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Understanding associations between perceptions of student behaviour, conflict representations in the teacher-student relationship and teachers' emotional experiences

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HIGHLIGHTS

- Empirical test of a relational model of teacher stress.
- Perceived student misbehaviour associated with teachers' negative affect.
- Relational conflict mediated teachers' negative affective responses.
- Relational closeness ameliorated impact of relational conflict.
- No impact of Compulsive Caregiving style in dyadic relationships.

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ABSTRACT

The present cross-sectional study of 230 teachers aimed to test Spilt, Koomen & Thijs's [*Educational Psychology Review, 23*, 457 (2011)] proposal that teachers' mental representations of their student relationships shape their affective responses to behaviour perceived as problematic. The association between student problematic behaviour and teachers' affective responses was mediated by relational conflict and this indirect effect was lessened by relational closeness. The degree to which teachers' attachment patterns were characterised by compulsive caregiving did not impact on these processes. The present study is consistent with relational theories of teacher wellbeing and argues for relationship-focused reflective practice in teacher training.

1. Introduction

In recent years there has been much interest in the psychological wellbeing of school teachers, ranked as one of the most stressful occupations (Health and Safety Executive, 2015; Johnson et al., 2005). In the UK, eighty-four percent of teachers responding to a recent survey reported experiencing some form of mental health problem in the previous two years (Education Support Partnership, 2015); stress has also been cited as a crucial factor in explaining elevated rates of job-attrition and suicide in the profession (Aud et al., 2011; National Union of Teachers, 2013).

Increasingly, there is a recognition that the interpersonal context of teaching – managing a complex network of relationships with students, parents and colleagues – can be a significant source of stress for some teachers (Prilleltensky, Neff, & Bessell, 2016). However, to date there has been little exploration of the psychological processes that might underpin the interpersonal stressors experienced by teachers. One existing theoretical model (Spilt, Koomen, & Thijs, 2011) argues that teachers' general mental wellbeing is shaped by their specific emotional responses to classroom interactions with students. Specifically, Spilt et al. (2011) propose that teachers' mental representations of their student relationships play an important part in the generation of these specific emotional responses. Although this model was built on existing research findings, the present study aimed to conduct the first empirical test

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of the model of Spilt et al. (2011). The present study also extended the model of Spilt et al. (2011) by examining the role of teachers' generalised mental representations of relationships in shaping these dyadic classroom processes.

Although diverse occupational sources of teachers stress have been identified (Kyriacou, 2001), problems with student behaviour have repeatedly been reported as a major factor by teachers (Blasé, 1986; Chan, Chen, & Chong, 2010; Ingersoll, 2001). This association is borne out by numerous findings of a significant inverse association between students' behaviour problems and teachers' psychological wellbeing (Friedman-Krauss, Raver, Morris, & Jones, 2014; McCormick & Barnett, 2011; Tsouloupas, Carson, Matthews, Grawitch, & Barber, 2010). For example, teachers who struggle with behaviour management (in their own opinion or that of their students) experience greater burnout (Brouwers & Tomic, 1999, 2000; Evers, Tomic, & Brouwers, 2004).

A number of theorists have suggested that the adverse impact of perceived student problematic behaviour[1] on teacher wellbeing is due to teachers' negative affective responses in their interactions with students (Chang, 2009; Frenzel, Goetz, Stephens, & Jacob, 2009; Hargreaves, 1998; Spilt et al., 2011). This view is supported by empirical findings, for example that students' ratings of their own behaviour problems predicted teachers' negative affective experiences (Becker, Keller, Goetz, Frenzel, & Taxer, 2015) and that teachers' affective classroom experiences were associated with burnout (Keller, Chang, Becker, Goetz, & Frenzel, 2014). Further, Chang (2013) found a positive relationship between teachers' negative affective responses to perceived student problematic behaviour and levels of burnout.

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

Spilt et al. (2011) situated their model within an attachment framework, arguing that mental representations of the TSR mediate teachers' affective responses to student problematic behaviour (see Fig. 1). In line with Pianta, Hamre, and Stuhlman (2003), Spilt et al. state that these mental representations "contain a teacher's image of the child, a sense of her- or himself in interaction with the child as well as internalized feelings that color these images" (2011, p.464). If a student's behaviour is perceived to be problematic in some way – such as disruptive, disobedient or disrespectful – a teacher may develop a mental model of their relationship as one of conflict and discord. This mental representation of the relationship may shape future interactions with the student and result in negative affect.

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

The present study aimed to test this central aspect of the model of Spilt et al. (2011), represented by the dotted line in Fig. 1, and operationalised in the following hypothesis at the dyadic relationship level:

H1. There is a significant indirect effect of teacher perceptions of student problematic behaviour on teacher negative affective responses, through teacher representations of conflict in the teacher-student relationship (mediation hypothesis).

Rooted in existing theories of stress (e.g., Lazarus & Folkman, 1987), the model of Spilt et al. (2011) proposes that, in the context of a conflicted dyadic teacher-student relationship, teachers experience negative affect. It is only in the cumulative, incremental experience of this negative affect that a teacher's global emotional wellbeing is affected. Therefore, to maximise the sensitivity of the hypothesis to the process outlined in the model, negative affective response was identified as the dependent variable, rather than teachers' global wellbeing.

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

> *"There are some kids who really make an impact … you'd go the extra mile for them. For those kids … they just don't get to me so*

[1] In this article we refer to the "perceived problematic student behaviour" to denote the behaviours of concern in the classroom. Our intention in doing so is to convey the notion that a behaviour is only problematic insofar as a teacher construes it this way. We have avoided the term "misbehaviour" used by some researchers (e.g. McCormick & Barnett, 2011; Tsouloupas et al., 2010), as we feel that this language risks invoking a set of objective rules against which behaviours are judged. Instead, we intend the term "problematic behaviour" to indicate the degree to a behaviour is judged negatively with a teacher's personal value system. Thus where "misbehaviour" may refer to disruptive or aggressive actions, "problematic behaviour" may also include disrespectful, withdrawn or distracted behaviour, but above all is determined ideographically.

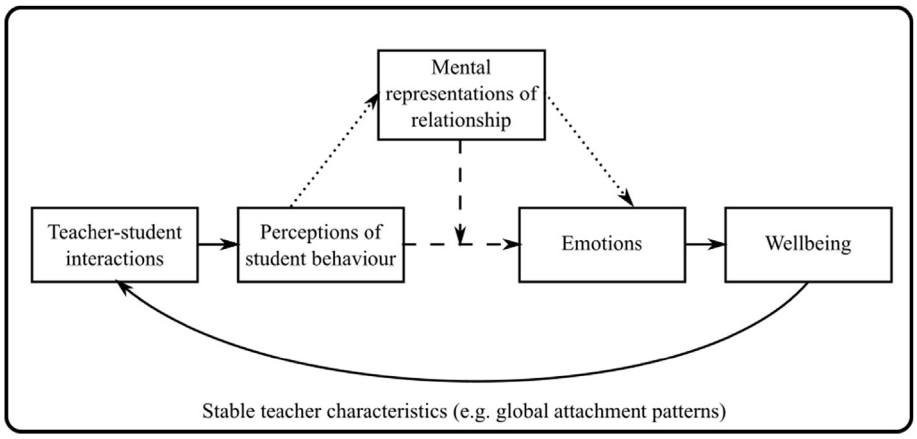

Fig. 1. Diagram of the theoretical model of Spilt et al. (2011), based on their Fig. 1 (p.460). Dotted lines indicate proposed mediation – the shaping of relational representations by perceptions of behaviour. Dashed lines indicate proposed moderation of relationship between perceptions of behaviour and emotions by relational representations. Spilt et al. (2011) argue that mental representations of relationship can exist at different levels of abstraction – they can be specific to a particular TSR or can be more general models of attachment.

much. It's not like I give them more slack or leniency, we can still be at loggerheads in the middle of a lesson … it just doesn't bug me so much."

The present study aimed to test the assumption in the theoretical model that conflict is problematic insofar as it thwarts a teacher's goal of establishing close relationships with students, by testing whether closeness in the TSR ameliorates the adverse consequences of conflict. This was operationalised in the following hypothesis at the dyadic relationship level:

H2. The indirect effect hypothesised in H1 is smaller (i.e., conflict is less problematic) for teachers who view the relationship with a particular student as being more close (moderated mediation hypothesis).

Mental representations of relationships are thought to exist at different levels of a hierarchy, from specific relationships to a broader models that guide more generally how relationships are viewed (e.g., attachment patterns; Sibley & Overall, 2008). The attachment system (viewed as a 'behavioural control system') is thought to set goals such as proximity and relational closeness (Bowlby, 1977; West & Sheldon-Keller, 1994) and therefore may play a significant role in the processes discussed above. This role is an aspect of the theoretical model of Spilt et al. (2011) that is somewhat tentative and speculative, due to limitations in existing research evidence. The present study aimed to extend Spilt et al.'s theoretical model by clarifying the role of broad patterns of attachment in shaping teachers' negative affective responses to perceived student problematic behaviour.

A number of studies have consistently reported that a more secure attachment style is related to lower levels of occupational burnout in other professions (Pines, 2004; Ronen & Baldwin, 2010; Ronen & Mikulincer, 2009; Simmons, Gooty, Nelson, & Little, 2009). In a sample of security guards, Vanheule and Declercq (2009) found that an insecure attachment style increased the risk of burnout following the experience a stressful incident at work. Within caring professions, there have been mixed findings on associations between attachment style and burnout. A positive association between insecure attachment and burnout was reported in a sample of dementia care staff (Kokkonen, Cheston, Dallos, & Smart, 2014), but not in a sample of hospice care staff (Hawkins, Howard, & Oyebode, 2007).

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

One limitation of the research discussed above is that it has primarily focused on general attachment insecurity, while it may be of more clinical interest to consider the role of particular attachment patterns (e.g., Bartholomew & Horowitz, 1991; Brennan, Clark, & Shaver, 1998; West & Sheldon-Keller, 1994). One specific attachment pattern which may in theory increase teachers' vulnerability to experiencing conflict in their relationships with students is that of compulsive caregiving. Compulsive caregiving is a pattern of attachment characterised by attempts to seek proximity and relational safety by attending to the needs of others to the exclusion of one's own needs (Bowlby, 1977; Crittenden, 2008). Compulsive caregiving is thought to develop in childhood when communication of distress is discouraged – the child learns that care and nurturance are most reliably elicited through taking a caregiving role with regards to the attachment figure. Although defined by caregiving behaviour, Crittenden (2008) argues that compulsive caregiving represents a distinct internal working model of self and other, in which one's own sense of self-worth is dependent upon one's ability to care for others, and in which the availability of others is dependent upon their willingness to accept this care.

Compulsive caregiving was termed the "helping profession syndrome" by Malan (2001, p. 161), and is particularly prevalent in other helping professions (Leiper & Casares, 2000). Malan proposed that compulsively meeting the needs of others leads to a "deficit in the emotional balance of payments" (2001, p. 161) and cited this as the main reason that helping professionals seek therapeutic

support. However, the role of compulsive caregiving in the teachers' wellbeing has not previously been studied. In a compulsive caregiving attachment pattern, one's self-worth is contingent on giving care to others. If care is blocked, for example by a student misbehaving in class, a teacher with this attachment pattern might question their own worth and perceive greater conflict in the relationship. It is therefore possible that, in response to perceived problematic behaviour, a compulsive caregiving style may facilitate the development of conflict representations in dyadic teacher-student relationships. This is operationalised in the following hypothesis at the dyadic relationship level:

H3. The indirect effect hypothesised in H1 is larger (i.e. conflict is more problematic) for teachers who report relatively higher levels of a compulsive caregiving attachment pattern (moderated mediation hypothesis).

The present study aimed to provide an initial empirical test of the theoretical model described above, in addition to examining whether general patterns of attachment (specifically compulsive caregiving) might facilitate the role of conflictual teacher-student relationships in teacher wellbeing. The study hypotheses (summarised in Table 1), were tested in a diverse sample of British school teachers. A large sample was required to achieve adequate statistical power to test the moderated mediation hypotheses (H2 and H3; see below). Consequently, and because the present study signifies the first test of the model of Spilt et al. (2011), a cross-sectional design was used.

2. Methods

Participants. Participants were teachers working in British inner-city primary and secondary schools. Table 2 shows characteristics of the participating teachers. The intention was to sample teachers with a broad range of experience, to maximise the generalisability of the findings from this study. Fimian and Blanton (1987) found that the occupational burnout of trainee teachers is almost indistinguishable from that of their qualified colleagues. Consequently, qualified and trainee teachers were recruited for this study.

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

Qualified teachers were recruited firstly through schools. Three Birmingham primary schools advertised the study to their teachers. These three schools had previously agreed to facilitate recruitment of teachers to research through the X University, and were not already involved in other university-based research projects. Sixty-one qualified teachers participated from these three schools at voluntary recruitment events held during inset teacher training sessions. Information about these inset events was provided in advance to class teachers by school management during staff meetings. Further, another four schools (two primary, two secondary), as well as "Teaching Leaders" – a charity that provides professional development to qualified teachers – sent an invitation to their teachers to participate through an online portal. Eighty-one qualified teachers participated in this manner, giving a total of 142 qualified teachers. The 243 trainee and qualified teachers recruited worked across 128 different primary and secondary schools. Of these participants, 13 did not complete all questionnaires, and were excluded from hypothesis testing, resulting in a final $n = 230$.

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

Materials. To aid interpretation, for all measures outlined below, a participant's index score for each scale was calculated as the total sum of the scale divided by the number of items that made up the scale.

Dyadic Measures. The variables from the model of Spilt et al. (2011) that were operationalised in this study within a student-teacher dyad were: teachers' perceptions of student behaviour, student-teacher relationship representations and teachers' affective responses to the student. Participants were asked to identify a specific student in their class (or with whom they had daily contact) who "often gets into trouble," and respond to the questionnaires about that student *over the past two weeks*. Of note, over three quarters (76.13%) of the selected students were male.

Perceived student problematic behaviour. Rather than focusing solely on disruptive behaviour, student problematic behaviour was operationalised to include a variety of different behaviours of concern, including interpersonal ones (e.g. disrespectful behaviour). This reflects previous studies that have demonstrated associations between a range of problematic behaviours and conflict representations in the TSR (e.g. Doumen et al., 2008; Hamre et al., 2008). To measure perceived problematic behaviour of the identified student, the Teacher Observation of Classroom Adaptation Checklist (TOCAC; Leaf, Schultz, Keys, & Ialongo, 2002) was used. Across twenty-one items, participants rated the frequency with which the identified student displayed a range of behaviours, comprising three subscales: concentration (e.g., "this child pays attention"), disruptive behaviour (e.g., "this child breaks rules") and prosocial behaviour (e.g., "this child is friendly") on a six-point Likert scale (anchored with "Never" and "Almost always"). The whole measure (with concentration and prosocial behaviour items reverse scored) was used rather than individual subscales to reflect the possibility that different teachers may consider different aspects of behaviour more challenging (Clunies-Ross, Little, & Kienhuis, 2008; Friedman, 1995; Hastings & Bham, 2003). The checklist has been shown to have a robust factor structure, high internal consistency, and high convergence with an interview-method of assessing student behaviour ($\alpha = 0.96$; Koth, Bradshaw, & Leaf, 2009). In the current study, the total scale demonstrated good internal consistency ($\alpha = 0.81$). A higher score indicated a

Table 1
Summary of study hypotheses.

Hypothesis	Study question	Analysis
H1: Significant indirect effect of perceived student problematic behaviour on teacher negative affective responses, through teacher relational representations of conflict.	Is the central process of the Spilt et al. (2011) model supported?	Mediation
H2: Indirect effect (H1) is smaller for teachers who view the relationship with a particular student as being more close.	Is Spilt et al. (2011) assumption of goal of closeness validated?	Moderated mediation
H3: Indirect effect (H1) is larger for teachers who report relatively higher levels of a compulsive caregiving attachment pattern	Is compulsive caregiving an emotional risk factor in dyadic relationships?	Moderated mediation

Table 2
Characteristics of participating teachers included in analyses (N = 230).

Variables	*n* or sample mean	% or SD	Range
Demographics			
Age	31	9.78	21–69
Gender (Female)	176	76.52	n/a
Ethnicity			
Caucasian	186	80.87	n/a
Ethnic minorities:	44	19.13	n/a
Mixed	14	6.09	n/a
Asian/Asian British	15	6.52	
Black/Black British	12	5.22	n/a
Other	3	1.30	n/a
Qualification status			
In training	95	41.30	n/a
Completed training	135	58.70	n/a
School type			
Primary	124	53.91	n/a
Secondary	106	46.09	n/a
Length of teaching experience (Years)	6.73	7.99	0.33–37[a]
Dyadic-level measures (Scores = mean total score divided by number of scale items)			
TOCAC student problematic behaviour	3.52	0.41	1.81–4.48
STRS conflict	3.25	0.88	1.00–4.88
STRS closeness	3.22	0.88	1.00–5.00
PANAS Negative affect	2.06	0.73	1.00–4.20
Teacher-level measures (Scores = mean total score divided by number of scale items)			
RAQ compulsive caregiving	3.38	0.54	1.71–4.86
WEMWBS wellbeing	3.26	0.55	1.79–4.86

Notes: [a] Trainee teachers had a range of 0.33–2 years' teaching experience. Qualified teachers had a range of 1–37 years' teaching experience.

higher degree of perceived problematic behaviour.

Student-teacher relational representations. To measure conflict and closeness in the teachers' representation of their relationship with the identified student, two subscales of the short version Student-Teacher Rating Scale (STRS; Pianta, 2001) were used. As noted by Spilt et al. (2011), the STRS is the most widely used self-report assessment of a teacher's perception of the quality of their relationship with a given child. An interview-based measure, such as the Teacher Relationship Interview (Pianta, 1999), may have provided a deeper understanding of relational representations (Maier, Bernier, Pekrun, Grossmann, & Zimmermann, 2004). However, the logistical demands of administering this interview to a large number of teachers precluded its use and therefore the STRS self-report questionnaire was selected to facilitate recruitment of a sufficiently large sample. The conflict (eight items, e.g., "This child and I always seem to be struggling with each other") and closeness (seven items, e.g., "I share an affectionate, warm relationship with this child") subscales are measured across fifteen items, each rated on a five-point Likert scale (anchored with "Definitely does not apply" and "Definitely applies"). The factor structure of this questionnaire has previously been demonstrated ($\alpha = .82$ for conflict, and 0.84 for closeness; Drugli & Hjemdal, 2013). Internal consistency in the current study was good for both the conflict ($\alpha = 0.85$) and closeness ($\alpha = 0.86$) subscales. Higher scores on each subscale indicated greater perceived conflict and closeness, respectively.

The STRS has traditionally been used to assess representations of teachers' relationships with primary-school aged children, although previous doctoral research has used the questionnaire in a group of secondary-school teachers (Clark, 2014). To ensure that the STRS retained its face validity in the current sample that included secondary school teachers, two focus groups (one each of primary and secondary school teachers) were convened during the study design. The feedback from the secondary school teacher focus group was that both the Conflict and Closeness scales of the STRS satisfactorily characterised how they thought and felt about their relationships with students. Following feedback from these focus groups, the short version of this questionnaire was used, to reduce burden on participants.

Teacher affective responses. The negative affect scale of the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) was used to measure teachers' negative affective responses to interactions with the identified student. This measure, which covers a broad range of negative feelings, was chosen because no particular specific negative emotion was hypothesised to characterise teachers' affective response. The negative affect scale of the PANAS consisted of ten single-word items (distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery, afraid), which participants rated on a five-point Likert scale based on how much they felt that way in their interactions with the identified student (anchored with "Not at all" and "Very much"). This measure has been shown, in a non-clinical sample, to have good convergent validity with other questionnaire measures of mood, and high subscale internal consistency ($\alpha = 0.89$ for PA, 0.85 for NA; Crawford & Henry, 2004), and demonstrated good internal consistency in the current study ($\alpha = 0.85$). Higher scores indicated a greater negative affective response.

Global measures. In addition to those dyadic variables, two teacher-level variables were also operationalised: teacher well-being (explicitly included in the model of Spilt et al., 2011), and the teacher's attachment pattern (an extension of the Spilt et al. model).

Teacher wellbeing. Teachers' mental wellbeing was measured using the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS; Tennant et al., 2007). Participants rated each of fourteen statements about their thoughts and feelings over the past two weeks (e.g., "I've been feeling cheerful", "I've been thinking clearly", "I've been interested in new things") on a five-point Likert scale (anchored with "None of the time" and "All of the time"). Tennant et al. (2007) report an α of between 0.89 and 0.90, which was replicated in the present study ($\alpha = 0.90$). Higher scores indicated greater mental wellbeing.

Teacher attachment patterns. The attachment pattern of interest in this study was that of compulsive caregiving, which was measured using the Compulsive Caregiving subscale of the Reciprocal Attachment Questionnaire (RAQ; West & Sheldon-Keller, 1994). Participants were asked to complete this questionnaire

based on their attachment figure, which was defined as the person to whom they felt closest. Across twenty-eight items, rated on a five-point Likert scale (anchored with "Strongly disagree" and "Strongly agree"), the RAQ pattern scale gives scores for four different attachment patterns (compulsive caregiving, compulsive care-seeking, compulsive self-reliance, and angry withdrawal). Only the compulsive caregiving scale (seven items, e.g., "I put my attachment figure's needs before my own") was used in this study, as this was the attachment pattern of interest. West and Sheldon-Keller (1994) report an α of 0.70 for this scale, although reliability in the present study was somewhat lower (α = 0.61). Higher scores indicated a greater degree of compulsive caregiving.

Procedure. Ethical approval for the study was obtained from the X University Science, Technology, Engineering and Mathematics Ethical Review Committee. All participants gave written informed consent. The school inset and Teach First recruitment events lasted up to 2 h, during which time participants gave informed consent and completed the battery of questionnaires using pencil and paper. Participants were then debriefed during the session through a short talk by the researcher, supported by written information. For those participants who completed the study online (33%), the online portal was hosted by LimeSurvey (Schmitz, 2015). Participants accessed the study information sheet, consent form and an electronic version of the questionnaires through a secure URL. After completion of the questionnaires, participants could download an electronic version of the debrief information.

Data Analysis. Data analyses were carried out using SPSS (v.22; IBM Corp., 2013). Regression analyses were conducted using ordinary least squares (OLS) regression. Of the 128 schools represented in this sample, seven schools provided multiple participants, arguably violating the OLS regression assumption of independent observations. However, multilevel modelling was not used for a number of statistical and pragmatic reasons. Firstly, bias in parameter estimates at the between-subject level can be minimised with as few as thirty higher-level clusters (McCoach, 2010). The number of higher-level clusters (schools) in the present study (128) exceeds this threshold, suggesting that bias in estimates of between-subject variance may not be problematic. Secondly, the data had no consistent nesting structure. While some of the sample (n = 122, recruited directly through schools) were clearly clustered across seven schools, the other participating teachers (n = 121, recruited through Teach First and Teaching Leaders) were all working at different schools but may have had undefined connections with each other through forums of training and professional development. Consequently, variance was modelled at the between-subject level only. Significant results should be interpreted within the context of this limitation.

Mediation and moderated mediation analyses were undertaken using the PROCESS macro for SPSS. Specific details of hypothesis testing are described in the results section.

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

Hypotheses 2 and 3 involved a "moderated mediation" analysis. This analysis tests the null hypothesis that an indirect effect is *unconditional* on a moderator variable (Hayes, 2013). Hayes (2013) explains that an indirect effect (*ab* path) may be conditional on a moderator variable even when the individual associations that make up that indirect effect (*a* path: independent variable to mediator variable; or *b* path: mediator variable to dependent variable) are not. Hayes (2013) has therefore developed a bootstrapping method for assessing whether an indirect effect is conditional on a moderator variable at a statistically significant level. This method is detailed in the results section, below.

Preacher et al. (2007, Table 5) report empirical power of bias-corrected bootstrapped confidence intervals in a simulated moderated mediation model similar to those hypothesised in the current study. With a sample size of 200, empirical power was 1.00 when regression coefficients were moderate (0.39) and was 0.46 when regression coefficients were small (0.14). Therefore the current sample size (n = 230) was deemed sufficient for identifying effects of moderate size, which may be of clinical interest (Jacobson & Truax, 1991).

3. Results

Means and standard deviations of the study variables are shown in Table 2. Intercorrelations (Pearson's r) between study variables are shown in Table 3. The mean values of the dyadic measures were generally around the midpoint of the possible ranges; it was not possible to compare these to previously published values as this study was unique in requiring participants to identify a student who "often gets in trouble." Mean levels of compulsive caregiving were similar to those reported in a previous sample of helping professionals (Dickson, Moberly, Marshall, & Reilly, 2011) and were roughly at the midpoint of the possible range. Mean levels of general wellbeing were roughly at the midpoint of the possible range, but were somewhat lower than the population mean (Craig & Mindell, 2011).

Examining potential demographic confounding variables. Table 4 shows correlation coefficients (Pearson's r) between the study variables and the demographic variables (categorical demographic variables coded as dummy variables, indicated in table notes). All of the demographic variables were significantly associated with at least one of the study outcome or mediator variables. Consequently, all of the analyses described below were repeated including age, teaching experience as continuous covariates and ethnicity, gender, school type and qualification status as dummy covariates. In all cases, when repeating the following analyses additionally controlling for these demographic variables, an identical pattern of results emerged, therefore the results presented below are those without covariates.

Validity of dependent variable in dyadic analysis. Spilt et al. (2011) propose that, for teachers, negative affect is the direct outcome of teacher-student interactions. The cumulative experience of specific affective responses is argued to impact on overall wellbeing, in line with the model of stress of Lazarus and Folkman (1987). Indicating that this assumption of the model was valid, the

Table 3
Pearson's correlations (r) between all study variables.

	2	3	4	5	6
Relationship-level measures					
1. TOCAC student problematic behaviour	.37***	-.04	.27***	.06	-.18**
2. STRS conflict		-.42***	.52***	.05	-.26***
3. STRS closeness			-.20**	.05	.10
4. PANAS Negative affect				.05	-.21**
Teacher-level measures					
5. RAQ compulsive caregiving					.02
6. WEMWBS wellbeing					

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

Table 4
Pearson's correlations (r) between study and demographic variables.

Study variable	Demographic variable					
	Age	Gender[a]	Ethnicity[b]	Teaching experience	School type[c]	Qualification status[d]
TOCAC student problematic behaviour	-.02	-.02	-.01	-.12^{+}	-.01	-.20**
STRS conflict	-.14*	-.09	.05	-.21**	-.27***	-.37***
STRS closeness	.06	.19**	.10	.12^{+}	.34***	.17*
PANAS Negative affect	-.22**	.05	.16*	-.25***	-.04	-.34***
RAQ compulsive caregiving	-.07	-.04	-.01	-.02	.03	.10
WEMWBS wellbeing	.01	-.07	-.02	.01	-.05	.15*

Notes: Dummy variables coded as: [a] Gender: male = 0, female = 1; [b] Ethnicity: Caucasian = 0, ethnic minority = 1; [c] School type: secondary = 0, primary = 1; [d] Qualification status: in training = 0, completed training = 1.
$^{+}$ $p < .1$, * $p < .05$, ** $p < .01$, *** $p < .001$.

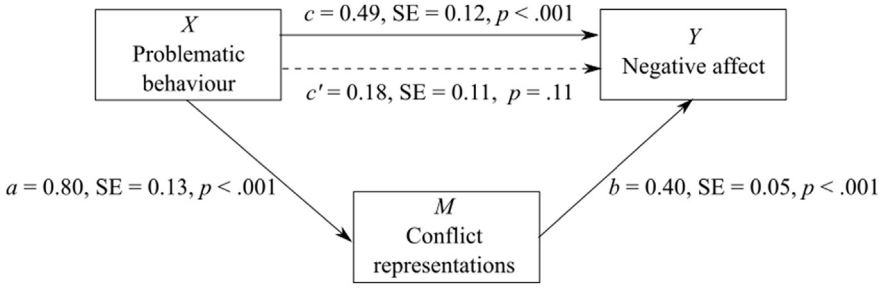

Fig. 2. Mediation model showing indirect effect of perceived problematic behaviour (*X*) on teachers' negative affect (*Y*) through relational representations of conflict (*M*).

correlation coefficient between teachers' negative affective responses and global wellbeing was negative and significant (see Table 3). Therefore, teacher negative affective responses were deemed to be a relevant and valid outcome variable for subsequent analyses of dyadic teacher-student relationships.

H1. Negative affective responses to perceived problematic behaviour are mediated by conflict representations.

A regression analysis demonstrated a significant total effect (path *c*, Fig. 2) of perceived individual problematic behaviour (measured using the TOCAC) on teachers' negative affect (measured using the PANAS), B = 0.49, SE = 0.12 $p < .001$. In support of H1 and the central theoretical proposition of Spilt et al. (2011), mediation analysis demonstrated that this total effect was mediated by relational representations of conflict (measured using the STRS conflict scale). Fig. 2 reports the regression coefficients for the model. Perceived student problematic behaviour was positively related to conflict representations (path $a = 0.80$), which were in turn positively associated with negative affect (when controlling for perceived student problematic behaviour; path $b = 0.40$). Multiplying these paths gives an indirect effect of $ab = 0.32$. In other words, a one-unit increase in perceived student problematic behaviour is expected, through its indirect effect on conflict representations, to result in a 0.32-unit increase in negative affect. A bias corrected 95% confidence interval from 10000 bootstrap samples indicated the indirect effect was significantly greater than zero (95% CI = 0.19 to 0.48). Indicating full mediation, this model found no significant association between perceived student problematic behaviour and negative affect independent of conflict representations (path $c' = 0.18$, $p = .11$).[2]

H2. The indirect effect of perceived problematic behaviour on teacher negative affect through conflict representations is conditional on closeness in the teacher-student relationship.

H2 states that the indirect effect described in H1 is weaker when teachers represent their relationship with the identified student as being closer. This hypothesised conditional indirect effect is represented in Fig. 3 as conceptual and statistical diagrams. The conceptual diagram is more complex than that depicted in Fig. 1, and reflects one hypothesised interplay between the mediating and moderating effects of mental relationship representations proposed by Spilt et al. (2011). This model proposes that closeness moderates (alleviates) the positive association between conflict and negative affect.

To estimate the statistical model (Fig. 3, Panel B), two separate regression analyses were conducted. In the first, conflict representations were regressed on perceived student problematic behaviour (path *a*). In the second, negative affect was regressed on perceived student problematic behaviour (path *c'*), conflict representations (path b_1), closeness representations (path b_2), and their product (path b_3). The coefficients of these regression analysis are shown in Table 5, Panel A. In the terminology of Fig. 3, the conditional indirect effect is expressed as $a(b_1 + b_3V)$. This represents the product of the effect of the independent variable on the mediator — path *a* — and the conditional effect of the mediator on the outcome, defined by Hayes (2013) as $b_1 + b_3{}^{*}V$. This conditional indirect

[2] Although including school-type as a covariate did not change the pattern of results (see "Examining potential demographic confounding variables" section), there is a theoretical argument that the emotional impact of teacher-student relationships will differ across primary and secondary school teachers. Hargreaves (2000) found that primary school teachers reported more emotionally intense relationships with their students than did secondary school teachers. Therefore, as an ancillary analysis, H1 (mediation hypothesis) was tested separately in primary and secondary school teachers. The indirect effects were both significant and of similar magnitude (95% CI for $ab = 0.10$ to 0.55 for primary teachers; 0.17 to 0.61 for secondary teachers). In other words, the core process proposed in the model of Spilt et al. (2011) was evidenced in both groups of teachers. The same was true for trainee vs qualified teachers (95% CI for $ab = 0.01$ to 0.47 for trainee teachers; 0.07 to 0.37 for qualified teachers). This echoes findings from Claessens et al. (2016) that teachers' descriptions of problematic teacher-student relationships did not differ between novice and experienced teachers. The sample size was not sufficiently large to achieve adequate power to test the moderated mediation hypotheses (H2, H3) separately in teachers from different school types or with different qualification statuses.

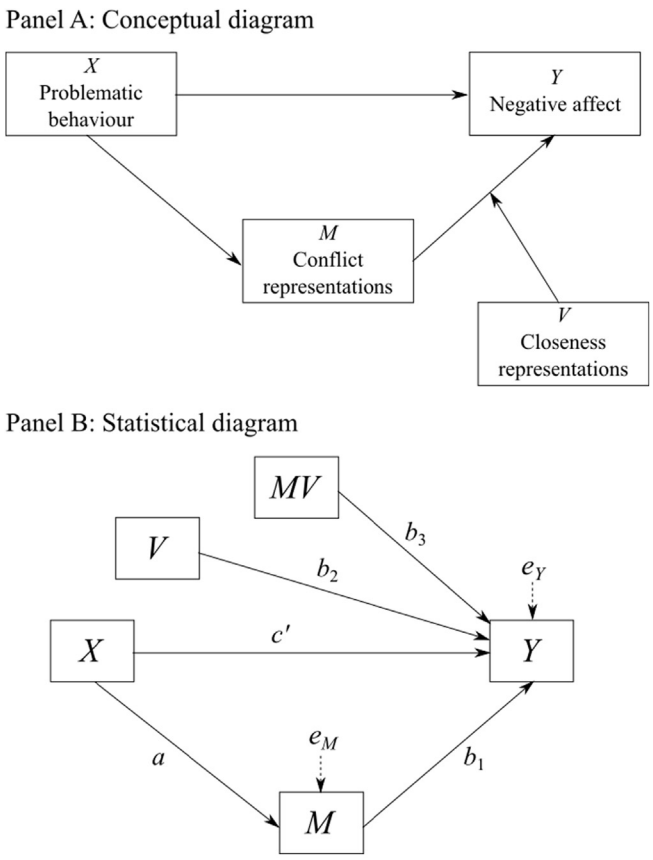

Fig. 3. Conceptual (Panel A) and Statistical (Panel B) diagrams of conditional indirect effect of perceived student problematic behaviour (*X*) on teachers' negative affect (*Y*) through conflict representations (*M*) moderated by closeness representations (*V*). This is Model 14 from Hayes (2013).

effect was calculated with bias corrected 95% confidence intervals (from 10000 bootstrap samples) at chosen values of the moderator (mean, +/−1SD), shown in Table 5, Panel B and represented graphically in Fig. 4. As closeness representations increased, the conditional indirect effect of perceived student problematic behaviour on negative affect through conflict representations became weaker, although remained significant.

Therefore, the conditionality of the indirect effect was as predicted in H2. Hayes (2013) recommends testing such a *moderated mediation* hypothesis by conducting an inferential test to assess the significance of the conditional indirect effect at chosen values of the moderating variable. The difference in the conditional indirect effect at any two given values of the moderator is calculated as $a(b_1 + b_3V_1) - a(b_1 + b_3V_2)$, simplifying to $ab_3(V_1 - V_2)$. Given that in a set of bootstrapped samples, $(V_1 - V_2)$ will always be constant, then a bootstrapped 95% confidence interval of ab_3 alone can serve as an inferential test of moderated mediation (Hayes, 2013). Using 10000 bootstrap samples, the bias corrected 95% confidence interval of ab_3 for this model was −0.02 to −0.20, with a point estimate of −0.09, indicating that the conditional indirect effect of perceived problematic behaviour on negative affect through conflict representations was significantly different at any two given values of closeness representation, supporting H2.

In sum, at the 0.05 α level, the indirect effect of perceived student problematic behaviour on teacher negative affect through conflict representations became significantly smaller as closeness representations increased. As teachers felt closer to their identified student, any conflict in the relationship became significantly less problematic.

H3. The indirect effect of perceived problematic behaviour on teacher negative affect through conflict representations is conditional on compulsive caregiving.

H3 states that the indirect effect described in H1 is stronger for teachers who report a more compulsive caregiving attachment style. Conceptual and statistical representations of this hypothesised conditional indirect effect are shown in Fig. 5. This model proposes that compulsive caregiving moderates (exacerbates) the positive association between perceived student problematic behaviour and conflict representations, reflecting another hypothesised interplay between the effects of mental relationship representations proposed by Spilt et al. (2011).

To estimate the model (Fig. 5, Panel B), two separate regression analyses were performed. In the first, conflict representations were regressed on perceived student problematic behaviour (path a_1), compulsive caregiving (path a_2) and their product (path a_3). In the

Table 5
Results of moderated mediation analysis (moderator: closeness representations).

Panel A: Regression results				
Conflict representations regressed on:	B	SE	t	p
Constant	0.43	0.47	0.91	.36
Student problematic behaviour (a)	0.80	0.13	5.97	<.001
$R^2 = 0.14$, $p < .001$				
Negative affect regressed on:	B	SE	t	p
Constant	−1.25	0.74	−1.70	.09
Student problematic behaviour (*c'*)	0.19	0.11	1.70	.10
Conflict representations (b_1)	0.79	0.18	4.37	<.001
Closeness representations (b_2)	0.40	0.18	2.19	.03
Interaction (conflict x closeness; b_3)	−0.12	0.05	−2.25	.03
$R^2 = 0.29$, $p < .001$				

Panel B: Indirect effect of perceived problematic behaviour on negative affect through conflict representations conditioned at values of closeness representations, with bias-corrected bootstrapped 95% confidence intervals (10000 bootstrap samples)

Closeness representations		Indirect effect	Bias-corrected bootstrapped 95% confidence intervals	
			Lower	Upper
−1 SD	2.34	0.41	0.26	0.60
Mean	3.22	0.33	0.20	0.50
+1 SD	4.10	0.25	0.11	0.44

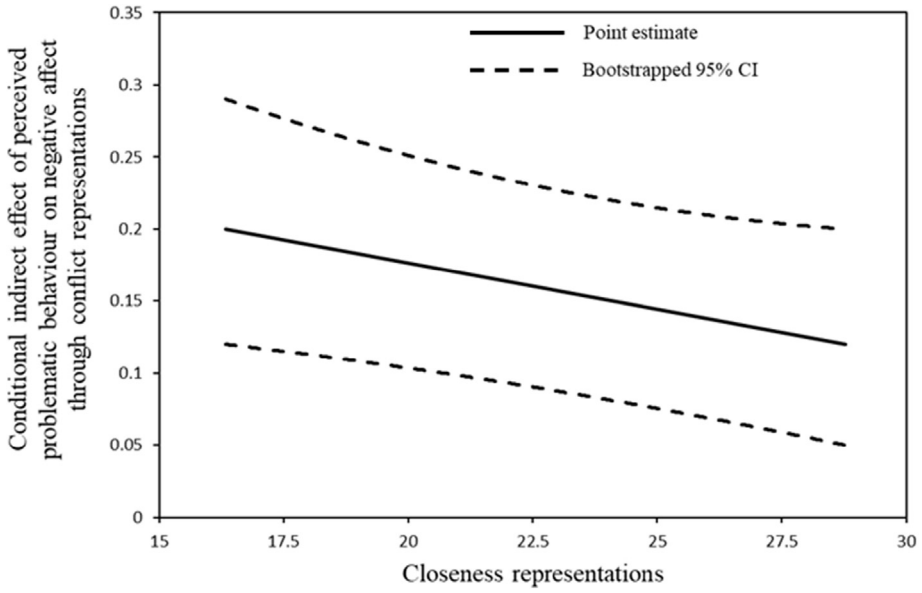

Fig. 4. Conditional indirect effect of perceived student problematic behaviour on negative affect through conflict representations plotted as a function of closeness representations, including bias corrected 95% confidence intervals calculated from 10000 bootstrap samples.

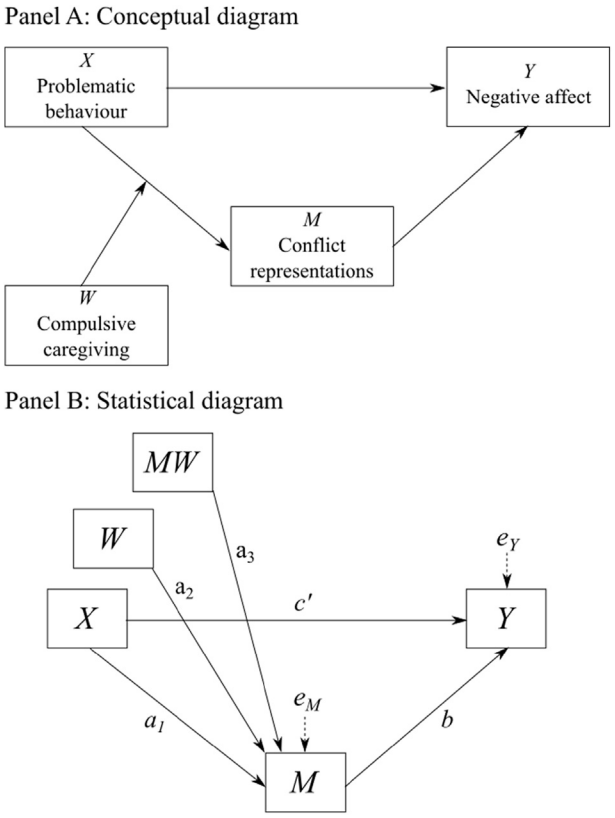

Fig. 5. Conceptual (Panel A) and Statistical (Panel B) diagrams of conditional indirect effect of perceived student problematic behaviour (*X*) on teachers' negative affect (*Y*) through conflict representations (*M*) moderated by compulsive caregiving (*W*). This is Model 7 from Hayes (2013).

second, negative affect was regressed on perceived student problematic behaviour (path *c'*) and conflict representations (path *b*). The coefficients of these regression analysis are shown in Table 6, Panel A. In the terminology of Fig. 5, the conditional indirect effect is expressed as $b(a_1 + a_3W)$. This conditional indirect effect was calculated with bias corrected 95% confidence intervals (from 10000 bootstrap samples) at chosen values of the moderator (mean, +/−1SD), shown in Table 6, Panel B. As compulsive caregiving increased, the conditional indirect effect of perceived student problematic behaviour on negative affect through conflict representations changed very little. A bias corrected 95% confidence interval of a_3b for this model contained zero as a value (−0.24 to 0.17), indicating that this mediation was not conditional on compulsive caregiving, contrary to H3.

In sum, at the 0.05 α level, the indirect effect of perceived student problematic behaviour on teacher negative affect through conflict representations was independent of compulsive caregiving. This attachment pattern did not appear to be an emotional risk factor in dyadic relationships.

4. Discussion

Spilt et al. (2011) proposed a model of teacher wellbeing in which problematic student behaviour leads to negative teacher emotions through the shaping of mental representations of conflict in the teacher-student relationship (TSR), which are incongruent with the close relationships that teachers seek to build with their students. Using a cross-sectional design, the present study tested predictions arising from this model, as well as extending it by examining whether a compulsive caregiving attachment style might facilitate the negative effects of conflictual teacher-student relationships on teacher wellbeing.

In support of H1, and the core process in the theoretical model, the effect of perceived student problematic behaviour on teachers' negative affective responses was fully mediated by teachers' mental representations of conflict in their relationship with that student. Due to the cross-sectional nature of this study, it is not possible to draw firm causal conclusions from this mediational model, but the results are consistent with the causal model proposed by Spilt et al. (2011).

In support of H2, representations of closeness had an ameliorative moderating effect on the mediation described in H1. Closeness appeared to mitigate against the problematic effects of

Table 6
Results of moderated mediation analysis (moderator: compulsive caregiving).

Panel A: Regression results				
Conflict representations regressed on:	B	SE	t	p
Constant	−0.47	3.03	-.15	.88
Student problematic behaviour (a_1)	1.01	0.84	1.21	.23
Compulsive caregiving (a_2)	0.27	0.90	0.30	.76
Interaction (problematic behaviour x compulsive caregiving; a_3)	−0.06	0.25	-.26	.79
$R^2 = 0.14$, $p < .001$				
Negative affect regressed on:	B	SE	t	p
Constant	0.15	0.36	0.42	.68
Student problematic behaviour (c')	0.18	0.11	1.59	.11
Conflict representations (b)	0.40	0.05	7.89	<.001
$R^2 = 0.27$, $p < .001$				

Panel B: Indirect effect of perceived problematic behaviour on negative affect through conflict representations conditioned at values of compulsive caregiving, with bias-corrected bootstrapped 95% confidence intervals (10000 bootstrap samples)

Compulsive caregiving		Indirect effect	Bias-corrected bootstrapped 95% confidence intervals	
			Lower	Upper
−1 SD	2.84	0.33	0.17	0.54
Mean	3.38	0.32	0.18	0.48
+1 SD	3.92	0.30	0.14	0.52

conflict. This finding is consistent with the assumption made by Spilt et al. (2011), that conflict is problematic insofar as it thwarts a teacher's goal of establishing close relationships with their students. It offers further support to previous findings that this is a central goal for school teachers (Schutz, 2001; Sikes et al., 1991).

With regard to the impact of a compulsive caregiving attachment pattern, contrary to H3, there was no indication that the indirect effect of perceived problematic behaviour on teachers' negative affective responses through conflict was exacerbated by compulsive caregiving. In other words, at the dyadic relationship level, this attachment pattern did not appear to confer any degree of vulnerability.

These findings highlight the TSR as an important context for understanding the negative emotional consequences of perceived problematic student behaviour and the particular role of teachers' internal mental representations of these relationships in mediating the effect of this context. Although previous studies have examined associations between student behaviour and teachers' emotions (Tsouloupas et al., 2010), student behaviour and TSRs (Doumen et al., 2008; Hamre et al., 2008), and TSRs and teacher wellbeing (Gastaldi et al., 2014; Grayson & Alvarez, 2008; Veldman et al., 2013), this is the first study to empirically test the interplay of all three components of the model proposed by Spilt et al. (2011). The broad sample of teachers with different levels of experience and training recruited in the present study mean that the findings may generalise to different populations of teachers including those in training and those with more experience, as well as in different levels of education (primary and secondary).

While previous research has explored the impact of conflict and closeness in the TSR separately (e.g., Hamre et al., 2008; Milatz et al., 2015), the current study is unique in examining the interaction between these dimensions of the TSR. The present findings are consistent with the notion that relational closeness is protective against the affective components of conflict with challenging students. This is consistent with existing work, for example, Milatz et al. (2015) found that emotional exhaustion was lowest when teachers reported relationships that were consistently close across *all* students in the class, including with the least attached students. However, because the present study only examined mental representations of closeness and conflict with one individual student in a teachers' class whose behaviour was identified as being challenging, it is possible that the pattern of findings may differ across different classroom relationships.

Interestingly, many participating teachers shared during the study debrief that their interactions with students were a primary source of job satisfaction (e.g., "it's the kids that keep me sane"), rather than stress. This pattern of findings echoes the results from a series of interviews conducted by Le Cornu (2013), that teachers are "both sustained by and drained by the relationships they developed with their students" (p.4).

In examining the role of a specific attachment internal working model in teacher wellbeing (compulsive caregiving), the present study goes beyond previous research, which has measured general attachment insecurity in teachers (e.g., Littman-Ovadia et al., 2013; Morris-Rothschild & Brassard, 2006). Levels of compulsive caregiving within this population of teachers reflected those observed in other groups of helping professionals.

Contrary to predictions, the current findings do not support the notion that a compulsive caregiving attachment pattern in teachers might confer a vulnerability to negative affective responses to student behaviour through mental representations of the student-teacher relationship. The lack of support for this finding may reflect a genuine lack of effect, an argument supported by a study by Constantino and Olesh (1999), who found that educators' attachment security did not predict the quality of their reciprocal interactions with specific children. Further, Milatz et al. (2015) reported that global attachment security was less important than closeness with a specific student in predicting teacher burnout.

Alternatively, the lack of support for H3 may be the result of methodological issues. Given the current sample size, the statistical power to detect a significant interaction of such small magnitude (see Table 6, Panel A) would be limited (Preacher et al., 2007). This problem may have been compounded by the moderate reliability of the compulsive caregiving measure (acknowledged also by Field & Sundin, 2001).

Another possible explanation for the lack of support for a role of compulsive caregiving in affecting the dynamics of dyadic TSRs is that attachment style may have systematically affected student selection in the present study. Silberman (1969) proposed a system of classifying students into four categories based on teachers' feelings towards that student: *Rejection* ("If your class was to be reduced by one child, whom would you be relieved to have

removed?" p. 403); *Attachment* ("If you could keep one student another year for the sheer joy of it, whom would you pick?" p. 403); *Indifference* ("If a parent were to drop in, unannounced, for a conference, whose child would you be least prepared to talk about?" p. 403); and *Concern* ("If you could devote all your attention to a child who concerns you a great deal, whom would you pick?" p. 403). Claessens et al. (2016) also identified distinct "student schemas" in teachers' descriptions of problematic teacher-student relationships. Teachers in the present study were instructed to identify a student who "often gets into trouble." It is conceivable that levels of compulsive caregiving may have biased teachers' selection of student, potentially masking important effects of this attachment pattern.

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

While the current findings provide support for the fostering of good quality relationships between teachers and students, they do not speak to the details of how this can be achieved. A range of interventions have been proposed for building teachers' skills in developing good quality classroom relationships, including 'Banking Time' (Driscoll & Pianta, 2010) and 'Playing-2-gether' (Vancraeyveldt et al., 2015), both of which focus on developing particular dyadic teacher-student relationships using child-led play and teacher-coaching; and the relationship focused reflection programme developed by Spilt et al. (2012), which encourages teachers to reflect on their normal interactions with particular children, while also providing interpersonal training. These programmes have all been developed and evaluated in preschool teachers. However, the fact that, in the present study, support was found for the model of Spilt et al. (2011) in both primary and secondary school teachers, it may be useful to develop and evaluate these interventions further for other populations of teachers.

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

Limitations. In addition to methodological issues discussed above, there are several further potential limitations to the present study that need to be evaluated. Firstly, as acknowledged above, the cross-sectional design means that firm causal conclusions about the interplay of student behaviour and teachers' internal mental representations of the TSR cannot be drawn. Further, the associations hypothesised by Spilt et al. (2011) are proposed to be reflexive, not linear. For instance, although teachers may respond with negative emotions to perceived student problematic behaviour, these negative emotions may equally provide a context which shapes future perceptions of student behaviour. Indeed, previous longitudinal research has not only established that perceptions of student behaviour causally precede the development of teachers' relational representations, this work has also demonstrated that these associations are reciprocal (Doumen et al., 2008). Although the mediational model tested in the present study is consistent with previous theoretical and empirical research, more work with alternative study designs needs to be done to examine both linear and reflexive causal associations proposed in the theoretical model.

The method of using self-report questionnaires to assess mental representations of the teacher-student relationship and broad patterns of attachment may also provide a second limitation. The use of a single assessment method, at a single time point, through a single informant, may have contributed bias to the findings. Further, it has been argued that semi-structured interviews, such as the Teacher Relationship Interview (Pianta, 1999), may provide a deeper understanding of caregivers' mental representations of their relationships with children (Maier et al., 2004). The choice to use the STRS self-report questionnaire here instead was a pragmatic one, intended to maximise participation to ensure a large enough sample size to test the moderated mediation hypotheses in this study. The measure of compulsive caregiving (the RAQ) can also be criticised for being focused on the respondent's significant other. This raises the possibility that teachers' responses were influenced by the attachment pattern of this other individual. However, this widely used measure has been validated in another sample of caregiving professionals (Leiper & Casares, 2000). The questionnaire developers (West & Sheldon-Keller, 1994) argue that one's interaction with a significant other is modelled on one's underlying broader model of attachment, a view that is widely held in the adult attachment literature (Howe, 2011).

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

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

A fifth limitation was the representativeness of the sample. Firstly, all participants were self-selecting, and volunteered to participate in a research project about teacher stress. This may have biased the sample towards those who had a particular interest in this area. However, the spread of scores on the WEMWBS (see

Table 2) would suggest that the sample included teachers with a wide range of stress levels. Secondly, all trainee teachers were identified through Teach First. It is possible that these trainees are different from trainees who choose to gain their qualified teacher status elsewhere (e.g., post-graduate certificate in education). Although recruitment for the current study aimed to produce a broad sample to increase generalisability, further work should aim to identify individual differences in teachers' experience of student relationships. Further, the high correlation between qualification status and the study variables (see Table 3) indicates possible systematic differences between trainee and qualified teachers. Although an ancillary analysis demonstrated that the core study hypothesis (H1) was supported in both trainee and qualified teachers, (see Note 2) a full exploration of this question was beyond the scope of the current study.

Future directions. To be more certain about the causal nature of the dynamics discussed in the present study, future work would helpfully include studies specifically designed to address causal hypotheses, such as longitudinal (e.g., Doumen et al., 2008) or experience sampling (e.g., Keller et al., 2014) methodologies. Further, examining mental representations of the relationship from both teacher and student perspectives may shed further light on the emergence of dyadic teacher-student relationships (see Koomen & Jellesma, 2015; Zee & Koomen, 2017). Although these approaches are more time- and resource-consuming and often necessitate smaller sample sizes as a result, the additional explanatory power that such designs afford is invaluable. If future studies using these alternative designs and methods are consistent with the present findings, a logical next step would be to evaluate whether relational training and reflective practice interventions (discussed above) are beneficial for the wellbeing of school teachers.

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

5. Conclusion

In summary, teachers' mental representations of their dyadic relationships with students had a significant role in mediating teachers' negative affective responses to perceived student problematic behaviour. There was no support for the idea that broader relational representations, specifically a compulsive caregiving attachment pattern, were an emotional vulnerability factor in dyadic relationships. These findings are consistent with the relational model of teacher wellbeing proposed by Spilt et al. (2011) and argue for the implementation of reflective practice focusing on teacher-student relationships in the training of teachers.

Conflict of interest declaration

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

We confirm that the manuscript has been read and approved by all named authors and that there are no other persons who satisfied the criteria for authorship but are not listed. We further confirm that the order of authors listed in the manuscript has been approved by all of us.

We confirm that we have given due consideration to the protection of intellectual property associated with this work and that there are no impediments to publication, including the timing of publication, with respect to intellectual property. In so doing we confirm that we have followed the regulations of our institutions concerning intellectual property.

We further confirm that any aspect of the work covered in this manuscript that has involved either experimental animals or human patients has been conducted with the ethical approval of all relevant bodies and that such approvals are acknowledged within the manuscript.

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