D. M. (2008). Measures of Classroom Quality in Prekindergarten and Children ' s Development of Academic , Language, and Social Skills. *Child Development*, 79(3), 732–749.

Maslach, C. (2011). Burnout and engagement in the workplace : new perspectives. *The European Health Psychologist*, 13(3), 44–47.

Maslach, C., & Leiter, M. P. (2016). Understanding the burnout experience : recent research and its implications for psychiatry. *World Psychiatry*, 15(2), 103–111.

Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, 52, 397–422. <https://doi.org/10.1146/annurev.psych.52.1.397>

McDonald, A. S. (2010). The prevalence and effects of test anxiety in school children. *Educational*

References

Psychology, 21(1), 89–101. <https://doi.org/10.1080/01443410020019867>

Milatz, A., Lüftenegger, M., & Schober, B. (2015a). Teachers' relationship closeness with students as a resource for teacher wellbeing: A response surface analytical approach. *Frontiers in Psychology*, 6, 1–16. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2016-22182-001&site=ehost-live>

Milatz, A., Lüftenegger, M., & Schober, B. (2015b). Teachers' relationship closeness with students as a resource for teacher wellbeing: A response surface analytical approach. *Frontiers in Psychology*, 6. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2016-22182-001&site=ehost-live>

Milkie, M. A., & Warner, C. H. (2011). Classroom Learning Environments and the Mental Health of First Grade Children. *Journal of Health and Social Behavior*, 52(1), 4–22. <https://doi.org/10.1177/0022146510394952>

Muijs, D. (1997). Predictors of academic achievement and academic self-concept : a longitudinal perspective. *British Journal of Educational Psychology*, 67, 263–277.

Naghieh, A., Montgomery, P., Bonell, C., Thompson, M., & Aber, J. (2015). Organisational interventions for improving wellbeing and reducing work-related stress in teachers. *The Cochrane Database of Systematic Reviews*, 4(4), 1–70. <https://doi.org/10.1002/14651858.CD010306.pub2>

Neuenschwander, R., Friedman-krauss, A., Raver, C., & Blair, C. (2017). Teacher Stress Predicts Child Executive Function : Moderation by School Poverty Teacher Stress Predicts Child Executive Function : Moderation by. *Early Education and Development*, 28(7), 880–900. <https://doi.org/10.1080/10409289.2017.1287993>

Neuenschwander, R., Friedman-Krauss, A., Raver, C., & Blair, C. (2017). Teacher Stress Predicts Child Executive Function: Moderation by School Poverty. *Early Education and Development*, 00(00), 1–21. <https://doi.org/10.1080/10409289.2017.1287993>

Oberle, E., & Schonert-Reichl, K. A. (2016). Stress contagion in the classroom? The link between classroom teacher burnout and morning cortisol in elementary school students. *Social Science and Medicine*, 159, 30–37. <https://doi.org/10.1016/j.socscimed.2016.04.031>

Olsson, E. (2009). The role of relations. Do disadvantaged adolescents benefit more from high-quality social relations? *Acta Sociologica*, 52(3), 263–286. <https://doi.org/10.1177/0001699309339802>

Pakarinen, E., Kiuru, N., Lerkkanen, M. K., Poikkeus, A. M., Siekkinen, M., & Nurmi, J. E. (2010). Classroom organization and teacher stress predict learning motivation in kindergarten children. *European Journal of Psychology of Education*, 25(3), 281–300. <https://doi.org/10.1007/s10212-010-0025-6>

Pianta, R. C. (2001). Student-teacher Relationship Scale (STRS): Professional Manual.

Pianta, R. C., Hamre, B. K., & Allen, J. P. (2012). Teacher-student relationships and engagement: conceptualizing, measuring, and improving the capacity of classroom interactions. In *Handbook of Research on Student Engagement* (pp. 365–386). <https://doi.org/10.1007/978-1-4614-2018-7>

Pianta, R., & Hamre, B. (2009). Conceptualization, Measurement, and Improvement of Classroom Processes: Standardized Observation Can Leverage Capacity. *Educational Researcher*, 38(2), 109–119. <https://doi.org/10.3102/0013189X09332374>

Pines, A. M., & Keinan, G. (2005). Stress and burnout : The significant difference. *Personality and Individual Differences*, 39, 625–635. <https://doi.org/10.1016/j.paid.2005.02.009>

Radloff, L. S. (1977). The CES-D Scale : A Self-Report Depression Scale for Research in the General Population. *Applied Psychological Measurement*, 1(3), 385–401.

Ravens-Sieberer, U., Gosch, A., Rajmil, L., Erhart, M., Bruij, J., Power, M., ... Phillips, K. (2007). The KIDSCREEN-27 quality of life measure for children and adolescents: Psychometric results from a cross-cultural survey in 13 European countries. *Quality of Life Research*, 16, 1347–1356. <https://doi.org/10.1111/j.1524-4733.2007.00291.x>

Roberts, A., LoCasale-Crouch, J., Hamre, B., & DeCoster, J. (2016a). Exploring teachers' depressive symptoms, interaction quality, and children's social-emotional development in Head Start. *Early Education and Development*, 27(5), 642–654. <https://doi.org/10.1080/10409289.2016.1127088>

Roberts, A., LoCasale-Crouch, J., Hamre, B., & DeCoster, J. (2016b). Exploring Teachers' Depressive Symptoms, Interaction Quality, and Children's Social-Emotional Development in Head Start. *Early Education and Development*, 27(5), 642–654. <https://doi.org/http://dx.doi.org/10.1080/10409289.2016.1127088>

Rodríguez-Mantilla, J. M., & Fernández-Díaz, M. J. (2017). The effect of interpersonal relationships on burnout syndrome in secondary education teachers. *Psicothema*, 29(3), 370–377. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2018-24692-010&site=ehost-live>

References

Roffey, S. (2012). Pupil wellbeing – teacher well-being: Two sides of the same coin? *Educational and Child Psychology*, 29(4), 8–17. <https://doi.org/10.1007/978-94-007-2147-0> Y3 - 15.02.2016 M4 - Citavi

Roorda, D. L., & Koomen, H. M. Y. (2011). The Influence of Affective Teacher – Student Relationships on Students’ School Engagement and Achievement: A Meta-Analytic Approach, 81(4), 493–529. <https://doi.org/10.3102/0034654311421793>

Roorda, D. L., Koomen, H. M. Y., Spilt, J. L., & Oort, F. J. (2011). The Influence of Affective Teacher-Student Relationships on Students’ School Engagement and Achievement: a Meta-Analytic Approach. *Review of Educational Research*, 81(4), 493–529.

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: classic definitions and new directions. *Contemporary Educational Psychology*, 25, 54–67. <https://doi.org/10.1006/ceps.1999.1020>

Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: a review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology*, 52, 141–166.

Sandilos, L. E., Cycyk, L. M., Scheffner Hammer, C., Sawyer, B. E., López, L., & Blair, C. (2015). Depression, Control, and Climate: An Examination of Factors Impacting Teaching Quality in Preschool Classrooms. *Early Education and Development*, 26(8), 1111–1127. <https://doi.org/http://dx.doi.org/10.1080/10409289.2015.1027624>

Sandilos, L. E., Goble, P., Rimm-Kaufman, S. E., & Pianta, R. C. (2018a). Does Professional Development Reduce the Influence of Teacher Stress on Teacher-Child Interactions in Pre-Kindergarten Classrooms? *Early Childhood Research Quarterly*, 42, 280–290. Retrieved from <https://search.proquest.com/docview/2011262276?accountid=13963>

Sandilos, L. E., Goble, P., Rimm-Kaufman, S. E., & Pianta, R. C. (2018b). Does professional development reduce the influence of teacher stress on teacher – child interactions in pre-kindergarten classrooms? *Early Childhood Research Quarterly*, 42, 280–290. <https://doi.org/10.1016/j.ecresq.2017.10.009>

Saunders, J. A., Morrow-howell, N., Spitznagel, E., Doré, P., Proctor, E. K., & Pescarino, R. (2006). Imputing missing data: a comparison of methods for social work researchers. *Social Work Research*, 1, 19–31.

Sava, F. A. (2002a). Causes and effects of teacher conflict-inducing attitudes towards pupils: A path analysis model. *Teaching and Teacher Education*, 18(8), 1007–1021. Retrieved from <https://search.proquest.com/docview/62216975?accountid=13963>

Sava, F. A. (2002b). Causes and Effects of Teacher Conflict-Inducing Attitudes towards Pupils: A

Path Analysis Model. *Teaching and Teacher Education*, 18(8), 1007–1021. Retrieved from <https://search.proquest.com/docview/62216975?accountid=13963>

Schaufeli, W., Maslach, C., & Marek, T. (2018). *Professional burnout. Recent developments in theory and research*.

Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*. <https://doi.org/10.1037/0003-066X.55.1.5>

Shen, B., McCaughtry, N., Martin, J., Garn, A., Kulik, N., & Fahlman, M. (2015). The relationship between teacher burnout and student motivation. *British Journal of Educational Psychology*, 85(4), 519–532. <https://doi.org/10.1111/bjep.12089>

Sherman, R. A., & Funder, D. C. (2009). Evaluating Correlations in Studies of Personality and Behavior: Beyond the Number of Significant Findings to be Expected by Chance. *Journal of Research in Personality*, 43, 1053–1063. <https://doi.org/10.1016/j.jrp.2009.05.010>

Skaalvik, E. M., & Skaalvik, S. (2011). Teacher job satisfaction and motivation to leave the teaching profession: Relations with school context, feeling of belonging, and emotional exhaustion. *Teaching and Teacher Education*, 27(6), 1029–1038. <https://doi.org/10.1016/j.tate.2011.04.001>

Skaalvik, E., & Skaalvik, S. (2014). Teacher self-efficacy and perceived autonomy: relations with teacher engagement, job satisfaction, and emotional exhaustion 1. *Psychological Reports: Employment Psychology and Marketing*, 114(1), 68–77. <https://doi.org/10.2466/14.02.PR0.114k14w0>

Smith, E. (2012). Attitudes and social cognition. Editorial. *Journal of Personality and Social Psychology*, 102(1), 1–3. <https://doi.org/10.1037/a0026676>

Spilt, J. L., Koomen, H. M. Y., & Thijs, J. T. (2011). Teacher wellbeing: The importance of teacher–student relationships. *Educational Psychology Review*, 23(4), 457–477. <https://doi.org/10.1007/s10648-011-9170-y>

Sutherland, W., Spiegelhalter, D., & Burgman, M. A. (2013). Twenty tips for interpreting scientific claims. *Nature*, 503, 335–337.

Sutton, R. E. (2004). Emotional regulation goals and strategies of teachers. *Social Psychology of Education*, 7, 379–398.

Taxer, J. L., Becker-Kurz, B., & Frenzel, A. C. (2018). Do quality teacher–student relationships protect teachers from emotional exhaustion? The mediating role of enjoyment and anger. *Social Psychology of Education: An International Journal*. <https://doi.org/10.1007/s11218-018-9421-2>

References

018-9468-4

Taxer, J. L., & Frenzel, A. C. (2015). Facets of teachers' emotional lives: A quantitative investigation of teachers' genuine, faked, and hidden emotions. *Teaching and Teacher Education*, 49, 78–88. <https://doi.org/10.1016/j.tate.2015.03.003>

Taylor, C., Harrison, J., Haimovitz, K., Oberle, E., Thomson, K., Schonert-Reichl, K., & Roeser, R. W. (2016). Erratum to: Examining Ways That a Mindfulness-Based Intervention Reduces Stress in Public School Teachers: a Mixed-Methods Study (Mindfulness, (2016), 7, (115–129), 10.1007/s12671-015-0425-4). *Mindfulness*, 7(6), 1449. <https://doi.org/10.1007/s12671-016-0620-y>

Valiente, C., Lemery-chalfant, K., & Reiser, M. (2011). Prediction of children's academic competence from their effortful control, relationships, and classroom participation. *Journal of Educational Psychology*, 100(1), 67–77. <https://doi.org/10.1037/0022-0663.100.1.67.Prediction>

Van den Broeck, A., Vansteenkiste, M., Witte, H. De, & Lens, W. (2008). Explaining the relationships between job characteristics , burnout , and engagement : The role of basic psychological need satisfaction. *Work and Stress*, 22(3), 277–294. <https://doi.org/10.1080/02678370802393672>

Weisberg, J., & Sagie, A. (1999). Teachers ' Physical , Mental , and Emotional Burnout : Impact on Intention to Quit Teachers ' Physical , Mental , and Emotional Burnout : Impact on Intention to Quit. *The Journal of Psychology*, 133(3), 333–339. <https://doi.org/10.1080/00223989909599746>

Whitaker, R. C., Dearth-Wesley, T., & Gooze, R. A. (2015a). Workplace stress and the quality of teacher-children relationships in Head Start. *Early Childhood Research Quarterly*, 30(PA), 57–69. <https://doi.org/10.1016/j.ecresq.2014.08.008>

Whitaker, R. C., Dearth-Wesley, T., & Gooze, R. A. (2015b). Workplace stress and the quality of teacher-children relationships in Head Start. *Early Childhood Research Quarterly*, 30(Part A), 57–69. <https://doi.org/10.1016/j.ecresq.2014.08.008>

Whitaker, R. C., Dearth-Wesley, T., & Gooze, R. A. (2015c). Workplace stress and the quality of teacher-children relationships in Head Start. *Early Childhood Research Quarterly*, 30, 57–69. <https://doi.org/10.1016/j.ecresq.2014.08.008>

Wisniewski, L., & Gargiulo, R. M. (1997). Occupational stress and burnout among special educators : A review of the literature. *The Journal of Special Education*, 31(3), 325–346.

Wong, V. W., Ruble, L. A., Yu, Y., & McGrew, J. H. (2017). Too Stressed to Teach ? Teaching

Quality , Student Engagement , and IEP Outcomes. *Exceptional Children*, 83(4), 412–427.
<https://doi.org/10.1177/0014402917690729>

Wunsch, G., Russo, F., & Mouchart, M. (2010). Do we necessarily need longitudinal data to infer causal relations? *Bulletin de Méthodologie Sociologique*, 106, 5–18.
<https://doi.org/10.1177/0759106309360114>

Yoon, J. S. (2002). Teacher characteristics as predictors of teacher-student relationships: Stress, negative affect, and self-efficacy. *Social Behavior and Personality: An International Journal*, 30(5), 485–494. <https://doi.org/10.2224/sbp.2002.30.5.485>

Zembylas, M. (2003). Caring for teacher emotion: reflections on teacher self-development. *Studies in Philosophy and Education*, 22, 103–125.

