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A systematic review of the teacher expectation literature over the past 30 years

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ABSTRACT

This review aimed to illustrate the development in the teacher expectation literature and discuss the major avenues of research in the teacher expectation field from 1989 to 2018. Four analytical themes emerged from a narrative synthesis based on a systematic literature search: (1) influential factors on teacher expectations; (2) mediation mechanism of teacher expectations; (3) moderating factors of teacher expectation effects; (4) teacher expectation effects on student socio-psychological, behavioural, and achievement outcomes. On the whole, most studies confirmed earlier research findings regarding the 4 themes, although there were some studies that found results contradicting earlier work. In addition, new research topics and directions raised in the past 3 decades were identified in this review, especially regarding the mediation of teacher expectations and the socio-psychological and behavioural outcomes of the expectation effects. The review concludes with a set of recommendations for future research directions on teacher expectations.

Introduction

Having survived the criticisms and controversies that surrounded the original *Pygmalion in the Classroom* study (Rosenthal & Jacobson, 1968), the teacher expectation field is now an important and flourishing research area within educational psychology. The term "teacher expectations", according to Good and Brophy (1997), refers to the "inferences that teachers make about the present and future academic achievement and general classroom behaviour of their students" (p. 79). Teachers generally form expectations for their individual students, particular groups of students, and also for their class as a whole (Brophy, 1983).

In the first 20 years after Pygmalion, empirical studies established some understandings about teacher expectation effects. The evidence typically suggested that teachers generally predicted students' ability and performance based on students' previous academic achievement (Hoge & Coladarci, 1989). However, in addition to prior performance, several studies showed that expectations could also be affected by other factors such as information about students' socioeconomic status (SES), ethnicity, gender, physical appearance, and other personal characteristics of students (see e.g., Dusek & Joseph,

1983, for an early meta-analysis on the student characteristics that teachers used to form their expectations).

Another fruitful area for the earlier teacher expectation research related to ways in which teachers interacted with students when they had high expectations for some students and low expectations for others. Once teacher expectations were formed, teachers then interacted with students in particular ways that aligned with their expectations (e.g., Brophy & Good, 1970). Teachers' differential expectations were transmitted to students through differential teacher behaviours, teacher–student interaction patterns, and variations in the learning opportunities provided for students (e.g., Brophy, 1983; Rosenthal, 1974). Moreover, studies provided evidence for students' sophistication in observing and appraising teachers' differential behaviours towards high- and low-achieving students (e.g., Weinstein, Marshall, Sharp, & Botkin, 1987). This early knowledge and understandings about teacher expectations provided a solid foundation for later research to build on (see a review of the first 20 years by Good, Sterzinger, & Lavigne, in this special issue).

In this current paper, our aim was to provide the first systematic review for several decades, synthesising the vast body of research on teacher expectations that has been conducted in the last 30 years (1989–2018). The paper aimed to illustrate how the teacher expectation literature has developed from 1989 and to discuss the major issues and research directions in the field. This synthesis of knowledge was intended to enable readers to develop a clear understanding of the current state of knowledge within the field of teacher expectation research. Specifically, this review aimed to seek answers to the following questions: Is there any new evidence to support the research findings from the first 20 years? Are there different findings which would challenge early understandings? Are there any new research trends and research foci which were not explored in the earlier research? What remains unclear and should be avenues of future research?

The following section describes the review methodology, including the literature search strategy, literature selection criteria, and analysis procedures. This is followed by the results section, which consists of four analytical themes that emerged from a thematic synthesis of the studies that were reviewed. Major research findings, existing research gaps, as well as future research directions will be discussed for each theme.

Method

Search strategy and selection procedure

The question that directed the literature search and analysis was as follows: What are the main research foci and findings from the empirical quantitative teacher expectation research over the past 30 years? To provide an overview concerning the major areas of teacher expectation research from 1989, a systematic literature search was conducted to identify all relevant publications. Two databases (PsycINFO and ERIC) were systematically searched using the same adapted index terms. These two databases were selected because they are the major databases for locating work in educational psychology. The search terms that were used in both databases were as follows: "teacher* expectation*" OR "teacher* expectanc*" OR ("teacher* judg*ment*" AND (student* achievement* OR student* performance* OR student* outcome* OR student* abilit* OR student*

attainment*)) OR ("teacher* perception*" AND (student* achievement* OR student* performance* OR student* outcome* OR student* abilit* OR student* attainment*)) OR ("teacher* belief*" AND (student* achievement* OR student* performance* OR student* outcome* OR student* abilit* OR student* attainment*)).

Using quotation marks helped to make sure that the search was conducted with the exact phrases rather than with the two separate words, and the asterisks were used as wildcard symbols in order to retrieve variations of a term (e.g., teacher* would find teacher, teachers, teacher's, teachers', etc.). These terms were searched for in the abstract field of the two databases. Filters were set to only include peer-reviewed journals, books, or book chapters written in English and published after 31 December 1988. Filtering to only include peer-reviewed journals, books, or book chapters helped to ensure the quality of the publications in the search result. However, it is important to bear in mind that there are potential file drawer effects (publication bias) which may affect the results of the systematic review because of the exclusion of grey literature.

The initial literature search identified 1,647 publications. These articles were exported, and duplicate records were removed. The titles and abstracts of the remaining articles were then evaluated against the following inclusion and exclusion criteria (Stage 1 selection).

Inclusion criteria:

(1) Teachers' academic expectations, which included teachers' expectations/perceptions/ judgements of students with regard to their academic ability, performance, or future achievement;
(2) Empirical quantitative studies. Quantitative studies were included for a number of reasons. First, most work in the teacher expectation field has involved quantitative research. Second, the important advances in the field have resulted from empirical quantitative investigations rather than from qualitative studies. Finally, because this review covered a wide range of years (30), there were potentially hundreds of studies that could have been included. Hence, pragmatics also dictated that the focus was on quantitative studies.

Exclusion criteria:

(1) Teachers' expectations/perceptions/judgements/beliefs about student factors other than academic ability or achievement (non-academic expectations); for example, teacher expectations about particular student behaviours, characteristics, social skills, social-emotional competence, mental health, and teacher–student relationships (note that studies that focussed on teachers' academic expectations but investigated non-academic student outcomes that resulted from expectations about academic performance were included);
(2) Teacher expectations/perceptions/beliefs of the role of a teacher within the profession (e.g., associate teachers' perceptions of their roles during practicum; preservice teachers' expectations for science teaching roles);
(3) Teacher expectations/perceptions/judgements/beliefs about themselves (e.g., teacher self-efficacy beliefs, teachers' ability, competence, effectiveness, knowledge, skills) or other school personnel (e.g., principal);

(4) Teacher expectations/perceptions of school or classroom factors (e.g., classroom size, class climate, or school environment);
(5) Teacher expectations/perceptions/judgements/beliefs about teaching and learning (strategies/skills), pedagogy, professional development, interventions, technology integration, programmes, projects, curriculum, homework, or tests;
(6) Teachers' specific expectations of student use of certain skills/strategies, or expectations about the outcome of a one-off, specific learning activity (e.g., teachers' beliefs about creativity and student creative outcomes; teachers' expectations of their students' knowledge and use of certain reading skills);
(7) Accuracy or inaccuracy (validity) of teacher judgements/perceptions as an evaluation tool compared with other measurement methods (e.g., standardised tests), unless the article also discussed how and why teacher judgements were biased;
(8) Using various methods/techniques to assist teacher judgement in order to increase accuracy.

Of the remaining 257 citations, full texts were retrieved and were read in full. This resulted in further exclusions based on both Stage 1 and the following Stage 2 criteria (Stage 2 selection):

(1) Full text was not available.
(2) Studies were of low quality. This included studies that did not have a methodology and/or a results section.
(3) Teacher expectation data were measured together with other factors using one measurement tool, for example, teacher expectations and responsiveness to developmental needs, teacher expectations and encouragement, peer and teacher expectations.

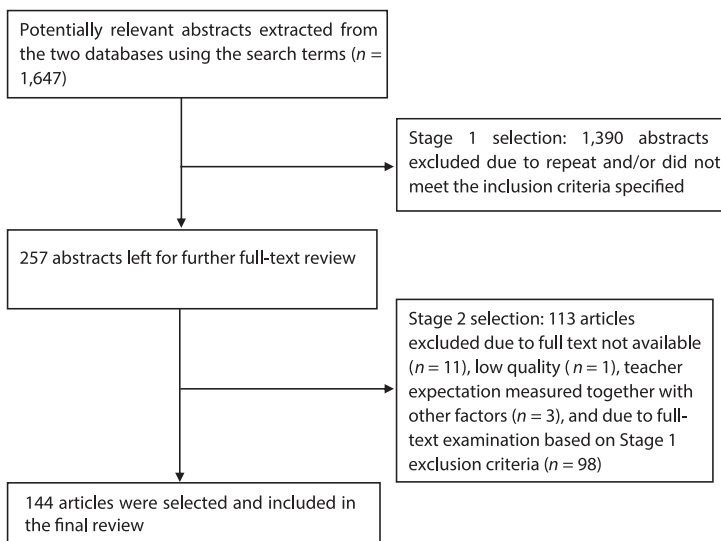The entire process of the literature search is shown in Figure 1.

Figure 1. Flow chart of the literature selection process.

Coding procedure and identifying emerging themes

Following the Stage 2 selection, 144 studies met all the criteria and were included in the data analysis procedure. Figure 2 shows how these 144 studies were distributed over the past 30 years on a 5-year basis. For the purpose of data analysis, thematic synthesis was used to analyse the selected publications with the aim of identifying potential themes that would capture the different aspects and major lines of research since 1989 (Thomas & Harden, 2008). The full texts of the 144 studies were read through again, with the following research question guiding the reading process: What aspect(s) of teacher expectation knowledge was/were focussed on and explored in the study? The process was undertaken using the Mendeley software (a free open-source tool available at http://mendeley.com). While reading the various publications, notes were taken in the software about the foci of each study, which were used later as codes and to develop descriptive themes.

As a result of grouping similar codes, the following 11 preliminary descriptive themes were identified: (1) student gender and teacher expectations, (2) student ethnicity and teacher expectations, (3) student socioeconomic status and teacher expectations, (4) teacher expectations for students with learning disabilities (LD), (5) other factors influencing the formation of teacher expectations, (6) mediation mechanisms of teacher expectations, (7) moderators of teacher expectation effects, (8) teacher expectation effects on student behaviours, (9) teacher expectation effects on student socio-psychological outcomes, (10) teacher expectation effects on student achievement, (11) teacher expectation intervention studies.

On the basis of their content, the 144 studies were then allocated to different themes. There were some overlaps across the themes because some studies included aspects related to more than one identified theme. For example, Speybroeck et al.'s (2012) study investigated the mediating role of teacher expectations between student SES and their achievement outcomes. It also explored the moderation effect of student ethnicity on the mediation effects of teacher expectations on student outcomes. Therefore, this
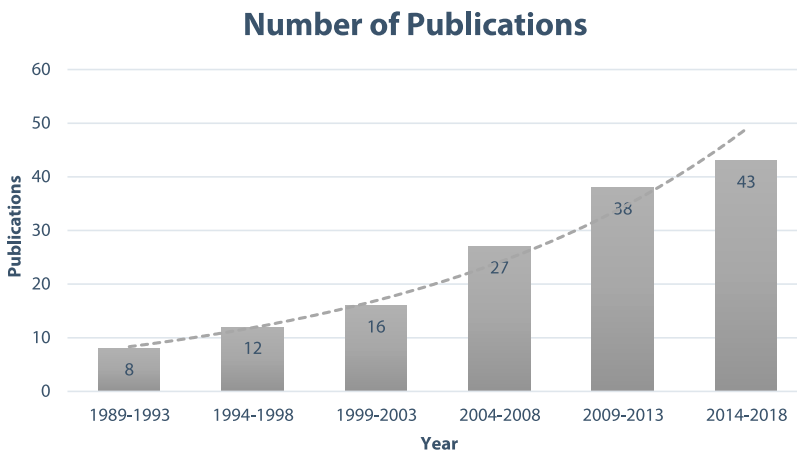

Figure 2. Number of empirical quantitative publications on teacher expectations for student academic performance in every 5-year period from 1989 to current (May 2018).

study was allocated to more than one descriptive theme. There were only two studies which could not be allocated to any theme. One of these studies explored student-perceived differential teacher treatment and grade level as a moderator of the stability of teacher expectation bias (Kuklinski & Weinstein, 2000). The other one provided a cognitive-ecological approach to understanding possible causes of teacher judgement biases (Fiedler, Walther, Freytag, & Plessner, 2002). Given that this review aimed to describe the major lines of research in the literature, the studies that could not be allocated to one of the identified descriptive themes were excluded from the synthesis process. Thus, a total of 142 studies were allocated to the 11 themes. A second coder was employed to randomly choose and code 20% of the studies ($n = 29$) in order to check the coding reliability. The results showed high intercoder reliability (agreement percentage: 97.4%). The only coding difference was for one article which was allocated to two themes by the second coder but was previously allocated to three themes (including the same two themes and another theme) by the first author. This difference was discussed with the second coder, and consensus was reached following discussion.

Thereafter, the 11 descriptive themes were summarised and combined to generate analytical themes. Those concerning how factors influenced the formation of teacher expectations were combined together (e.g., themes on student characteristics such as gender, ethnicity, SES, and LD status) to form a new theme – influential factors on the formation of teacher expectations. In addition, those that explored the outcomes of teacher expectation effects were combined together to include themes on teacher expectation effects on student academic achievement, school/learning behaviours, as well as socio-psychological outcomes. Since most intervention studies were based on research investigating the moderation effects of teacher beliefs (i.e., teachers' beliefs about their roles and their underlying theories about teaching and learning) and characteristics (i.e., different features or qualities of teachers), the intervention studies were combined together with the moderation studies. Hence, four final analytical themes emerged: (1) influential factors on the formation of teacher expectations; (2) mediation mechanisms of teacher expectations; (3) moderating factors of teacher expectation effects; (4) teacher expectation effects on student socio-psychological, behavioural, and achievement outcomes. Figure 3 shows the distribution of the 142 studies among the four analytical themes. The following section of this article will discuss the review findings in relation to each of the four themes. In addition, an overview of all the reviewed studies can be found in Appendices 1, 2, 3, and 4 (one appendix for each theme).

Results and discussion

Analytical Theme 1: influential factors on the formation of teacher expectations

Student-related factors

It has been stated that teachers make use of information related to individual students' characteristics in forming their expectations (Rubie-Davies, 2006). A large body of research has explored the nature of the information that influences the formation of teacher expectations. Before the 1990s, these studies mainly focussed on student demographic information such as students' ethnicity, gender, socioeconomic status, and other personal characteristics of students. From the 1990s onward, researchers continued to investigate
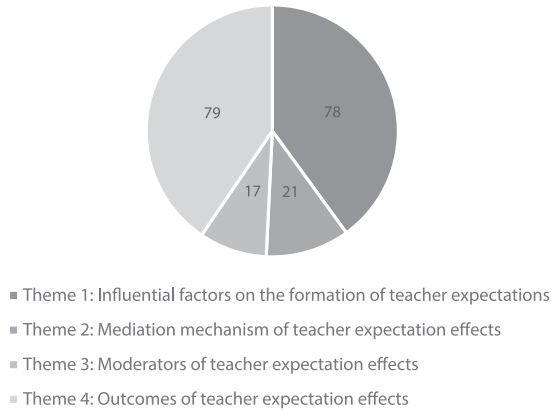
Number of Publications by Analytical Theme

- Theme 1: Influential factors on the formation of teacher expectations
- Theme 2: Mediation mechanism of teacher expectation effects
- Theme 3: Moderators of teacher expectation effects
- Theme 4: Outcomes of teacher expectation effects

Figure 3. Number of empirical quantitative publications on teacher expectations for student academic performance from 1989 to current (May 2018) by analytical theme.

these student characteristics in order to see whether or not similar biases could be found in new contexts or with other groups of students (see Appendix 1). For instance, studies have been conducted exploring the relationships between teacher expectations and student ethnicity. Most of these studies have demonstrated that negative achievement stereotypes and lower teacher expectations exist for African American and Latino students in the US (e.g., Hughes, Gleason, & Zhang, 2005; McKown & Weinstein, 2008; Ready & Wright, 2011; Shepherd, 2011), for aboriginal students in Canada (e.g., Corenblum, Annis, & Tanaka, 1997; Fitzpatrick, Côté-Lussier, & Blair, 2016; Riley & Ungerleider, 2008), for Māori and Pacific Island students in New Zealand (e.g., Meissel, Meyer, Yao, & Rubie-Davies, 2017; Rubie-Davies, Hattie, & Hamilton, 2006; Turner, Rubie-Davies, & Webber, 2015), and for students with immigration backgrounds in Europe (e.g., Holder & Kessels, 2017; Tobisch & Dresel, 2017; Van den Bergh, Denessen, Hornstra, Voeten, & Holland, 2010). There were also a smaller number of studies, however, which showed inconsistent evidence from the above-reported findings. In the US context, for instance, some studies found that the relations between student ethnicity and teacher expectations were not statistically significant (e.g., Hinnant, O'Brien, & Ghazarian, 2009; Minor, 2014; Muller, 1997; Paino & Renzulli, 2013). Findings from a few other studies in the European and New Zealand contexts also suggested that students from minority ethnic backgrounds were not underestimated by their teachers (e.g., De Boer, Bosker, & Van der Werf, 2010; Glock & Krolak-Schwerdt, 2014; Kaiser, Südkamp, & Möller, 2017; Rubie-Davies & Peterson, 2016).

Additional evidence has shown gender bias in teachers' expectations (e.g., Y.-H. Chen, Thompson, Kromrey, & Chang, 2011; De Boer et al., 2010; Hinnant et al., 2009; Holder & Kessels, 2017; Hornstra, Denessen, Bakker, Van den Bergh, & Voeten, 2010; Jussim, 1989; Kelly & Carbonaro, 2012; Lazarides & Watt, 2015; Meissel et al., 2017; Minor, 2014; Mizala, Martínez, & Martínez, 2015; Muller, 1997; Plewis, 1997; Ready & Wright, 2011; Riegle-Crumb & Humphries, 2012; Rubie-Davies & Peterson, 2016; Tiedemann, 2000, 2002; Timmermans, Kuyper, & Van der Werf, 2015; Van Matre, Valentine, & Cooper,

2000; Wood, Kaplan, & McLoyd, 2007). In general, these studies have provided some evidence that teachers tend to have higher expectations for girls in literacy (e.g., Hinnant et al., 2009; Hornstra et al., 2010; Meissel et al., 2017; Ready & Wright, 2011) and for boys in mathematics (e.g., Holder & Kessels, 2017; Lazarides & Watt, 2015; Riegle-Crumb & Humphries, 2012; Rubie-Davies & Peterson, 2016; Tiedemann, 2000, 2002). With regard to the studies which focussed on general academic outcomes (i.e., not subject specific), there was a tendency for teachers to hold higher expectations for girls than for boys (e.g., Y.-H. Chen et al., 2011; De Boer et al., 2010; Timmermans, De Boer, & Van der Werf, 2016; Timmermans et al., 2015; Van Matre et al., 2000; Wood et al., 2007). However, there have also been a number of studies which have not found gender effects in the formation of teacher expectations (e.g., Auwarter & Aruguete, 2008; Chalabaev, Sarrazin, Trouilloud, & Jussim, 2009; Fitzpatrick et al., 2016; Hinnant et al., 2009; Kaiser et al., 2017; Ready & Chu, 2015; Riley & Ungerleider, 2008; Soland, 2013; Tyler & Boelter, 2008; Van den Bergh et al., 2010; Van Houtte, Demanet, & Stevens, 2013). Hence, the evidence about whether or not teachers are biased in relation to gender is currently inconclusive.

With respect to the effects of student socioeconomic status, most studies have confirmed that teachers tend to hold lower expectations for low-SES students than for middle- or high-SES students (e.g., Auwarter & Aruguete, 2008; Childs & McKay, 1997; De Boer et al., 2010; Fitzpatrick et al., 2016; Kelly & Carbonaro, 2012; Minor, 2014; Muller, 1997; Plewis, 1997; Ready & Chu, 2015; Ready & Wright, 2011; Robinson, 1994; Speybroeck et al., 2012; Timmermans et al., 2015; Tobisch & Dresel, 2017; Van den Bergh et al., 2010; Van Houtte et al., 2013; Van Matre et al., 2000; Wilson & Martinussen, 1999). Only three exceptions were identified which showed a non-significant effect of student SES on teacher expectations (Glock & Krolak-Schwerdt, 2014; Paino & Renzulli, 2013; Wood et al., 2007).

The studies related to student ethnicity, gender, and social class have provided further evidence for potential influential factors on the formation of teacher expectations. Overall, relatively consistent evidence has indicated an association between low student SES and low teacher expectations. Some evidence has shown that teachers tended to hold lower expectations for ethnic minority groups in general, for boys in reading, and for girls in mathematics. However, the evidence of relations between student gender and ethnicity with teacher expectations appears to be less consistent with some studies finding effects and other studies not reporting differences by gender or ethnicity.

A few new research foci arose after the 1990s in relation to student characteristics that can influence teacher expectations. One of these was related to teacher expectations for students with learning disabilities (e.g., Hornstra et al., 2010; Hurwitz, Elliott, & Braden, 2007; Jenkins & Demaray, 2016; Montague & Rinaldi, 2001; Overby, Carrell, & Bernthal, 2007; Whitley, 2010; Woodcock & Vialle, 2011). Most of these studies have compared teachers' expectations for students with and without learning disabilities. Montague and Rinaldi's (2001) study, for instance, showed that Grades 2 and 3 students who were identified as at risk for learning or as having emotional and behavioural disorders perceived negative expectations from their teachers compared with not-at-risk students. Overby et al. (2007) examined teachers' perceptions of the academic, social, and behavioural competence of students with speech sound disorders (SSDs) and found that teachers' expectations were statistically significantly different between moderately intelligible students

(i.e., students with SSDs) and normally intelligible students (i.e., students with typically developing speech). Using student vignettes, Woodcock and Vialle's (2011) study showed that preservice teachers held a negative attribution style towards students with LD. Compared to students without LD, teachers perceived students with LD as lacking ability, and their expectations of the likelihood of the students' future failure were significantly increased by knowledge of the student's LD status. In addition, Jenkins and Demaray's (2016) study showed that teachers overestimated reading and mathematics performance for both student groups with and without LD. However, teachers overestimated student mathematics performance significantly more for students without LD than for students with LD. Furthermore, Whitley (2010) found that teachers held lower expectations for the long-term educational achievement of students with identified LD compared with students without LD. These studies have demonstrated that teachers tend to hold lower expectations for students with LD compared to their counterparts without LD.

Apart from the student demographic characteristics aforementioned (ethnicity, gender, SES, and LD status), some other student characteristics have also been explored during the past 3 decades. Some researchers have explored possible links between student socio-psychological characteristics and how these appear to influence the level of teacher expectations. For instance, Chalabaev et al. (2009) suggested that teacher expectations were positively related to student-perceived competence and self-determined motivation in gymnastics. Timmermans et al. (2016) found a statistically significantly positive correlation between teacher perceptions of student self-confidence and teacher expectations. De Boer et al.'s (2010) study showed that teacher expectations were more positive for students with lower achievement motivation. In addition, student classroom behaviours and engagement is another factor that has been studied as possibly influencing teacher expectations. Kaiser, Retelsdorf, Südkamp, and Möller's (2013) path analysis showed that student reading engagement was positively related to teacher judgements of student achievement. In the same vein, Fitzpatrick et al. (2016) found that teacher ratings of student classroom engagement positively predicted teacher expectations of student success in mathematics, reading, and spelling. Similarly, Van Houtte et al.'s (2013) study also showed that students' study involvement was positively related to teachers' perceptions of student cognitive capacity. In contrast, Timmermans et al. (2016) found that, whereas teacher perceptions of students' work habits positively predicted teacher expectations, after controlling for student performance and demographic characteristics, perceived student social behaviours were found to be negatively associated with teacher expectations.

Compared to studies before the 1990s, which mainly focussed on student demographic characteristics as a basis of potentially biased teacher expectations, studies in the past 30 years have begun to explore influential factors with regard to other student factors. These studies have demonstrated that the formation of teacher expectations is a complex process and that teacher expectations can be influenced not only by student demographic characteristics but also by other socio-psychological characteristics of students, as well as their classroom behaviours and engagement. This complex picture may be even more complicated as researchers have shown that the level of teacher expectations can be influenced by not only student factors but also teacher and contextual factors.

Teacher-, class-, and school-related factors

The area of teacher factors as influencing their expectations is vastly under-researched compared to student factors as potential sources of expectations. Only 10 studies could be identified that met the criteria of being related to teacher factors, and two of them explored the effects of teachers' implicit attitudes on their expectations. Hornstra et al.'s (2010) study of the effects of implicit negative teacher attitudes towards dyslexia on teacher expectations of student writing achievement showed a non-significant result. Another study by Van den Bergh et al. (2010), however, found that the interactions between teacher prejudiced ethnic attitudes and student ethnicity significantly and negatively predicted teacher expectations. Teaching experience was another factor that had been studied as potentially influencing teacher expectations. Among the four studies located that examined the associations between teaching experience and teacher expectations, two found significantly negative associations (i.e., teachers with more years of teaching experience had lower expectations; Riegle-Crumb & Humphries, 2012; Whitley, 2010), whereas the other two showed non-significant results (Agirdag, Van Avermaet, & Van Houtte, 2013; Rubie-Davies, Flint, & McDonald, 2012). Hence, the current evidence does not suggest a positive association between teaching experience and teacher expectations.

As for contextual factors, studies have shown that teacher expectations can be affected by school academic achievement level, school-level SES, and school ethnicity composition. Ready and Wright (2011) explored the possible influences of student background and classroom context on teacher expectations. Results from hierarchical linear modelling analyses suggested that class average achievement significantly and positively predicted teacher expectations of students' literacy skills. Teachers in higher achieving classrooms tended to have higher expectations for their students. Agirdag et al. (2013) investigated factors that affected teachers' perceptions of student teachability and found that student previous academic achievement was significantly related to teachers' teachability expectations. Teachers in schools that had a higher proportion of students who had experienced grade retention perceived their students to be less teachable. Brault, Janosz, and Archambault's (2014) study reached a similar conclusion: The school academic composition (percentage of students with academic difficulties) was negatively associated with teacher expectations. School type was also found to be an influential factor on teacher expectations (Van Houtte et al., 2013). Students in technical or vocational education were perceived to be significantly less capable than students in academic education. In addition, Al-Fadhli and Singh's (2006) study revealed that teachers in high-achieving schools tended to base their expectations on student ability, whereas teachers in low-achieving schools based their expectations on student characteristics (appearance, conduct, parent education level, and parental support).

With regard to school SES and ethnic composition, Agirdag et al.'s (2013) study provided evidence that both school SES and ethnic composition were associated with teacher expectations. Teachers in schools with a higher share of working-class students and a higher share of non-native students were found to hold lower expectations. Brault et al.'s (2014) study also showed that school SES (percentage of students coming from a disadvantaged SES family background) and ethnic composition (percentage of ethnic minority students) significantly and negatively predicted teacher expectations. Other studies have also reported similar findings (e.g., Matsuoka, 2014; Thys & Van

Houtte, 2016; Timmermans et al., 2015), whereas a few have shown non-significant results (e.g., Rubie-Davies et al., 2012) or opposing results (e.g., Paino & Renzulli, 2013). Overall, however, it appears that school factors could exert an influence on teachers' expectations.

Other factors

In addition to student, teacher, and contextual factors, there have been studies exploring other possible influential factors on the formation of teacher expectations. Studies have investigated how teacher–student relationships are related to the level of teacher expectations. Some of these studies have shown that teacher–student relationship quality is positively related to teacher expectations for students (De Koning & Boekaerts, 2005; Fowler, Banks, Anhalt, Der, & Kalis, 2008; Hughes et al., 2005). However, Timmermans et al. (2016) showed that the association between teacher expectations and teacher–student relationships became non-significant when factors like student achievement, gender, SES, self-confidence, and work habits were taken into consideration.

Another research focus investigating potential influential factors associated with the formation of teacher expectations has been on the match/mismatch of teacher–student characteristics (e.g., gender, cognitive style, ethnicity, SES, urbanicity, and personality). Page and Rosenthal's (1990) experimental study, for example, showed that for Asian students having a teacher of the opposite gender generated higher performance score ratings. Similar results were found by Kelly and Carbonaro (2012), who showed that a gender match between students and teachers was negatively associated with teacher expectations. Their study also suggested that an ethnicity match between Black teachers and students positively predicted teacher expectations. However, this positive association did not apply to Hispanic or White teachers and students. Moreover, Doyle (2014) suggested that teacher–student SES match was a significant predictor of teacher expectations. Saracho (1991) found that teachers tended to underestimate students whose cognitive style (field dependent/field independent) did not match their own. Further, student and teacher personality similarity was also found to have a significant effect on teacher expectations (Rausch, Karing, Dörfler, & Artelt, 2016). Students whose personality was similar to that of their teacher's were judged more positively than those whose personalities were dissimilar to their teacher's. All the above studies analysed data by comparing teacher and student characteristics and examining differences in teacher expectations related to the relevant characteristics. However, this is a relatively nascent area of research in the field. An interesting future research direction could be to examine teachers' perceptions of the mismatch, that is, whether, for example, male teachers actually perceive that girls and boys differ in their achievement more so than do female teachers.

Conclusion Theme 1

Research over the past 30 years has shown that the expectations that teachers hold for their students can be affected by student demographic and socio-psychological characteristics, student classroom behaviours and engagement, teacher attitudes, class and school contextual factors, as well as relationship and interaction factors between teacher and students. Relatively strong and consistent evidence has been obtained indicating that teachers typically hold lower expectations for low-SES students and for students with LD. Although with some inconsistent evidence identified, the majority of the studies reviewed have found ethnicity and/or gender bias in teachers' expectations. However, when

measuring the relations between teacher expectations and student-related factors, nearly 30% of the existing studies did not have actual student achievement controlled (see Appendix 1). Without student achievement being considered, it is difficult to establish whether the low expectations that teachers hold for a particular group represent teachers' biased expectations or a real reflection based on manifested student achievement. In order to make rigorous conclusions about the potential factors that influence teacher expectations, future research on the correlates of teacher expectations should have student actual performance considered or controlled.

Among these influential factors, although student characteristics have been amply studied, research on teacher, contextual, and relationship factors has been relatively limited. More evidence is still needed in order to draw more solid conclusions about these additional factors that may influence the formation of teacher expectations, to generalise the results, or to make use of the findings to inform teaching and learning practice.

Analytical Theme 2: mediating mechanisms of teacher expectations

After teacher expectations are formed, they must be transmitted to students in some ways in order to function as self-fulfilling or self-maintaining effects. Self-fulling effects are those where teacher expectations cause students to achieve at higher or lower levels than previous attainment would indicate. Self-maintaining effects, on the other hand, are those where teachers maintain their original expectations despite contradictory evidence that students have improved/declined, which serves to maintain student performance at previous levels.

The second theme focussed on how teacher expectations could be transmitted or mediated to students (see Appendix 2). Existing studies over the past 30 years have addressed this issue in three main ways, which could be depicted by the paths shown in Figure 4. Those studies focusing on Path A-B explored teachers' differential classroom behaviours based on their differential expectations. Studies of Path B-C looked at student perceptions of differential teacher behaviours and treatment. Studies of Path C (A)-D-E investigated how teacher expectations influenced student socio-psychological factors which mediated the teacher expectation effects on student achievement. The following sections of Theme 2 have been structured in relation to these three dimensions.

Transmission Path A-B: teachers' differential behaviours based on expectations

Numerous mediation studies were conducted following the Pygmalion study. Brophy and Good were the key initiators and most important representatives, profoundly influencing mediation studies for the next generation by starting a tradition of studying mechanisms through looking at interpersonal interactions within the classrooms (Weinstein, 2002). In
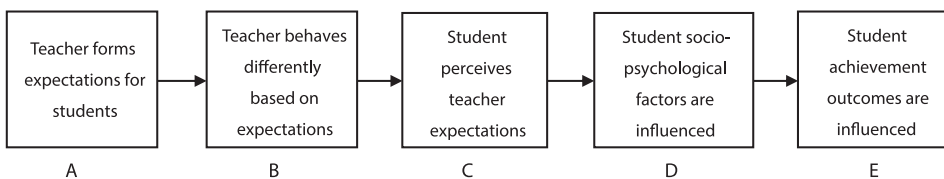

Figure 4. Flow chart of the mediation mechanism of teacher expectation effects.

the past 30 years, other researchers have followed this route and explored how teacher expectations are manifested and transmitted to students by way of differential teacher behaviours and classroom interaction patterns. As an example, Y.-H. Chen et al.'s (2011) study explored the relations between teacher expectation level and four types of oral feedback from teachers (positive academic, positive non-academic, negative academic, and negative non-academic). The results revealed that all four types of feedback differed significantly across the expectation groups. Students in the lower expectation groups tended to receive less positive and more negative oral feedback than did students in the higher expectation groups. In addition, Montague and Rinaldi (2001) found that the ways that teachers engaged and responded to at risk for LD and not-at-risk students were quite different. Teachers were found to have made significantly more non-academic and negative feedback to at-risk students, whereas non-at-risk students received significantly more academic feedback. Wanzek, Roberts, and Al Otaiba's (2014) study, however, found no association between teachers' perceptions of student academic competence and students' opportunities for academic responding in the classrooms. Ready and Chu (2015) looked at the relations between ability grouping and teacher expectations. Their study suggested that teachers tended to place their high-expectation students into more advanced reading groups. Further, based on classroom observations, Rubie-Davies' (2007) study of class-level teacher expectations revealed that high-expectation teachers (teachers who hold relatively high expectations for all their students), compared to low-expectation teachers, built a better framework for student learning, provided more feedback to students, asked more questions which required higher order thinking, and were more positive in their use of classroom management strategies. Overall, these studies suggest that teachers interact very differently with some students compared with others. It would seem very likely that students perceive these differential interactions and that the differential teacher behaviours are accompanied with differential learning opportunities for students.

Transmission Path B-C: student perceptions of teacher expectations through differential teacher behaviours and treatment

As shown in Figure 4, differential teacher behaviours and interaction patterns can exert an influence on student outcomes by affecting student socio-psychological factors and learning behaviours. For teacher expectations to function through this path, the expectations have to be interpreted by students. Babad and colleagues have conducted studies which provided evidence of students' sophistication in observing and appraising teachers' differential behaviours and emotions towards high- and low-achieving students (Babad, Bernieri, & Rosenthal, 1989a, 1991; Babad & Taylor, 1992). In Babad and Taylor's (1992) study, judges from New Zealand (ranging from 10-year-old students to experienced teachers) were asked to watch short video clips showing teachers talking about and talking to a high-expectation and a low-expectation student. Even though they could not understand the language in the clips (Hebrew), all groups of judges successfully detected teachers' high or low expectations in the "talking to student" clips. These studies have demonstrated that students get clues about their teachers' expectations of them not only through teachers' verbal but also their non-verbal behaviours. Once these expectations are conveyed to the students, students use the information to make inferences about their own intelligence and ability, which may in turn affect student

academic motivation and learning behaviours. Statistical models have been built with actual classroom data to test student perceptions of teacher expectations as a mediator of the effects of teacher expectations on school outcomes (Path A-C-E). The results of the study by Gill and Reynolds (1999), however, indicated that student perceptions of teacher expectations did not mediate the indirect teacher expectation effects on Grade 6 reading and mathematics outcomes. Yet, this was the only study identified which empirically investigated the mediating role of student perceptions of teacher expectations. More empirical evidence is needed to support the current findings.

Mediation Path C(A)-D-E: student socio-psychological factors as mediators of teacher expectation effects on student academic achievement

Teacher expectations may affect student learning outcomes by influencing student academic beliefs and motivation. Benner and Mistry (2007) explored the mediating role of student beliefs by examining the direct and indirect effects of teacher expectations on student academic outcomes through student self-expectations, self-concept of ability, expectations for success, and attainment values. The results indicated that these student beliefs partially mediated the expectation effects. The strongest indirect relationship was found to be mediated by student self-concept, and student self-expectation was shown to be another significant mediator. In addition, Gilbert et al. (2014) showed that the association between student-perceived teacher expectations and student mathematics SAT-10 (i.e., Stanford Achievement Test Series, 10th ed.) score was mediated by student mathematics self-efficacy. Similar results have also been found in other studies (Friedrich, Flunger, Nagengast, Jonkmann, & Trautwein, 2015; Kuklinski & Weinstein, 2001; Trouilloud, Sarrazin, Martinek, & Guillet, 2002).

Another motivational variable that has been studied as a mediator is student sense of academic futility. Agirdag et al.'s (2013) study indicated that teacher expectations had an indirect effect on students' mathematics achievement through student sense of academic futility. Moreover, it has also been shown that student sense of futility mediated the association between teacher expectations and student misconduct (Demanet & Van Houtte, 2012). Other socio-psychological factors acting as mediators of teacher expectation effects have included student academic motivation (Woolley, Strutchens, Gilbert, & Martin, 2010), locus of control (Prihadi, Hairul, & Hazri, 2012), and student attribution style (Zhou & Urhahne, 2013).

Conclusion Theme 2

Studies throughout the past 3 decades have, first, confirmed the findings from previous mediation studies in that teachers' differential expectations can be manifested and transmitted to students through teachers' differential behaviours. These behaviours include not only verbal but also non-verbal behaviours. Most of these differential behaviours have involved teacher–student classroom interactions and the feedback teachers gave to students. There has been no study identified in the time period which has tested the relations between teachers' differential behaviours and student achievement outcomes. Therefore, whether these differential teacher behaviours could function as a mediator and influence student outcomes remains unclear (A-B-E). Future studies could be conducted on this issue to extend our understanding about this mediation relationship. Second, studies have provided additional evidence that student perceptions of teacher expectations are aligned

with the actual teacher expectations. However, it seemed the number of studies on this topic was quite limited and the studies were rather old, with all having been conducted at the beginning of the 30-year period. It is still unclear whether or not student-perceived teacher expectations can function as a mediation variable for teacher expectation effects on student achievement outcomes, and whether students' awareness of teacher expectations or student perceptions that align with actual teacher expectations are necessary conditions for the expectation effects to take place. More studies are needed to examine the relations between teacher expectations and student perceptions of teacher expectations, and to explore the possible mediating role that student perceptions may play in expectation effects (A-C-E). Finally, student socio-psychological factors like self-concept, self-efficacy, and self-expectations have been found to mediate teacher expectation effects on student academic achievement. Given the complexity of the mediation process, no study could be identified which had looked at the entire mediating process of teacher expectation effects depicted in Figure 4. Future studies should be designed with the aim of covering the entire mediating process of teacher expectation effects.

Analytical Theme 3: moderators of teacher expectation effects

The expectations that teachers hold for their students could affect the ways that teachers behave and interact with their students and influence how and what they teach, which may in turn influence student learning and their outcomes. Yet, questions have been asked about whether all students are influenced similarly by teacher expectations, and whether all teachers create similar expectation effects among their students. Factors that possibly moderate the magnitude of teacher expectation effects would also be worthy of investigation. The third theme was focussed on studies exploring the factors that moderate teacher expectation effects (see Appendix 3). In this section, studies on student- and teacher-related moderators of teacher expectation effects will be discussed. This will be followed by a brief discussion of the intervention studies which have aimed to change potential negative teacher expectation effects.

Student-related moderating factors

Studies have shown that students' demographic characteristics may affect their susceptibility to teacher expectation effects. Jussim, Eccles, and Madon's (1996) study tested student gender, SES, and ethnicity as moderators of teacher expectation effects in the mathematics domain. Results showed that teacher expectation effects were more powerful among girls, students who were from a lower SES family background, and African American students. McKown and Weinstein (2002) examined whether stigmatised groups (African American students in general and girls in mathematics) were more susceptible to negative teacher expectation effects. Research findings confirmed their hypothesis and showed that student ethnicity moderated expectation effects in reading, and gender moderated the effects in mathematics. Students from stigmatised groups were found to be more susceptible to low teacher expectations. Similarly, Hinnant et al. (2009) showed that teacher expectations played a more significant role in student performance for students who were from marginalised groups, that is, students from low-SES families in mathematics and minority-group boys in reading. In addition, girls have been found to be more

susceptible to teacher expectation effects on their creativity (Karwowski, Gralewski, Szumski, & 2015) as well as reading motivation (Boerma, Mol, & Jolles, 2016). In contrast, the study by De Boer et al. (2010) found that neither student gender nor student ethnicity moderated the teacher expectation effects. Further evidence suggested that the magnitude of the teacher expectation effects may also link to student prior achievement level. The findings, however, have not been consistent. In two of three studies identified, teacher expectation effects were stronger for higher achieving students (De Boer et al., 2010; Pesu, Viljaranta, & Aunola, 2016), whereas in the other study, teacher expectation effects were stronger for lower achieving students (Liu & Wang, 2008).

Teacher beliefs and characteristics as moderators

Not all teachers are influenced by potentially biasing information to the same degree, and not all teachers treat high- and low-expectation students differently. Teachers' differential behaviours towards their students may depend on their expectations but can also be influenced by different teacher beliefs and characteristics. On the basis of his studies of teachers' different levels of susceptibility to biasing information, Babad (2009) initiated a teacher typology suggesting the existence of two extreme groups of teachers: high-biased teachers and no-bias teachers. High-biased teachers were those who showed high susceptibility to biasing information about students and reacted negatively towards low-expectation students, whereas no-bias teachers were those who were not susceptible to the biasing information and treated all students equitably. In the context-minimal studies (using short videotape clips of teacher behaviours rather than observing natural classrooms) that Babad and associates conducted (Babad, Bernieri, & Rosenthal, 1989a, 1989b), the leakage of non-verbal negative affect was only found for biased but not for no-bias teachers. In addition, teacher expectation effects, especially Golem effects (poor performance resulting from low or negative expectations), were only present in high-biased teachers' classrooms with no expectation effects found in no-bias teachers' classes (Babad, 1993).

Weinstein (2002) has created a similar teacher typology, but the classification of teacher types was based on students' perceptions of teachers' differential treatment. High-differentiation teachers were perceived by students as treating high-achieving students more positively, while treating low achievers more restrictively and negatively. Low-differentiation teachers, on the other hand, were not perceived as behaving differently towards high- and low-achieving students to the degree that high-differentiation teachers did. High-differentiation teachers believed that students should be given quite different instruction, learning tasks, and activities based on their ability levels, whereas low-differentiation teachers believed all students should be given similar learning opportunities. Using a path model, classroom perceived differential treatment (PDT) was examined as a moderator of teacher expectation effects on children's self-expectations and year-end achievement (Kuklinski & Weinstein, 2001). The results revealed that the direct effects of teacher expectations on Grade 3 students' ending achievement was stronger in high-PDT compared to low-PDT classrooms. Furthermore, McKown and Weinstein (2008) reported on the moderating role of perceived differential treatment on the relationship between student ethnicity and teacher expectations. The results showed that whereas teachers in low-PDT classrooms held similar expectations for students from all ethnic groups, in high-PDT classrooms, teacher expectations of European and Asian American students

were between .75 and 1.00 standard deviations higher than teacher expectations of Latino and African American students who had similar academic attainment. In addition, teacher expectation effects were found to have contributed an average of .29 standard deviations in the year-end ethnic achievement gap, whereas in the classes of low-differentiating teachers the contribution was a negligible .003.

On the basis of her studies of class-level teacher expectations, Rubie-Davies (2006, 2007) proposed a new typology of teachers related to the expectations that teachers held for all their students, as a whole. Teachers who held correspondingly high expectations for all their students were identified as high-expectation teachers, whereas teachers who held correspondingly low expectations for all their students were identified as low-expectation teachers. High-expectation teachers differed greatly from low-expectation teachers in their pedagogical beliefs, instructional practices, classroom interactions with students, and the socioemotional environment they created in classrooms (Rubie-Davies, 2007). The results of Rubie-Davies' studies showed that students with high-expectation teachers made much larger academic gains than did students who had low-expectation teachers (Li & Rubie-Davies, 2017; Rubie-Davies et al., 2006).

Intervention studies

An important outcome of identifying teacher beliefs and characteristics as potential moderators of teacher expectation effects has been some intervention studies (Gottfredson, Marciniak, Birdseye, & Gottfredson, 1995; Rubie-Davies, Peterson, Sibley, & Rosenthal, 2015; Timperley & Phillips, 2003; Weinstein et al., 1991; Weinstein & Worrell, 2016). By changing teachers' pedagogical beliefs and instructional practices, these studies aimed to reduce the potential negative effects of low expectations for students. Weinstein et al.'s (1991) study was a quasi-experimental study which aimed to raise teacher expectations and to motivate student engagement by changing the classroom and school environment for 158 at-risk Grade 9 students. Positive results were found after the intervention. Participant teachers became more positive about their students, and the intervention led to a change in school tracking policies. Moreover, compared to comparison students, students in the intervention group showed improved grades and increased retention in school a year later. However, these results were not sustained once students moved to non-intervention teachers in the following academic year. Gottfredson et al.'s (1995) study involved teachers using 15 classroom behaviours in their teaching practices. The results of this intervention were mixed and less successful. Grades 1, 2, and 3 students in the intervention group achieved better results than the control group in the same school, though the achievement differences were not statistically significant. Moreover, students in a second control group from a different school achieved significantly higher than students in the intervention group even after the baseline achievement was controlled. More recently, Rubie-Davies and colleagues (Rubie-Davies et al., 2015) designed a large-scale experimental study with the purpose of training teachers in high-expectation principles. In their study, 84 teachers, 43 in the intervention group, were given workshops on the beliefs and instructional practices of high-expectation teachers. Results of the study showed that the intervention significantly improved students' mathematics but not reading achievement.

Conclusion Theme 3

The moderation studies outlined above indicated that both student and teacher factors could moderate the magnitude of teacher expectation effects. Teachers who were more likely to be biased and who showed highly differential behaviours towards high- and low-achieving students exacerbated expectation effects. Students who were from marginalised groups were found to be more sensitive to expectation effects.

For over 40 years after Pygmalion, the vast majority of studies in the teacher expectation field have been essentially descriptive studies; that is, they have described the student characteristics associated with teacher expectations, described differential teacher–student interactions, and described student perceptions of teacher expectations. However, few studies have taken those findings and put them together to create an intervention designed to raise teachers' expectations and increase student achievement. These intervention studies, therefore, are important advances in the field and have provided implications on possible directions for future intervention research (refer to De Boer, Van der Werf, & Timmermans in this special issue for a more comprehensive review of the teacher expectation intervention studies).

Analytical Theme 4: teacher expectation effects on student outcomes

The final stage of the process of teacher expectation effects relates to possible outcomes for students (see Appendix 4). Studies of this theme have mainly focussed on three student outcome factors: student socio-psychological outcomes ($n = 29$), student behavioural outcomes ($n = 4$), and achievement outcomes ($n = 60$). Findings from each of the three outcome factors will be discussed in this section.

Socio-psychological outcomes

Empirical studies have been conducted to explore the possible influential relationships between teacher expectations and student socio-psychological factors, such as student self-efficacy perceptions, self-concept, self-expectations, and academic motivation. With regard to students' self-efficacy perceptions, Karwowski et al.'s (2015) study revealed that teachers' expectations of student creativity played a significant role in predicting students' creative self-efficacy a semester later. Furthermore, Bohlmann and Weinstein (2013) reported that students' self-perceptions of their mathematics ability were congruent with their teachers' expectations in high-differentiating classrooms. Other studies have also provided evidence for the positive associations between teacher expectations and student self-efficacy perceptions (e.g., P. P. Chen, 2006; Kuperminc, Darnell, & Alvarez-Jimenez, 2008; Tyler & Boelter, 2008; Vekiri, 2010).

Other studies have explored the relations between teacher expectations and student self-concept. Using latent growth curve models, Upadyaya and Eccles (2015) investigated whether teacher expectations predicted student self-concept of ability in reading and mathematics. Results revealed that teacher expectations predicted both students' concurrent and subsequent self-concept in these two academic domains, after students' achievement and general verbal intelligence were controlled for. Similar results were found in the Chinese foreign language learning context. With the same level of achievement, students who were underestimated by their teachers showed a lower self-concept in English learning (Zhu & Urhahne, 2015). Pesu et al. (2016) found positive associations between teacher

expectations and student self-concept of ability in reading and mathematics for high per-formers but not for low performers. By comparing the changes in the self-perceptions of students who were in classes with high-, average-, and low-expectation teachers across a year, Rubie-Davies (2006) found students' self-perceptions changed over the year in line with their teachers' expectations.

Regarding students' self-expectations, Haraoka's (1991) study in the Japanese context suggested that students who perceived high teacher expectations also had high expec-tations for themselves. Lazarides and Watt (2015) also found that perceived high math-ematics teacher expectations increased students' own success expectations. In addition, a study by Urhahne, Chao, Florineth, Luttenberger, and Paechter (2011) indicated that underestimated students showed lower expectations for success and lower academic self-concept, and experienced higher levels of test anxiety, even though they performed as well as the overestimated students. Zhou and Urhahne (2013) reached a similar con-clusion in both the German and Chinese context.

Woolley et al. (2010) found that students who reported higher levels of teacher expec-tations showed more desirable levels of mathematics learning motivation – teacher expec-tations had significant and positive correlations with students' confidence in mathematics and interest in mathematics, and were significantly and negatively associated with stu-dents' anxiety about mathematics. Similarly, Gilbert et al. (2014) found that student-perceived teacher expectations were significantly and positively associated with students' mastery and performance goals, student perceptions of mathematics utility, and students' mathematics self-efficacy. A study by Boerma et al. (2016) showed that teacher expec-tations predicted reading motivation (measured by reading self-concept and value of reading) for girls but not for boys. The results of these studies have indicated that students' self-efficacy perceptions, self-concept, self-expectations, and academic motivation may act as mediators of indirect teacher expectation effects on student achievement; they them-selves can be important consequences of differential teacher expectations on students' socio-psychological and personal development as well.

Behavioural outcomes

Teacher expectations can influence not just student socio-psychological factors; they may also affect subsequent student learning behaviours. How students react and behave as a result of differential teacher expectations and treatment is an important and non-negli-gible part for understanding teacher expectation effects, but studies on this issue have been scarce. One study investigating students' behavioural outcomes was by Cousineau and Luke (1990), who reported significant differences in academic learning time between high-, medium-, and low-expectation students in physical education. In Tyler and Boelter's (2008) study, teacher expectations were found to be a statistically significant predictor for students' behavioural and cognitive engagement. However, Archambault, Janosz, and Chouinard (2012) suggested that teacher expectations about student success did not predict student cognitive engagement in mathematics. Another study investigating the relations between teacher expectations and student school misconduct found that students in schools with lower teacher expectations were more likely to show school misconduct (Demanet & Van Houtte, 2012). This relation remained significant after student prior achievement had been controlled.

Achievement outcomes

The final part of this section focusses on the literature related to teacher expectation effects on student academic achievement. Babad (1993) noted that the literature examining the influence of teacher expectations on student achievement was comparatively sparse. From the 1990s onward, however, an increasing number of studies have been conducted to look at this issue. A large proportion of these studies has investigated the possible influences of teacher expectations on student achievement performance in different curriculum domains (e.g., Agirdag et al., 2013; Archambault et al., 2012; Kim, 2015; Muller, 1997; Woolley et al., 2010). In general, literacy (reading, speaking, and writing) and mathematics are the two subjects that have been most frequently studied. A few studies have focussed on other subject areas including science, social science, history, and physical education (e.g., Kuperminc et al., 2008; Martín, Martínez-Arias, Marchesi, & Pérez, 2008; Rumberger & Palardy, 2005; Thomas & Strunk, 2017; Trouilloud et al., 2002). In some other studies, the dependent variable was related to students' future education status, such as finishing high school, attaining college, and college graduation (e.g., Becker, 2013; Byun, Meece, & Agger, 2017; Gregory & Huang, 2013; Hinojosa, 2008; Holwerda, Brouwer, De Boer, Groothoff, & Van der Klink, 2015; Schiller & Muller, 2000; Sciarra & Ambrosino, 2011; Soland, 2013; Wu & Bai, 2015).

Among the 60 identified studies which explored teacher expectation effects on student achievement, 37 studies considered student prior achievement or controlled for it, whereas 23 did not control for student baseline achievement. In addition, various statistical analytic methods have been employed in these studies to detect the expectation effects (e.g., analyses of variance, regression, path analyses, hierarchical linear modelling, structural equation modelling, and so on; see details in Appendix 4). Despite these considerable methodological variations, most of the studies have reached the conclusion that teacher expectations are positively associated with student achievement performance level, high school graduation, college attendance, and graduation. As one example of the expectation effects on student subject achievement, Friedrich et al. (2015) found significant individual-level teacher expectation effects on two achievement outcomes – mathematics grades and standardised mathematics achievement test results. An example for the expectation effects on student future education status can be seen in a study by Gregory and Huang (2013), who found that mathematics and English teacher expectations significantly and positively predicted student postsecondary education.

In addition, some studies have investigated possible links between teachers' expectations and implicit prejudiced attitudes with the existing ethnic achievement gaps (McKown & Weinstein, 2008; Peterson, Rubie-Davies, Osborne, & Sibley, 2016; Van den Bergh et al., 2010). Prejudiced attitudes have been defined as "the (often negative) feelings and attitudes one holds towards a particular group" (Peterson et al., 2016, p. 124), and implicit attitudes are often unconscious. These types of attitudes have been suggested to be one source of differential teacher expectations towards different ethnic groups. Results of these studies have indicated that teachers' implicit prejudiced attitudes predicted student performance and explained the different sizes of the ethnic achievement gap across classrooms. Teacher expectation effects have also been found to have contributed to the ethnic achievement gap. In addition, there were a few studies which have provided evidence for the enduring and long-term effects of teacher expectations on student

achievement performance (De Boer et al., 2010; Hinnant et al., 2009; Jamil, Larsen, & Hamre, 2018; Rubie-Davies et al., 2014).

Conclusion Theme 4

Research evidence has been provided on the positive relations between teacher expectations and student socio-psychological, behavioural, and achievement outcomes. However, it was found that nearly 40% of the studies which examined the relations between teacher expectations and student achievement outcomes did not have student baseline achievement controlled. Student prior achievement has been shown to be the strongest predictor of student later achievement and also an important predictor for teacher expectations. Hence, it would be expected for higher achieving students to receive higher teacher expectations and also to perform better in subsequent tests, compared with lower achieving students. Therefore, without student baseline data controlled, any associations found between teacher expectations and student later achievement may be due to student actual ability differences at the beginning of any study, rather than the self-fulfilling effects of teacher expectations. For this reason, for future studies which aim to investigate the expectation effects on student achievement, it would be important to have student baseline achievement controlled.

Compared to student socio-psychological factors and achievement outcomes, student classroom behaviours as both an outcome and a possible mediating factor of teacher expectation effects have been somewhat neglected. Only four studies were identified during the past 3 decades, and the findings were not consistent. Future research needs to pay more attention to this issue to fill the research gap. In addition, it appeared that most of the existing studies investigating teacher expectation effects on student outcomes looked at the expectation effects over a relatively short timeframe, usually 1 year. More longitudinal research may be needed to explore the stability and sustainability of long-term teacher expectation effects.

Overall discussion and future directions

This study was the first systematic review of the literature which has provided a general overview of studies that have been conducted from 1989 to 2018 in the teacher expectation field. A synthesis of the existing studies has allowed an analysis based on the existing evidence, to identify strong and important research findings, as well as issues that are still unclear or have not yet been studied. Educators might benefit from the important research findings discussed in the review which have been supported by strong research evidence, and utilise them to direct teaching and learning. For instance, teachers could be aware that some of their students might be underestimated only because of the students' learning disability status or their families' social and economic positions. Therefore, it would be important for teachers to fight against bias, prejudice, and stereotypes of any kind, to form suitable and high expectations for all their students, and to support every student to achieve their best. In addition, the review could inform teachers about the ways through which their expectations could be communicated to students. Moreover, teachers could understand that their expectations can exert important influences on how their students see themselves, where the students believe they could achieve, and in most of the cases, what the students could achieve eventually. Hence, teachers may

be more cautious in their classroom teaching and interaction behaviours in order to provide equal learning opportunities and create a positive learning environment for all students. Apart from the potential contribution to school teaching and learning, the review may also help inform researchers in the field of teacher expectations about existing research gaps and potential future research directions.

This review, however, is not without limitations. First, as aforementioned, the results of the review should be interpreted with the potential file drawer effects in mind. Second, given the relatively large number of studies reviewed and the limited word count for this article, we were not able to closely compare and discuss studies in a detailed manner with regard to their study designs and analytic methods employed. Appendices on the basic information of all the reviewed studies have been provided to remedy this limitation. Readers may use that information to assist them in judging the weight of the findings in different studies.

The review concludes with a few recommendations for possible future research directions. First, future studies could work on issues that have not yet been clearly understood or have never been empirically studied, in order to tackle the current research gaps. For studies exploring the influential factors on teacher expectations, more attention could be paid to student socio-psychological characteristics, classroom behaviours and engagement, class and school contextual factors, as well as the teacher–student relationship and interaction factors. In addition, more studies will be needed to better understand the complex mediation mechanism of the expectation effects. Future studies could explore the relationships between teacher expectations, student perceptions of teacher expectations, and student achievement. More empirical evidence on the possible mediation effects of teachers' differential behaviours between teacher expectations and student achievement outcomes is also needed. Furthermore, student learning behaviours as both an outcome and a possible mediating factor of teacher expectation effects could be another research focus for future studies.

A further recommendation for future review research is to focus on one of the themes or subthemes identified in the current review. This would allow for a closer look at those studies with similar or different findings, to compare their research contexts, the methodologies used, and the variables that have been controlled (or uncontrolled), with the aim of disentangling the possible causes for the discrepant findings on similar research topics.

Last but not least, an issue that came up as a concern during the process of reviewing the studies related to the conceptualisation and operationalisation of the teacher expectation concept. Although not detailed in this review, in many of the studies reviewed, teacher expectations were defined differently in different studies, and also measured as a variable in quite different ways. To enable rigorous comparisons between studies in future research, the multiplicity of definitions and operationalisations across studies is something that needs to be taken into consideration. In fact, the conceptualisation and operationalisation of the teacher expectation construct is an issue for the field to consider in moving forward.

Disclosure statement

Notes on contributors

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References

References marked with asterisks are publications that were included in the systematic review.

*Agirdag, O., Van Avermaet, P., & Van Houtte, M. (2013). School segregation and maths achievement: A mixed-method study on the role of self-fulfilling prophecies. *Teachers College Record*, *115*(3), 1–50.

*Al-Fadhli, H., & Singh, M. (2006). Teachers' expectancy and efficacy as correlates of school achievement in Delta, Mississippi. *Journal of Personnel Evaluation in Education*, *19*, 51–67. doi:10.1007/s11092-007-9032-9

*Archambault, I., Janosz, M., & Chouinard, R. (2012). Teacher beliefs as predictors of adolescents' cognitive engagement and achievement in mathematics. *The Journal of Educational Research*, *105*, 319–328. doi:10.1080/00220671.2011.629694

*Atnafu, M. (2010). Relation between tenth grade students' attitude and components of attitude in algebra with algebra achievement of Addis Ababa secondary schools, Ethiopia. *International Journal for Mathematics Teaching & Learning*. Retrieved from http://www.cimt.org.uk/journal/index.htm

*Auwarter, A. E., & Aruguete, M. S. (2008). Effects of student gender and socioeconomic status on teacher perceptions. *The Journal of Educational Research*, *101*, 242–246. doi:10.3200/JOER.101.4.243-246

Babad, E. (1993). Pygmalion – 25 years after interpersonal expectations in the classroom. In P. D. Blank (Ed.), *Interpersonal expectations: Theory, research and applications* (pp. 125–153). Cambridge, UK: Cambridge University Press.

Babad, E. (2009). *The social psychology of the classroom*. New York, NY: Routledge.

Babad, E., Bernieri, F., & Rosenthal, R. (1989a). Nonverbal communication and leakage in the behavior of biased and unbiased teachers. *Journal of Personality and Social Psychology*, *56*, 89–94. doi:10.1037/0022-3514.56.1.89

Babad, E., Bernieri, F., & Rosenthal, R. (1989b). When less information is more informative: Diagnosing teacher expectations from brief samples of behaviour. *British Journal of Educational Psychology*, *59*, 281–295. doi:10.1111/j.2044-8279.1989.tb03103.x

Babad, E., Bernieri, F., & Rosenthal, R. (1991). Students as judges of teachers' verbal and nonverbal behavior. *American Educational Research Journal*, *28*, 211–234. doi:10.3102/00028312028001211

*Babad, E., & Taylor, P. J. (1992). Transparency of teacher expectancies across language, cultural boundaries. *Journal of Educational Research*, *86*, 120–125.

*Becker, D. (2013). The impact of teachers' expectations on students' educational opportunities in the life course: An empirical test of a subjective expected utility explanation. *Rationality and Society*, *25*, 422–469. doi:10.1177/1043463113504448

*Benner, A. D., & Mistry, R. S. (2007). Congruence of mother and teacher educational expectations and low-income youth's academic competence. *Journal of Educational Psychology*, *99*, 140–153. doi:10.1037/0022-0663.99.1.140

*Blöte, A. W. (1995). Students' self-concept in relation to perceived differential teacher treatment. *Learning and Instruction*, *5*, 221–236. doi:10.1016/0959-4752(95)00012-R

*Boerma, I. E., Mol, S. E., & Jolles, J. (2016). Teacher perceptions affect boys' and girls' reading motivation differently. *Reading Psychology*, *37*, 547–569. doi:10.1080/02702711.2015.1072608

*Bohlmann, N. L., & Weinstein, R. S. (2013). Classroom context, teacher expectations, and cognitive level: Predicting children's math ability judgments. *Journal of Applied Developmental Psychology*, *34*, 288–298. doi:10.1016/j.appdev.2013.06.003

*Brault, M.-C., Janosz, M., & Archambault, I. (2014). Effects of school composition and school climate on teacher expectations of students: A multilevel analysis. *Teaching and Teacher Education*, *44*, 148–159. doi:10.1016/j.tate.2014.08.008

Brophy, J. E. (1983). Research on the self-fulfilling prophecy and teacher expectations. *Journal of Educational Psychology*, *75*, 631–661. doi:10.1037/0022-0663.75.5.631

Brophy, J. E., & Good, T. L. (1970). Teachers' communication of differential expectations for children's classroom performance: Some behavioral data. *Journal of Educational Psychology*, *61*, 365–374. doi:10.1037/h0029908

*Byun, S. Y, Meece, J. L., & Agger, C. A. (2017). Predictors of college attendance patterns of rural youth. *Research in Higher Education*, *58*, 817–842. doi:10.1007/s11162-017-9449-z

*Cavanagh, R. F., & Waugh, R. F. (2004). Secondary school renewal: The effect of classroom learning culture on educational outcomes. *Learning Environments Research*, *7*, 245–269. doi:10.1007/s10984-004-3296-5

*Chalabaev, A., Sarrazin, P., Trouilloud, D., & Jussim, L. (2009). Can sex-undifferentiated teacher expectations mask an influence of sex stereotypes? Alternative forms of sex bias in teacher expectations. *Journal of Applied Social Psychology*, *39*, 2469–2498. doi:10.1111/j.1559-1816.2009.00534.x

*Chen, P. P. (2006). Relationship between students' self-assessment of their capabilities and their teachers' judgments of students' capabilities in mathematics problem solving. *Psychological Reports*, *98*, 765–778. doi:10.2466/pr0.98.3.765-778

*Chen, Y.-H., Thompson, M. S., Kromrey, J. D., & Chang, G. H. (2011). Relations of student perceptions of teacher oral feedback with teacher expectancies and student self-concept. *Journal of Experimental Education*, *79*, 452–477. doi:10.1080/00220973.2010.547888

*Childs, G., & McKay, M. (1997). The influence of family background on teachers' ratings of children starting school. *Australian Journal of Psychology*, *49*, 33–41. doi:10.1080/00049539708259848

*Corenblum, B., Annis, R. C., & Tanaka, J. S. (1997). Influence of cognitive development, self-competency, and teacher evaluations on the development of children's racial identity. *International Journal of Behavioral Development*, *20*, 269–286. doi:10.1080/016502597385333

*Cousineau, W. J., & Luke, M. D. (1990). Relationships between teacher expectations and academic learning time in sixth grade physical education basketball classes. *Journal of Teaching in Physical Education*, *9*, 262–271. doi:10.1123/jtpe.9.4.262

*Dare, G. J. (1992). The effect of pupil appearance on teacher expectations. *Early Child Development and Care*, *80*, 97–101. doi:10.1080/0300443920800112

*De Boer, H., Bosker, R. J., & Van der Werf, M. P. C. (2010). Sustainability of teacher expectation bias effects on long-term student performance. *Journal of Educational Psychology*, *102*, 168–179. doi:10.1037/a0017289

*De Boer, H., & Van der Werf, M. P. C. (2015). Influence of misaligned parents' aspirations on long-term student academic performance. *Educational Research and Evaluation*, *21*, 232–257. doi:10.1080/13803611.2015.1039548

*De Koning, E., & Boekaerts, M. (2005). Determinants of students' school-identification in secondary vocational education. *European Journal of Psychology of Education*, *20*: 289. doi:10.1007/BF03173558

*Demanet, J., & Van Houtte, M. (2012). Teachers' attitudes and students' opposition. School misconduct as a reaction to teachers' diminished effort and affect. *Teaching and Teacher Education*, *28*, 860–869. doi:10.1016/j.tate.2012.03.008

*Doyle, J. (2014). Predictors of culturally relevant attitudes and expectations of urban music teachers in the USA. *Music Education Research*, *16*, 436–453. doi:10.1080/14613808.2013.859662

*DuPaul, G. J., Volpe, R. J., Jitendra, A. K., Lutz, J. G., Lorah, K. S., & Gruber, R. (2004). Elementary school students with AD/HD: Predictors of academic achievement. *Journal of School Psychology*, *42*, 285–301. doi:10.1016/j.jsp.2004.05.001

Dusek, J. B., & Joseph, G. (1983). The bases of teacher expectancies: A meta-analysis. *Journal of Educational Psychology*, *75*, 327–346. doi:10.1037/0022-0663.75.3.327

*Edwards, O. W. (2018). School perceptions of children raised by grandparents. *Journal of Applied School Psychology*, *34*, 86–100. doi:10.1080/15377903.2017.1403401

*Faulkner, V. N., Crossland, C. L., & Stiff, L. V. (2013). Predicting eighth-grade algebra placement for students with individualized education programs. *Exceptional Children*, *79*, 329–345.

*Feinberg, A., & Shapiro, E. (2009). Teacher accuracy: An examination of teacher-based judgments of students' reading with differing achievement levels. *Journal of Educational Research*, *102*, 453–462. doi:10.3200/JOER.102.6.453-462

*Fiedler, K., Walther, E., Freytag, P., & Plessner, H. (2002). Judgment biases in a simulated classroom – A cognitive-environmental approach. *Organizational Behavior and Human Decision Processes*, *88*, 527–561. doi:10.1006/obhd.2001.2981

*Fitzpatrick, C., Côté-Lussier, C., & Blair, C. (2016). Dressed and groomed for success in elementary school: Student appearance and academic adjustment. *The Elementary School Journal*, *117*, 30–45.

*Foster, G. (2008). Names will never hurt me: Racially distinct names and identity in the undergraduate classroom. *Social Science Research*, *37*, 934–952. doi:10.1016/j.ssresearch.2008.02.004

*Fowler, L. T. S., Banks, T. I., Anhalt, K., Der, H. H., & Kalis, T. (2008). The association between externalizing behavior problems, teacher-student relationship quality, and academic performance in young urban learners. *Behavioral Disorders*, *33*, 167–183. doi:10.1177/019874290803300304

*Friedrich, A., Flunger, B., Nagengast, B., Jonkmann, K., & Trautwein, U. (2015). Pygmalion effects in the classroom: Teacher expectancy effects on students' maths achievement. *Contemporary Educational Psychology*, *41*, 1–12. doi:10.1016/j.cedpsych.2014.10.006

*Gilbert, M. C., Musu-Gillette, L. E., Woolley, M. E., Karabenick, S. A., Strutchens, M. E., & Martin, W. G. (2014). Student perceptions of the classroom environment: Relations to motivation and achievement in mathematics. *Learning Environments Research*, *17*, 287–304. doi:10.1007/s10984-013-9151-9

*Gill, S., & Reynolds, A. J. (1999). Educational expectations and school achievement of urban African American children. *Journal of School Psychology*, *37*, 403–424. doi:10.1016/S0022-4405(99)00027-8

*Glock, S., & Krolak-Schwerdt, S. (2014). Stereotype activation versus application: How teachers process and judge information about students from ethnic minorities and with low socioeconomic background. *Social Psychology of Education*, *17*, 589–607. doi:10.1007/s11218-014-9266-6

*Goldstein, J., McCoach, D. B., & Yu, H. H. (2017). The predictive validity of kindergarten readiness judgments: Lessons from one state. *The Journal of Educational Research*, *110*, 50–60. doi:10.1080/00220671.2015.1039111

Good, T. L., & Brophy, J. E. (1997). *Looking in classrooms* (7th ed.). New York, NY: Longman.

*Gottfredson, D. C., Marciniak, E. M., Birdseye, A. T., & Gottfredson, G. D. (1995). Increasing teacher expectations for student achievement. *The Journal of Educational Research*, *88*, 155–163. doi:10.1080/00220671.1995.9941294

*Gregory, A., & Huang, F. (2013). It takes a village: The effects of 10th grade college-going expectations of students, parents, and teachers four years later. *American Journal of Community Psychology*, *52*, 41–55. doi:10.1007/s10464-013-9575-5

*Hansen, K. (2016). The relationship between teacher perceptions of pupil attractiveness and academic ability. *British Educational Research Journal*, *42*, 376–398. doi:10.1002/berj.3227

*Haraoka, K. (1991). Perceived teacher's expectations, causal attribution of test results and pupils' motivation. *The Japanese Journal of Experimental Social Psychology*, *30*, 229–241. doi:10.2130/jjesp.30.229

*Heath, A. F., Colton, M. J., & Aldgate, J. (1994). Failure to escape: A longitudinal study of foster children's educational attainment. *British Journal of Social Work*, *24*, 241–260. doi:10.1093/oxfordjournals.bjsw.a056064

*Hinnant, J. B., O'Brien, M., & Ghazarian, S. R. (2009). The longitudinal relations of teacher expectations to achievement in the early school years. *Journal of Educational Psychology*, *101*, 662–670. doi:10.1037/a0014306

*Hinojosa, M. S. (2008). Black-white differences in school suspension: Effect of student beliefs about teachers. *Sociological Spectrum*, *28*, 175–193. doi:10.1080/02732170701796429

Hoge, R. D., & Coladarci, T. (1989). Teacher-based judgments of academic achievement: A review of literature. *Review of Educational Research*, *59*, 297–313. doi:10.3102/00346543059003297

*Holder, K., & Kessels, U. (2017). Gender and ethnic stereotypes in student teachers' judgments: A new look from a shifting standards perspective. *Social Psychology of Education*, *20*, 471–490. doi:10.1007/s11218-017-9384-z

*Holwerda, A., Brouwer, S., De Boer, M. R., Groothoff, J. W., & Van der Klink, J. J. L. (2015). Expectations from different perspectives on future work outcome of young adults with intellectual and developmental disabilities. *Journal of Occupational Rehabilitation*, *25*, 96–104. doi:10.1007/s10926-014-9528-3

*Hornstra, L., Denessen, E., Bakker, J., Van den Bergh, L., & Voeten, M. (2010). Teacher attitudes toward dyslexia: Effects on teacher expectations and the academic achievement of students with dyslexia. *Journal of Learning Disabilities*, *43*, 515–529. doi:10.1177/0022219409355479

*Hughes, J. N., Gleason, K. A., & Zhang, D. (2005). Relationship influences on teachers' perceptions of academic competence in academically at-risk minority and majority first grade students. *Journal of School Psychology*, *43*, 303–320. doi:10.1016/j.jsp.2005.07.001

*Hurwitz, J. T., Elliott, S. N., & Braden, J. P. (2007). The influence of test familiarity and student disability status upon teachers' judgments of students' test performance. *School Psychology Quarterly*, *22*, 115–144. doi:10.1037/1045-3830.22.2.115

*Jamil, F. M., Larsen, R. A., & Hamre, B. K. (2018). Exploring longitudinal changes in teacher expectancy effects on children's mathematics achievement. *Journal for Research in Mathematics Education*, *49*, 57–90. doi:10.5951/jresematheduc.49.1.0057

*Jenkins, L. N., & Demaray, M. K. (2016). Teachers' judgments of the academic achievement of children with and without characteristics of inattention, impulsivity, and hyperactivity. *Contemporary School Psychology*, *20*, 183–191. doi:10.1007/s40688-015-0073-7

*Jiménez-Morales, M., & López-Zafra, E. (2013). The impact of students perceived emotional intelligence, social attitudes and teacher expectations on academic performance. *Electronic Journal of Research in Educational Psychology*, *11*, 75–98.

*Jussim, L. (1989). Teacher expectations: Self-fulfilling prophecies, perceptual biases, and accuracy. *Journal of Personality and Social Psychology*, *57*, 469–480. doi:10.1037/0022-3514.57.3.469

*Jussim, L., & Eccles, J. S. (1992). Teacher expectations: II. Construction and reflection of student achievement. *Journal of Personality and Social Psychology*, *63*, 947–961. doi:10.1037/0022-3514.63.6.947

*Jussim, L., Eccles, J., & Madon, S. (1996). Social perception, social stereotypes, and teacher expectations: Accuracy and the quest for the powerful self-fulfilling prophecy. In M. P. Zanna (Ed.). *Advances in experimental social psychology* (Vol. 28, pp. 281–388). New York, NY: Academic Press. doi:10.1016/S0065-2601(08)60240-3

*Kaiser, J., Retelsdorf, J., Südkamp, A., & Möller, J. (2013). Achievement and engagement: How student characteristics influence teacher judgments. *Learning and Instruction*, *28*, 73–84. doi:10.1016/j.learninstruc.2013.06.001

*Kaiser, J., Südkamp, A., & Möller, J. (2017). The effects of student characteristics on teachers' judgment accuracy: Disentangling ethnicity, minority status, and achievement. *Journal of Educational Psychology*, *109*, 871–888. doi:10.1037/edu0000156

*Karwowski, M., Gralewski, J., & Szumski, G. (2015). Teachers' effect on students' creative self-beliefs is moderated by students' gender. *Learning and Individual Differences*, *44*, 1–8. doi:10.1016/j.lindif.2015.10.001

*Keller, C. (2001). Effect of teachers' stereotyping on students' stereotyping of mathematics as a male domain. *The Journal of Social Psychology*, *141*, 165–173. doi:10.1080/00224540109600544

*Kelly, S., & Carbonaro, W. (2012). Curriculum tracking and teacher expectations: Evidence from discrepant course taking models. *Social Psychology of Education*, *15*, 271–294. doi:10.1007/s11218-012-9182-6

*Kim, H. S. (2015). Foregone opportunities: Unveiling teacher expectancy effects in kindergarten using counterfactual predictions. *Social Psychology of Education*, *18*, 273–296. doi:10.1007/s11218-014-9284-4

*Kuklinski, M., & Weinstein, R. (2000). Classroom and grade level differences in the stability of teacher expectations and perceived differential teacher treatment. *Learning Environments Research*, *3*, 1–34. doi:10.1023/A:1009904718353

*Kuklinski, M. R., & Weinstein, R. S. (2001). Classroom and developmental differences in a path model of teacher expectancy effects. *Child Development*, *72*, 1554–1578. doi:10.1111/1467-8624.00365

*Kuperminc, G. P., Darnell, A. J., & Alvarez-Jimenez, A. (2008). Parent involvement in the academic adjustment of Latino middle and high school youth: Teacher expectations and school belonging as mediators. *Journal of Adolescence*, *31*, 469–483. doi:10.1016/j.adolescence.2007.09.003

*Lazarides, R., & Watt, H. M. G. (2015). Girls' and boys' perceived mathematics teacher beliefs, classroom learning environments and mathematical career intentions. *Contemporary Educational Psychology*, *41*, 51–61. doi:10.1016/j.cedpsych.2014.11.005

*Li, Z., & Rubie-Davies, C. M. (2017). Teachers matter: Expectancy effects in Chinese university English-as-a-foreign-language classrooms. *Studies in Higher Education*, *42*, 2042–2060. doi:10.1080/03075079.2015.1130692

*Liu, W. C., & Wang, C. K. J. (2008). Home environment and classroom climate: An investigation of their relation to students' academic self-concept in a streamed setting. *Current Psychology*, *27*, 242–256. doi:10.1007/s12144-008-9037-7

*Ma, X. (2001). Participation in advanced mathematics: Do expectation and influence of students, peers, teachers, and parents matter? *Contemporary Educational Psychology*, *26*, 132–146. doi:10.1006/ceps.2000.1050

*Martin, S. D., & Shapiro, E. S. (2011). Examining the accuracy of teachers' judgments of DIBELS performance. *Psychology in the Schools*, *48*, 343–356. 10.1002/pits.20558

*Martín, E., Martínez-Arias, R., Marchesi, A., & Pérez, E. M. (2008). Variables that predict academic achievement in the Spanish compulsory secondary educational system: A longitudinal, multi-level analysis. *The Spanish Journal of Psychology*, *11*, 400–413.

*Matsuoka, R. (2014). Disparities between schools in Japanese compulsory education: Analyses of a cohort using TIMSS 2007 and 2011. *Educational Studies in Japan*, *8*, 77–92. doi:10.7571/esjkyoiku.8.77

*McKown, C., & Weinstein, R. S. (2002). Modeling the role of child ethnicity and gender in children's differential response to teacher expectations. *Journal of Applied Social Psychology*, *32*, 159–184. doi:10.1111/j.1559-1816.2002.tb01425.x

*McKown, C., & Weinstein, R. S. (2008). Teacher expectations, classroom context, and the achievement gap. *Journal of School Psychology*, *46*, 235–261. doi:10.1016/j.jsp.2007.05.001

*Meissel, K., Meyer, F., Yao, E. S., & Rubie-Davies, C. M. (2017). Subjectivity of teacher judgments: Exploring student characteristics that influence teacher judgments of student ability. *Teaching and Teacher Education*, *65*, 48–60. doi:10.1016/j.tate.2017.02.021

Mendeley. (2017). Getting started with Mendeley. Mendeley desktop. London: Author. Retrieved from http://www.mendeley.com

*Minor, E. C. (2014). Racial differences in teacher perception of student ability. *Teachers College Record*, *116*(10), 1–22.

*Mizala, A., Martínez, F., & Martínez, S. (2015). Pre-service elementary school teachers' expectations about student performance: How their beliefs are affected by their mathematics anxiety and student's gender. *Teaching and Teacher Education*, *50*, 70–78. doi:10.1016/j.tate.2015.04.006

*Montague, M., & Rinaldi, C. (2001). Classroom dynamics and children at risk: A follow-up. *Learning Disability Quarterly*, 24, 75–83. doi:10.2307/1511063

*Muller, C. (1997). The minimum competency exam requirement: Teachers' and students' expectations and academic performance. *Social Psychology of Education*, 2, 199–216. doi:10.1023/A:1009658725797

*Müller, B. C. N., Oude Groote Beverborg, A., & Glock, S. (2017). Pre-service teachers' academic judgments of overweight students. *Social Psychology of Education*, 20, 897–913. doi:10.1007/s11218-017-9400-3

*Overby, M., Carrell, T., & Bernthal, J. (2007). Teachers' perceptions of students with speech sound disorders: A quantitative and qualitative analysis. *Language, Speech, and Hearing Services in Schools*, 38, 327–341. doi:10.1044/0161-1461(2007/035)

*Page, S., & Rosenthal, R. (1990). Sex and expectations of teachers and sex and race of students as determinants of teaching behavior and student performance. *Journal of School Psychology*, 28, 119–131. doi:10.1016/0022-4405(90)90003-P

*Paino, M., & Renzulli, L. A. (2013). Digital dimension of cultural capital: The (in)visible advantages for students who exhibit computer skills. *Sociology of Education*, 86, 124–138. doi:10.1177/0038040712456556

*Palardy, J. M. (1998). The effects of teachers' expectations on children's literacy development. *Reading Improvement*, 35, 184–186.

*Perin, D., Lauterbach, M., Raufman, J., & Kalamkarian, H. S. (2017). Text-based writing of low-skilled postsecondary students: Relation to comprehension, self-efficacy and teacher judgments. *Reading and Writing*, 30, 887–915. doi:10.1007/s11145-016-9706-0

*Pesu, L., Viljaranta, J., & Aunola, K. (2016). The role of parents' and teachers' beliefs in children's self-concept development. *Journal of Applied Developmental Psychology*, 44, 63–71. doi:10.1016/j.appdev.2016.03.001

*Peterson, E. R., Rubie-Davies, C., Osborne, D., & Sibley, C. (2016). Teachers' explicit expectations and implicit prejudiced attitudes to educational achievement: Relations with student achievement and the ethnic achievement gap. *Learning and Instruction*, 42, 123–140. doi:10.1016/j.learninstruc.2016.01.010

*Plewis, I. (1997). Inferences about teacher expectations from national assessment at key stage one. *British Journal of Educational Psychology*, 67, 235–247. doi:10.1111/j.2044-8279.1997.tb01240.x

*Prihadi, K., Hairul, N. I., & Hazri, J. (2012). Mediation effect of locus of control on the causal relationship between students' perceived teachers' expectancy and self-esteem. *Electronic Journal of Research in Educational Psychology*, 10, 713–736. doi:10.25115/ejrep.v10i27.1524

*Rausch, T., Karing, C., Dörfler, T., & Artelt, C. (2016). Personality similarity between teachers and their students influences teacher judgement of student achievement. *Educational Psychology*, 36, 863–878. doi:10.1080/01443410.2014.998629

*Ready, D. D., & Chu, E. M. (2015). Sociodemographic inequality in early literacy development: The role of teacher perceptual accuracy. *Early Education and Development*, 26, 970–987. doi:10.1080/10409289.2015.1004516

*Ready, D. D., & Wright, D. L. (2011). Accuracy and inaccuracy in teachers' perceptions of young children's cognitive abilities: The role of child background and classroom context. *American Educational Research Journal*, 48, 335–360. doi:10.3102/0002831210374874

*Riegle-Crumb, C., & Humphries, M. (2012). Exploring bias in math teachers' perceptions of students' ability by gender and race/ethnicity. *Gender and Society*, 26, 290–322. doi:10.1177/0891243211434614

*Riley, T., & Ungerleider, C. (2008). Preservice teachers' discriminatory judgments. *The Alberta Journal of Educational Research*, 54, 378–387.

*Robinson, J. (1994). Social status and academic success in South Korea. *Comparative Education Review*, 38, 506–530. doi:10.1086/447273

Rosenthal, R. (1974). *On the social psychology of the self-fulfilling prophecy: Further evidence for Pygmalion effects and their mediating mechanisms*. New York, NY: MSS Modular Publications.

Rosenthal, R., & Jacobson, L. (1968). *Pygmalion in the classroom: Teacher expectation and pupils' intellectual development*. New York, NY: Holt, Rinehart and Winston.

*Rubie-Davies, C. M. (2006). Teacher expectations and student self-perceptions: Exploring relation-ships. *Psychology in the Schools*, 43, 537–552. doi:10.1002/pits.20169

*Rubie-Davies, C. M. (2007). Classroom interactions: Exploring the practices of high- and low-expec-tation teachers. *British Journal of Educational Psychology*, 77, 289–306. doi:10.1348/000709906X101601

*Rubie-Davies, C. M., Flint, A., & McDonald, L. G. (2012). Teacher beliefs, teacher characteristics, and school contextual factors: What are the relationships? *British Journal of Educational Psychology*, 82, 270–288. doi:10.1111/j.2044-8279.2011.02025.x

*Rubie-Davies, C., Hattie, J., & Hamilton, R. (2006). Expecting the best for students: Teacher expec-tations and academic outcomes. *British Journal of Educational Psychology*, 76, 429–444. doi:10.1348/000709905X53589

*Rubie-Davies, C. M., & Peterson, E. R. (2016). Relations between teachers' achievement, over- and underestimation, and students' beliefs for Māori and Pākehā students. *Contemporary Educational Psychology*, 47, 72–83. doi:10.1016/j.cedpsych.2016.01.001

*Rubie-Davies, C. M., Peterson, E. R., Sibley, C. G., & Rosenthal, R. (2015). A teacher expectation inter-vention: Modelling the practices of high expectation teachers. *Contemporary Educational Psychology*, 40, 72–85. doi:10.1016/j.cedpsych.2014.03.003

*Rubie-Davies, C. M., Weinstein, R. S., Huang, F. L., Gregory, A., Cowan, P. A., & Cowan, C. P. (2014). Successive teacher expectation effects across the early school years. *Journal of Applied Developmental Psychology*, 35, 181–191. doi:10.1016/j.appdev.2014.03.006

*Rumberger, R. W., & Palardy, G. J. (2005). Does segregation still matter? The impact of student com-position on academic achievement in high school. *Teachers College Record*, 107, 1999–2045. doi:10.1111/j.1467-9620.2005.00583.x

*Saracho, O. N. (1991). Teacher expectations and cognitive style: Implications for students' academic achievement. *Early Child Development and Care*, 77, 97–108. doi:10.1080/0300443910770109

*Schiller, K. S., & Muller, C. (2000). External examinations and accountability, educational expec-tations, and high school graduation. *American Journal of Education*, 108, 73–102. doi:10.1086/444235

*Sciarra, D. T., & Ambrosino, K. E. (2011). Post-secondary expectations and educational attainment. *Professional School Counseling*, 14, 231–241. doi:10.1177/2156759X1101400307

*Shepherd, M. A. (2011). Effects of ethnicity and gender on teachers' evaluation of students' spoken responses. *Urban Education*, 46, 1011–1028. doi:10.1177/0042085911400325

*Smith, A. E., Jussim, L., Eccles, J., Vannoy, M., Madon, S., & Palumbo, P. (1998). Self-fulfilling prophe-cies, perceptual biases, and accuracy at the individual and group levels. *Journal of Experimental Social Psychology*, 34, 530–561. doi:10.1006/jesp.1998.1363

*Soland, J. (2013). Predicting high school graduation and college enrollment: Comparing early warning indicator data and teacher intuition. *Journal of Education for Students Placed at Risk*, 18, 233–262. doi:10.1080/10824669.2013.833047

*Sparks, R. L., & Ganschow, L. (1996). Teachers' perceptions of students' foreign language skills and affective characteristics. *The Journal of Educational Research*, 89, 172–185. doi:10.1080/00220671.1996.9941323

*Speybroeck, S., Kuppens, S., Van Damme, J., Van Petegem, P., Lamote, C., Boonen, T., & De Bilde, J. (2012). The role of teachers' expectations in the association between children's SES and perform-ance in kindergarten: A moderated mediation analysis. *PLoS ONE*, 7(4): e34502. doi:10.1371/journal.pone.0034502

Thomas, J., & Harden, A. (2008). Methods for the thematic synthesis of qualitative research in sys-tematic reviews. *BMC Medical Research Methodology*, 8: 45. doi:10.1186/1471-2288-8-45

*Thomas, J. A., & Strunk, K. K. (2017). Expectancy-value and children's science achievement: Parents matter. *Journal of Research in Science Teaching*, 54, 693–712. doi:10.1002/tea.21382

*Thys, S., & Van Houtte, M. (2016). Ethnic composition of the primary school and educational choice: Does the culture of teacher expectations matter? *Teaching and Teacher Education*, 59, 383–391. doi:10.1016/j.tate.2016.06.011

*Tiedemann, J. (2000). Gender-related beliefs of teachers in elementary school mathematics. *Educational Studies in Mathematics*, 41, 191–207. doi:10.1023/A:1003953801526

*Tiedemann, J. (2002). Teachers' gender stereotypes as determinants of teacher perceptions in elementary school mathematics. *Educational Studies in Mathematics*, *50*, 49–62. doi:10.1023/A:1020518104346

*Timmermans, A. C., De Boer, H., & Van der Werf, M. P. C. (2016). An investigation of the relationship between teachers' expectations and teachers' perceptions of student attributes. *Social Psychology of Education*, *19*, 217–240. doi:10.1007/s11218-015-9326-6

*Timmermans, A. C., Kuyper, H., & Van der Werf, G. (2015). Accurate, inaccurate, or biased teacher expectations: Do Dutch teachers differ in their expectations at the end of primary education? *British Journal of Educational Psychology*, *85*, 459–478. doi:10.1111/bjep.12087

*Timperley, H. S., & Phillips, G. (2003). Changing and sustaining teachers' expectations through professional development in literacy. *Teaching and Teacher Education*, *19*, 627–641. doi:10.1016/S0742-051X(03)00058-1

*Ting, C., & Gilmore, L. (2012). Attitudes of preservice teachers towards teaching deaf and ESL students. *Australian Journal of Teacher Education*, *37*(12), 46-56. doi:10.14221/ajte.2012v37n12.6

*Tobisch, A., & Dresel, M. (2017). Negatively or positively biased? Dependencies of teachers' judgments and expectations based on students' ethnic and social backgrounds. *Social Psychology of Education*, *20*, 731–752. doi:10.1007/s11218-017-9392-z

*Troia, G. A., Harbaugh, A. G., Shankland, R. K., Wolbers, K. A., & Lawrence, A. M. (2013). Relationships between writing motivation, writing activity, and writing performance: Effects of grade, sex, and ability. *Reading and Writing*, *26*, 17–44. doi:10.1007/s11145-012-9379-2

*Trouilloud, D. O., Sarrazin, P. G., Martinek, T. J., & Guillet, E. (2002). The influence of teacher expectations on student achievement in physical education classes: Pygmalion revisited. *European Journal of Social Psychology*, *32*, 591–607. doi:10.1002/ejsp.109

Turner, H., Rubie-Davies, C. M., & Webber, M. (2015). Teacher expectations, ethnicity and the achievement gap. *New Zealand Journal of Educational Studies*, *50*, 55–69. doi:10.1007/s40841-015-0004-1

*Tyler, K. M., & Boelter, C. M. (2008). Linking black middle school students' perceptions of teachers' expectations to academic engagement and efficacy. *Negro Educational Review*, *59*, 27–44.

*Tyler, K. M., Boykin, W. A., & Walton, T. R. (2006). Cultural considerations in teachers' perceptions of student classroom behavior and achievement. *Teaching and Teacher Education*, *22*, 998–1005. doi:10.1016/j.tate.2006.04.017

*Upadyaya, K., & Eccles, J. (2015). Do teachers' perceptions of children's math and reading related ability and effort predict children's self-concept of ability in math and reading? *Educational Psychology*, *35*, 110–127. doi:10.1080/01443410.2014.915927

*Urhahne, D., Chao, S.-H., Florineth, M. L., Luttenberger, S., & Paechter, M. (2011). Academic self-concept, learning motivation, and test anxiety of the underestimated student. *British Journal of Educational Psychology*, *81*, 161–177. doi:10.1348/000709910X504500

*Van den Bergh, L., Denessen, E., Hornstra, L., Voeten, M., & Holland, R. W. (2010). The implicit prejudiced attitudes of teachers: Relations to teacher expectations and the ethnic achievement gap. *American Educational Research Journal*, *47*, 497–527. doi:10.3102/0002831209353594

*Van Houtte, M., Demanet, J., & Stevens, P. A. J. (2013). Curriculum tracking and teacher evaluations of individual students: Selection, adjustment, or labeling? *Social Psychology of Education*, *16*, 329–352. doi:10.1007/s11218-013-9216-8

*Van Matre, J. C., Valentine, J. C., & Cooper, H. (2000). Effect of students' after-school activities on teachers' academic expectancies. *Contemporary Educational Psychology*, *25*, 167–183. doi:10.1006/ceps.1998.0999

*Vekiri, I. (2010). Boys' and girls' ICT beliefs: Do teachers matter? *Computers and Education*, *55*, 16–23. doi:10.1016/j.compedu.2009.11.013

*Wanzek, J., Roberts, G., & Al Otaiba, S. (2014). Academic responding during instruction and reading outcomes for kindergarten students at-risk for reading difficulties. *Reading and Writing*, *27*, 55–78. doi:10.1007/s11145-013-9433-8

Weinstein, R. S. (2002). *Reaching higher: The power of expectations in schooling*. Cambridge, MA: Harvard University Press.

Weinstein, R. S., Marshall, H. H., Sharp, L., & Botkin, M. (1987). Pygmalion and the student: Age and classroom differences in children's awareness of teacher expectations. *Child Development*, *58*, 1079–1093. doi:10.2307/1130548

*Weinstein, R. S., Soulé, C. R., Collins, F., Cone, J., Mehlhorn, M., & Simontacchi, K. (1991). Expectations and high school change: Teacher-researcher collaboration to prevent school failure. *American Journal of Community Psychology*, *19*, 333–363. doi:10.1007/BF00938027

Weinstein, R. S., & Worrell, F. C. (2016). *Achieving college dreams: How a university-charter district partnership created an early college high school*. New York, NY: Oxford University Press.

*Whitley, J. (2010). Modelling the influence of teacher characteristics on student achievement for Canadian students with and without learning disabilities. *International Journal of Special Education*, *25*, 88–97.

*Wilson, R. J., & Martinussen, R. L. (1999). Factors affecting the assessment of student achievement. *The Alberta Journal of Educational Research*, *45*, 267–277.

*Wood, D., Kaplan, R., & McLoyd, V. C. (2007). Gender differences in the educational expectations of urban, low-income African American youth: The role of parents and the school. *Journal of Youth and Adolescence*, *36*, 417–427. doi:10.1007/s10964-007-9186-2

*Woodcock, S., & Vialle, W. (2011). Are we exacerbating students' learning disabilities? An investigation of preservice teachers' attributions of the educational outcomes of students with learning disabilities. *Annals of Dyslexia*, *61*, 223–241. doi:10.1007/s11881-011-0058-9

*Woolley, M. E., Strutchens, M., Gilbert, M. C., & Martin, W. G. (2010). Mathematics success of black middle school students: Direct and indirect effects of teacher expectations and reform practices. *Negro Educational Review*, *61*, 41–59.

*Wu, C. L., & Bai, H. (2015). From early aspirations to actual attainment: The effects of economic status and educational expectations on university pursuit. *Higher Education*, *69*, 331–344. doi:10.1007/s10734-014-9778-1

*Zhou, J., & Urhahne, D. (2013). Teacher judgment, student motivation, and the mediating effect of attributions. *European Journal of Psychology of Education*, *28*, 275–295. doi:10.1007/sl0212-012-0114-9

*Zhu, M., & Urhahne, D. (2015). Teachers' judgements of students' foreign-language achievement. *European Journal of Psychology of Education*, *30*, 21–39. doi:10.1007/s10212-014-0225-6

Appendix 1. A list of studies on analytical Theme 1: influential factors on the formation of teacher expectations

Author(s)	Year	Country/Region	Age/grade level	Sample size	Curriculum area (DV)	Influential factors (IV)	Prior achievement/ baseline data controlled	Analytic method	Findings
I. Student factors									
Jussim	1989	US	Grade 6	T: 27 S: 429	Mathematics	Student prior achievement, student self-concept, & gender	Y	Path analyses	Student prior achievement (+), student self-concept (+), gender female (+)
Dare	1992	Nigeria	Primary	T:16 S:159	Intelligence & success	Physical appearance	N	Pearson correlation	Perceived positive physical appearance (+)
Robinson	1994	South Korea	Elementary	T: 58 S: 180		SES	N	Correlation & path analysis	SES (+)
Sparks & Ganschow	1996	US	College preparatory high school	S: 168	Foreign language (Spanish, French, German, & Latin)	Native language ability & foreign language aptitude	N	MANOVA & ANOVA	Native language ability (+), foreign language aptitude (+)
Childs & McKay	1997	Australia	Aged 5 to 5.5	S: 389	Word reading, reading comprehension, basic number skills, listening/language comprehension, expressive language	SES (fathers' occupation), gender	N	Regression & MANOVA	SES (+), gender female (+)
Corenblum et al.	1997	Canada	Kindergarten, Grades 1 & 2	T: 17 S: 294	Academic ability	Ethnicity (White & indigenous)	N	ANOVA	White (+)
Plewis	1997	UK	Key Stage One (aged 6 to 7)	S: 7,400	English, mathematics, & science	Gender, ethnicity (White, African, and African Caribbean, Indian, Pakistani), & SES	Y	Model with the cumulative logit/ proportional odds	Gender female (+), White (+), SES (+)
Muller	1997	US	Grade 10	S: 3,442	Mathematics	SES, gender, ethnicity (Asian, Latino, & African American), & prior achievement	Y	Logistic regression	SES (+), gender male (−), ethnicity (0), prior achievement (+)
Wilson & Martinussen	1999	Canada	An imaginary Grade 8 student	T: 147	Language arts	SES (manipulated high, middle, and low SES)	Y	ANOVA	SES (+)
Tiedemann	2000	Germany	Elementary (Grades 3 & 4)	T: 52 S: 312	Mathematics	Gender	Y	MANOVA & Tukey's Studentised range honestly significant difference (HSD)	Gender male (+)

Author(s)	Year	Country/Region	Age/grade level	Sample size	Curriculum area (DV)	Influential factors (IV)	Prior achievement/baseline data controlled	Analytic method	Findings
Van Matre et al.	2000	US	12 fictitious junior high school students	T: 98	GPA, predicted high school graduation, predicted college attendance	Gender, SES, & student after school activities (manipulated)	N	ANOVA	Gender female (+), SES (+), participation in after school activities (+)
Montague & Rinaldi	2001	US	Grades 3 & 4	T: 14 S: 20	Student perceptions of general teacher expectations	At risk for developing learning disorders (LD), and emotional and behavioural disorders (EBD)	N	ANOVA	Student at risk for LD/EBD (−)
Tiedemann	2002	Germany	Elementary (Grade 3 & 4)	T: 48 S: 288	Mathematics	Gender	Y	MANOVA & Tukey's Studentised range honestly significant difference (HSD)	Gender male (+)
Hughes et al.	2005	US	Grade 1	S: 607	Reading & mathematics	Ethnicity (African American, Hispanics, & White)	Y	ANCOVA	Hispanics (+), White (+), African American (−)
De Koning & Boekaerts	2005	Netherlands	Secondary vocational education	S: 1,819	Academic capacities	Personal goals of superiority & self-determination	N	Partial correlation & multiple linear regression	Personal goals of superiority (−), self-determination (+)
Rubie-Davies et al.	2006	New Zealand	Primary	T: 21 S: 540	Reading	Ethnicity (New Zealand European, Maori, Pacific Island, & Asian)	Y	ANOVA	New Zealand European (+), Maori (−), Asian (+)
Tyler, Boykin, & Walton	2006	US	Elementary (Four scenarios)	T: 62	Academic standing	Cultural ethos/orientations manifested through classroom behaviours	Y	MANOVA	Students displaying competitive and individualistic classroom behaviours (+), students displaying communal or vervistic classroom behaviours (−)
Hurwitz et al.	2007	US	Grade 4	T: 19 S: 38	Mathematics achievement	LD status	Y	ANOVA, pairwise comparison, & chi-square	LD (−)
Overby et al.	2007	US	A single Grade 2 student	T: 48	Academic competence	LD (speech sound disorders)	N	MANOVA	LD (−)
Wood et al.	2007	US	Aged 6–16	S: 466	Predicted college attendance and graduation	Gender, SES, age, & academic achievement	Y	Ordinary least squares regression	Gender male (−), SES (0), age (+), academic achievement (+)
Auwarter & Aruguete	2008	US	Four experimental conditions	T: 106	Future expectation	Gender & SES	Y	ANOVA	Gender (0), SES (+)
Foster	2008	Australia	Undergraduate	S: 18,559	Course performance	Names (Black & Asian)	Y	A self-designed equation model, regression	Names (0)

McKown & Weinstein	2008	US	Elementary	S: 1,872	Reading & mathematics	Ethnicity	Y	Hierarchical regression analyses	White & Asian (+), Black & Latino (−) in classrooms with high perceived differential teacher treatment
Riley & Ungerleider	2008	Canada	24 fictitious students	T: 50	Recommend placement in remedial, conventional, or advanced programmes	Ethnicity (aboriginal), gender, & prior achievement	Y	ANOVA (Pillai's trace)	Aboriginal (−), gender (0), prior achievement (+)
Tyler & Boelter	2008	US	Middle school (Grades 6, 7, & 8)	S: 262	General academic expectations	Gender & grade level (Grades 6, 7, & 8)	N	Hierarchical regression analyses	Gender (0), grade (−)
Chalabaev et al.	2009	France	a. Laboratory experiment b. Naturalist study	a. T: 163 S: 8 b. T: 15 S: 422	Gymnastics performance	a. Gender b. Gender, performance, perceived competence, motivation, past achievement, & participation in sports	a. Y b. Y	a. ANOVA b. HLM	a. Gender male (+) b. Gender (0), other characteristics (+)
Feinberg & Shapiro	2009	US	Grades 2–5	T: 74 S: 148	Reading	Student achievement level (low-achieving & average-achieving)	Y	Correlation & t test	Low-achieving students (+)
Hinnant et al.	2009	US	Grades 1, 3, & 5	S: 2,892	Reading & mathematics	Gender, ethnicity, family income/needs, & social skills	Y	Hierarchical regression analyses	Reading: gender female (+), mathematics: gender (0); ethnicity (0), family income/needs (0), social skills (+),
De Boer et al.	2010	Netherlands	Primary	S: About 11,000	Education ladder score corresponding to track recommendation	Gender, SES, ethnicity, prior achievement, IQ, motivation, & grade repetition	Y	HLM	Gender female (+), high SES (+), ethnicity (0), prior achievement (−), IQ (−), motivation (−), grade repetition (−)
Hornstra et al.	2010	Netherlands	Grades 2–6	S: 307	Academic characteristics & ratings of writing achievement	LD (dyslexia), gender, & SES	N	HLM	LD (−), gender female (+), SES (+)
Van den Bergh et al.	2010	Netherlands	Grades 1–4 (aged 7–12)	T: 41 S: 434	Text comprehension & mathematics test scores	SES, ethnicity (Dutch, Turkish, & Moroccan), & gender	N	HLM	High SES (+), Turkish/Moroccan (−), gender (0)
Whitley	2010	Canada	Grades 1–6	S: 2,367	Long-term success & Rating of achievement	LD	N	Path analyses	LD (−)
Y.-H. Chen et al.	2011	Taiwan	Grades 3–6	S: 1,598	Academic and non-academic performance	Gender & grade level (Grades 3, 4, & 5)	N	Chi-square test	Gender male (−), Grade 5 (−)

Appendix 1. Continued.

Author(s)	Year	Country/Region	Age/grade level	Sample size	Curriculum area (DV)	Influential factors (IV)	Prior achievement/baseline data controlled	Analytic method	Findings
Martin & Shapiro	2011	US	Kindergarten & Grade 1	T: 38 S: 76	Literacy skills (phonological awareness & alphabetic principle)	Student achievement level (low-achieving & typical-achieving)	Y	Correlation, z test	Typical-achieving students (+)
Ready & Wright	2011	US	Kindergarten	S: 9,493	Teacher rating of children's language and literacy skills	Gender, ethnicity (Black, Asian, Hispanic, indigenous American, multiracial, & White), SES, prior achievement, kindergarten repeater, age, single-parent family, number of siblings	Y	HLM	Gender female (+), Black (−), Hispanic (−), Asian (0), indigenous American (0), multiracial (0), SES (+), prior achievement (+), kindergarten repeater (−), age (+), single-parent family (−), number of siblings (−)
Shepherd	2011	US	Grades 2 & 3	T: 57 S: 40	Spoken response	Gender & ethnicity (White & minority)	Y	Regression	White female (+)
Woodcock & Vialle	2011	Australia	Primary (vignettes)	T: 444	Future failure	LD	Y	ANOVA & paired sample t test	LD (+)
Kelly & Carbonaro	2012	US	Grade 8	T: 14,720 S: 8,868	College going	Track placement, SES, gender, ethnicity, prior achievement, engagement, & student expectation	Y	Ordered logit regression & HLM	Track academic (+), track honours (+), SES (+), gender male (+), Hispanic (+), Asian (+), prior achievement (+), engagement (+), student expectation (+)
Riegle-Crumb & Humphries	2012	US	High school	S: About 15,000	Mathematics (teacher perceptions of course difficulty for students: too easy, appropriate, & too difficult)	Ethnicity & gender	Y	Multinomial logistic regression	White male (+), White female (−)
Speybroeck et al.	2012	Netherlands	Kindergarten	S: 3,948	General academic expectation	SES	Y	SEM	SES (+)
Ting & Gilmore	2012	Australia	Two imaginary students (one Australian deaf student and one Polish student)	T: 200 (preservice)	General academic ability	Ethnicity (Australian deaf & Polish)	N	EFA & nonparametric tests (Wilcoxon's signed ranks tests)	Australian deaf (+)
Kaiser et al.	2013	Germany	Secondary (Grade 6)	T: 52 S: 1,135	Reading	Student engagement	Y	SEM	Students' reading engagement level (+)
Jiménez-Morales & López-Zafra	2013	Spain	Secondary (Aged 11–16)	S: 193	General adaptation levels & academic performance	Students' prosocial attitudes	N	Correlation	Prosocial attitudes (+)

Paino & Renzulli	2013	US	Grades 3 & 5	NA	Mathematics & reading (student performance compared to others)	Teacher perceptions of students' computer proficiency, academic achievement, gender, ethnicity, SES, dual parents, educational home computer use	Y	Logistic regression	Teacher perceptions of students' computer proficiency (+), academic achievement (+), gender female in reading (+), ethnicity (0), SES (0), dual parents (0), educational home computer use (+)
Soland	2013	US	Grade 10	S: 9,482 (dropout analysis) & 7,883 (college analysis)	Dropping out & attending college	Gender, SES, ethnicity, & special education	Y	Regression	Dropping out: gender (0), SES (−), ethnicity (0), special education (0); attending college: gender (0), African American (+), Hispanic (+), special education (−)
Van Houtte et al.	2013	Belgium	Secondary	S: 6,545	Cognitive capacity	Gender, SES, migrant status, ability, study involvement, sense of belonging, & school misconduct	Y	HLM	Gender (0), SES (+), migrant status (0), ability (+), study involvement (+), sense of belonging (+), school misconduct (0)
Glock & Krolak-Schwerdt	2014	Germany	An imaginary student	a. T: 64 b. T: 66	Intellectual power, learning habits, mathematics & German performance, language proficiency	Ethnicity & SES	Y	ANOVA	Ethnicity (0), SES (0)
Minor	2014	US	Kindergarten	S: 10,316	Mathematics thinking & literacy and language	Ethnicity, SES, gender, prior achievement, home language English, two-parent family, number of siblings, repeat kindergarten, all-day kindergarten	Y	Regression	Black (0), SES (+), gender female (+), prior achievement (+), home language English (0), two parent family (0), number of siblings (0), repeat kindergarten (−), all day kindergarten (+)
Lazarides & Watt	2015	Australia	Grades 10 & 11	S: 438	Mathematics	Gender & achievement level	Y	Multilevel SEM	Gender female (−), achievement level (+)
Mizala et al.	2015	Chile	Elementary (hypothetical students)	T: 208 (preservice)	Mathematics & general achievement	Gender & SES	Y	ANOVA	Mathematics: gender female (−), SES (0); general: gender female (−), SES (+)

(*Continued*)

Appendix 1. Continued.

Author(s)	Year	Country/ Region	Age/grade level	Sample size	Curriculum area (DV)	Influential factors (IV)	Prior achievement/ baseline data controlled	Analytic method	Findings
Ready & Chu	2015	US	Kindergarten	S: About 14,000	Literacy	SES, ethnicity, gender, non-English status, kindergarten repeater, age, single-parent family, number of siblings & students' approaches to learning	Y	HLM	SES (+), Black (0), Hispanic (0), Asian (−), indigenous American (0), multiracial (0), gender (0), non-English (−), kindergarten repeater (0), age (+), single-parent family (0), number of siblings (0), students' approaches to learning (+)
Timmermans et al.	2015	Netherlands	Primary	T: 500 S: 7,550	Education ladder score corresponding to track recommendation	Gender, prior achievement, & socio-ethnic background	Y	HLM	Gender female (+), prior achievement, (+), Dutch SES (+)
Fitzpatrick et al.	2016	Canada	Birth to Grade 4	S: 1,311	Global achievement in mathematics, reading and spelling	General appearance, ethnicity, SES, classroom engagement, number knowledge, family functioning, maternal hostility, & gender	Y	Regression	General appearance (−), Black or indigenous (−), SES (+), classroom engagement (+), number knowledge (+), family functioning (+), maternal hostility (0), gender (0)
Hansen	2016	UK	Aged 7 & 11	S: 9,233	General knowledge, numbers, books, oral ability, & probability of being over-/under-rated by teacher	Attractiveness	Y	Regression	Teachers' perceptions of student attractiveness (+)
Jenkins & Demaray	2016	US	Elementary (Grades 3, 4, & 5)	T: 18 S: 72	Reading, mathematics, & writing	LD (ADHD)	Y	Correlation & percent agreement calculations	Reading: LD (0); mathematics: non-LD (+)
Rubie-Davies & Peterson	2016	New Zealand	Grades 6 & 7 (aged 10–14)	S: 650	Mathematics	Ethnicity & gender	Y	Multilevel logistic regression	Ethnicity (0), gender male (+)
Timmermans et al.	2016	Netherlands	Primary (Grade 6)	S: 5,316	Track recommendations	Prior achievement, gender, SES, work habits, popularity, teachers' perceptions of students' self-confidence, & classroom behaviour	Y	HLM	Prior achievement (+), gender female (+), SES (+), positive work habits (+), popularity (0), self-confidence (+), classroom behaviour (−)
Holder & Kessels	2017	Germany	Vignettes	a. T: 155 b. T: 265	Mathematics performance (subjective & objective)	Gender & ethnicity (German & Turkish)	Y	ANOVA	Gender male (+), Turkish (−)

Kaiser et al.	2017	Germany	Computer simulated classroom (Grade 3)	a. T: 34 b. T: 30 c. T: 48 d. T: 52	Percentage of correct answers	Gender & ethnicity	Y	Moderation analysis	Gender (0), ethnicity (0)
Meissel et al.	2017	New Zealand	Grades 3–7 (aged 8–13)	S: 4,771 (reading) & 11,765 (writing)	Reading & writing	Gender, ethnicity, ESOL, & LD status	Y	HLM	Gender female (+), Maori (−), Pasifika (−), ESOL (−), LD (−)
Müller, Oude Groote Beverborg, & Glock	2017	Netherlands	Fictional students	T: 57	Academic competencies in mathematics and Dutch language & intelligence	Weight (overweight & normal weight)	Y	ANOVA	Overweight (+)
Tobisch & Dresel	2017	Germany	Primary (vignettes)	T: 237	Achievement-relevant characteristics (general abilities, willingness to put in effort, qualification for higher secondary school), achievement expectations and aspirations in German, mathematics, and social studies	Ethnicity & SES	Y	MANOVA & ANOVA	German (+), SES (+)
Edwards	2018	US	Grades 6–8	S: 6,550	General school performance	Family structure (status of being raised by grandparents)	N	Nonparametric tests (Mann-Whitney *U* tests)	Status of being raised by grandparents (−)
II Teacher factors									
De Koning & Boekaerts	2005	Netherlands	Secondary vocational education	S: 1,819	Academic capacities	Teacher learning support	N	Partial correlation & multiple linear regression	Teacher learning support (+)
Hornstra et al.	2010	Netherlands	Grades 2–6	S: 307	Teacher ratings of writing and spelling achievement, mathematics achievement	Interaction of LD status (dyslexia) and teaches' implicit attitudes toward dyslexia, gender, SES	N	HLM	Writing & spelling: the interaction (−), gender female (+), SES (+); mathematics: the interaction (0);
Van den Bergh et al.	2010	Netherlands	Grades 1–4 (Aged 7–12)	T: 41 S: 434	Text comprehension & mathematics test scores	Teachers' explicit and implicit prejudiced attitudes towards ethnic minorities	N	HLM	Explicit attitude (0), interaction of implicit attitudes and ethnicity (−)

Author(s)	Year	Country/Region	Age/grade level	Sample size	Curriculum area (DV)	Influential factors (IV)	Prior achievement/baseline data controlled	Analytic method	Findings
Whitley	2010	Canada	Grades 1–6	S: 2,367	Long-term success & rating of achievement	Teacher experience & teacher efficacy	N	Path analyses	Teacher experience (−), teacher efficacy (+)
Kelly & Carbonaro	2012	US	Grade 8	T: 14,720 S: 8,868	College going	Gender, ethnicity, educational attainment, years of teaching, subject matter, & certification in the subject matter	Y	Ordered logit regression & HLM	Gender male (−), White (−), educational attainment (0), years of teaching (−), subject math (−), & certification in the subject matter (+)
Riegle-Crumb & Humphries	2012	US	High school	S: About 15,000	Mathematics (teacher perceptions of course difficulty for students: too easy, appropriate, & too difficult)	Years teaching	Y	Multinomial logistic regression	Years teaching (−)
Rubie-Davies et al.	2012	New Zealand	Primary (aged 8–10) & intermediate (aged 11–12)	T: 68	Reading comprehension	Gender & teaching experience	Y	Correlation	Gender (0), teaching experience (0)
Agirdag et al.	2013	Belgium	Primary	T: 706 S: 2,845	Mathematics	Gender, ethnicity, SES, teaching experience, & teacher type	Y	HLM	Gender (0), ethnicity (0), SES (0), teaching experience (0), teacher type (0)
Doyle	2014	US	K-12	T: 584	General academic performance & success in music	Teacher culturally relevant preparation	N	EFA & multiple regression analyses	Teacher culturally relevant preparation (+)
Mizala et al.	2015	Chile	Elementary (hypothetical students)	T: 208 (preservice)	Mathematics & general achievement	Teachers' mathematics anxiety	Y	ANOVA	Teachers' mathematics anxiety (−)
III School/Class factors									
De Koning & Boekaerts	2005	Netherlands	Secondary vocational education	S: 1,819	Academic capacities	Procedural support	N	Partial correlation & multiple linear regression	Procedural support (+)
Al-Fadhli & Singh	2006	US	Elementary	T: 102	Teacher expectations based on students' ability and personal characteristics	School achievement level (high & low)	Y	t tests & multiple linear regressions	High school achievement level (+)
Ready & Wright	2011	US	Kindergarten	S: 9,493	Teacher rating of children's language and literacy skills	Class and school average SES, and class average achievement level	Y	HLM	Class average SES (+), school average SES (−), class average achievement (+)
Kelly & Carbonaro	2012	US	Grade 8	T: 14,720 S: 8,868	College going	Class track location	Y	Regression & HLM	Teachers in high track classes (+)
Rubie-Davies et al.	2012	New Zealand	Primary (aged 8–10) & intermediate (aged 11–12)	T: 68	Reading comprehension	School SES & class level	Y	Correlation	School SES (0), class level (0)

Agirdag et al.	2013	Belgium	Primary	T: 706 S: 2,845	Mathematics	School SES (% working class), ethnic (% non-native), and previous achievement composition (% repeaters)	Y	HLM	School SES composition (−), school ethnic composition (−), previous achievement composition (−)
Paino & Renzulli	2013	US	Grades 3 & 5	NA	Mathematics & reading (student performance compared to others)	School SES (% students eligible for free and reduced priced lunches), ethnicity composition (minority population in school)	Y	Logistic regression	School SES (+), ethnicity composition (+)
Van Houtte et al.	2013	Belgium	Secondary	S: 6,545	Cognitive capacity	School type/track (academic education & technical and vocational education)	Y	HLM	High school track (+)
Brault et al.	2014	Canada	High school	T: 2,666	Capacity to succeed in school	School SES (% disadvantaged family), ethnic (% ethnic minorities), and academic composition (% academic difficulties)	Y	HLM	School SES composition (−), school ethnic composition (−), achievement composition (−)
Doyle	2014	US	K-12	T: 584	General academic performance & success in music	School/community support	N	EFA & multiple regression analyses	School/community support (+)
Matsuoka	2014	Japan	Grades 4 & 8	S: 4,487 (Grade 4) & 4414 (Grade 8)	General academic achievement (performance)	School composition of students' cultural capital (SES), school performance, large city, urban, & private/national	Y	Logistic regression analyses	School SES composition (+), school performance (+), large city (−), urban (−), national (+)
Timmermans et al.	2015	Netherlands	Primary	T: 500 S: 7,550	Education ladder score corresponding to track recommendation	Class-level achievement and SES (% of students with low educated parents)	Y	HLM	Class-level achievement (+) and SES (−)

(*Continued*)

Author(s)	Year	Country/Region	Age/grade level	Sample size	Curriculum area (DV)	Influential factors (IV)	Prior achievement/baseline data controlled	Analytic method	Findings
Thys & Van Houtte	2016	Belgium	Primary	T: 471 S: 1,049	Students' future school progress	School ethnic composition (% ethnic minorities)	N	Correlation	School ethnic composition (−)
IV Other factors									
Page & Rosenthal	1990	US	University (experimental teaching situation)	T: 12 S: 96	A vocabulary and a quantitative task	Student–teacher gender match/mismatch	Y	F tests	Asian: student–teacher gender mismatch (+)
Saracho	1991	US	Grades 2 & 5	T: 40 S: 480	Academic competence rank	Student–teacher cognitive style match/mismatch	Y	ANOVA	Student–teacher cognitive style mismatch (−)
Hughes et al.	2005	US	Grade 1	S: 607	Reading & mathematics	Parent–teacher & student–teacher relationship quality	Y	Hierarchical regression analyses	Teacher perception of parent-teacher alliance (+), teacher perception of parent involvement (+), teacher perception of student-teacher support (+)
De Koning & Boekaerts	2005	Netherlands	Secondary vocational education	S: 1,819	Academic capacities	Course utility, student–teacher relationship (teacher involvement and teacher righteousness), student–student relationship (mutual support), & personal respect	N	Partial correlation & multiple linear regression	Course utility (+), teacher involvement (+), teacher righteousness (+), student mutual support (+), personal respect (+)
Fowler et al.	2008	US	Kindergarten & Grades 1–3	T: 20 S: 230	Mathematical thinking & literacy skill development	Student–teacher relationship	N	Correlation & multiple regression	Correlation (0); regression (+)
De Boer et al.	2010	Netherlands	Primary	S: About 11,000	Education ladder score corresponding to track recommendation	Parents' aspirations (minimum level of education)	Y	HLM	Parents' aspirations (+)
Kelly & Carbonaro	2012	US	Grade 8	T: 14,720 S: 8,868	College going	Gender match, ethnicity match	Y	Ordered logit regression & HLM	Gender match (−), ethnicity match for Black T & S (+), ethnicity match for Hispanic/White T & S (0)
Doyle	2014	US	K-12	T: 584	General academic performance & success in music	Teacher–student ethnicity, SES, & urbanicity match/mismatch	N	EFA & multiple regression analyses	Teacher–student SES match (+), ethnicity match (0), urbanicity match (0)
De Boer & Van der Werf	2015	Netherlands	Grades 7–11	S: 10,433	Track recommendation (difference between teacher's expectation and student's actual talent and achievement)	Misalignment between parents' aspiration and student's talent and achievement	Y	Correlation & HLM	Misalignment between parents' aspiration and student's talent and achievement (+)

Rausch et al.	2016	Germany	Secondary (Grade 8)	T: 409 S: 409	Global and task specific judgment of reading comprehension and mathematics achievement	Teacher–student personality similarity	Y	Stepwise multiple regression analysis	Global judgement: teacher–student personality similarity (+); specific judgment: teacher-student personality similarity (0)
Timmermans et al.	2016	Netherlands	Primary (Grade 6)	S: 5,316	Track recommendations	Student–teacher relationships	Y	HLM	Student–teacher relationships (0)

Note: DV = dependent variable, each DV relates to teacher expectations for the specific factor mentioned in the column; IV = independent variable; T = teacher; S = student; Y = student prior achievement/baseline data controlled; N = student prior achievement/baseline data not controlled; "+" represents statistical significant positive association; "−" represents statistical significant negative association; "0" represents non-significant association; MANOVA = multivariate analysis of variance; ANOVA = analysis of variance; ANCOVA = analysis of covariance; GPA = grade point average; LD = learning disabilities; HLM = hierarchical linear modelling; SEM = structural equation modelling; EFA = exploratory factor analysis; ESOL = English for speakers of other languages; CFA = confirmatory factor analysis.

Appendix 2. A list of studies on analytical Theme 2: mediating mechanism of teacher expectation effects

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Mediating factors	Prior achievement/ baseline data controlled	Analytic method	Findings
Jussim	1989	US	Grade 6	T: 27 S: 429	Mathematics grades	Student self-concept	Y	Path analyses	Student self-concept (+)
Babad & Taylor	1992	Israel & New Zealand	Students aged 10, 13, and 16, & high school teachers	85	Judges' perceptions of teacher differential behaviours when talking about and talking to high- and low-expectation students	Teachers' non-verbal behaviours	NA	ANOVA & matched-pair t tests	Clips on teachers talking about students: teachers' non-verbal behaviours (0); clips on teachers talking to students: teachers' non-verbal behaviours (significant)
Robinson	1994	South Korea	Elementary	T: 58 S: 180	Achievement	Peer group membership, call-ons, & teacher controls	N	Correlation & path analysis	Peer group membership (+), call-ons (+), teacher controls (−)
Blöte	1995	Netherlands	Elementary (Grade 5)	S: 529	Similarities and disparities between students' and teachers' perceptions of 15 teacher behaviours	15 teacher behaviours	N	Discriminant analysis, correlation, & paired t tests	Both students and teachers perceived low-achieving student received more teacher help and support. They held opposite views with regard to teachers' praise and criticism.
Gill & Reynolds	1999	US	Grade 6	S: 712	Reading & mathematics achievement	Student perceptions of teacher expectations	Y	Path analysis	Student perceptions of teacher expectations (0)
Kuklinski & Weinstein	2001	US	Grades 1, 3, & 5	T: 48 S: 376	Reading achievement	Students' self-expectations	Y	Path analysis	In Grade 5 high perceived differential treatment classrooms (+)
Montague & Rinaldi	2001	US	Grades 3 & 4	T: 14 S: 20	Student perceptions of general teacher expectations	Teacher–student classroom interactions, peer interactions, & academic engaged time	N	ANOVA	Teacher–student classroom interactions (+), academic engaged time (+), peer interactions (0)
Trouilloud et al.	2002	France	Junior high (Grades 8–11)	T: 7 S: 173	Physical education achievement	Students' perceived ability	Y	Path analysis	Students' perceived ability (marginally +)

Benner & Mistry	2007	US	Aged 9–16	S: 522	Reading & mathematics achievement	Student expectations, self-concept of ability, expectations for success, & attainment values	N	Path analyses	Student expectations (+), self-concept of ability (+), expectations for success (0), & attainment values (0)
Rubie-Davies	2007	New Zealand	Primary	T: 12	Reading achievement	Classroom instructional & interactions (class level)	Y	ANOVA & Mann-Whitney *U* post-hoc comparisons	Classroom instructional and interactions of high-expectation teachers were significantly different from average progress and low-expectation teachers
Woolley et al.	2010	US	Middle school (Grades 6, 7, & 8)	S: 933	Mathematics achievement	Student motivation (confidence, interest, & anxiety)	N	SEM	Confidence (+), interest (+), anxiety (−)
Y.-H. Chen et al.	2011	Taiwan	Grades 3–6	S: 1,598	Academic and non-academic performance	Student perceptions of teachers' oral feedback (positive/negative & academic/non-academic)	N	Discriminant analysis, MANOVA, & pairwise comparisons	Student perceptions of the four types of teachers' oral feedback differentiated among students of the three levels of teacher expectations
Demanet & Van Houtte	2012	Belgium	Secondary school	T: 2,104 S: 11,844	School misconduct	Student sense of academic futility & perceptions of teacher support	Y	HLM	Student sense of academic futility (+), perceptions of teacher support (−)
Prihadi et al.	2012	Indonesia	High school (aged 15–17)	S: 800	Student self-esteem	Locus of control	N	Regression	When students had an internal locus of control, their perceived teacher expectations did not affect their self-esteem
Agirdag et al.	2013	Belgium	Primary	T: 706 S: 2,845	Mathematics achievement	Student feelings of academic futility	Y	Path analysis	Student feelings of academic futility (−)
Zhou & Urhahne	2013	Germany & China	Grade 4	S: 144 (German) & 272 (Chinese)	Students' expectations for success, self-concept, and test anxiety in mathematics	Student attribution style (ability, chance, & mood)	Y	Hierarchical multiple regression analyses & Freedman-Schatzkin test	Students' expectations for success: ability (+), chance (0), mood (0); students' self-concept: ability (+), chance (0), mood (−); test anxiety: ability (0), chance (0), mood (+)

(Continued)

Appendix 2. Continued.

Author(s)	Year	Country/region	Age/grade level	Sample size	Curriculum area (DV)	Mediating factors	Prior achievement/baseline data controlled	Analytic method	Findings
Gilbert et al.	2014	US	Middle school	S: 979	Mathematics achievement	Student self-efficacy & performance avoidance goal	N	SEM	Student self-efficacy (+), performance avoidance goal (+)
Matsuoka	2014	Japan	Grades 4 & 8	S: 4,487 (Grade 4) & 4,414 (Grade 8)	General academic achievement	Frequency of homework assignments (school level)	Y	Multiple regression analyses	Grade 4: high expectation were associated with less homework; Grade 8: high expectation were associated with more homework
Wanzek et al.	2014	US	Kindergarten	S: 109	Reading achievement	Opportunities for academic responding	Y	SEM	Opportunities for academic responding (0)
Friedrich et al.	2015	Germany	Grade 5	T: 73 S: 1,289	Mathematics grade & test score	Student self-concept	Y	HLM	Mathematics grade: student self-concept (+); test score: student self-concept (0)
Ready & Chu	2015	US	Kindergarten	S: About 14,000	Literacy achievement gain	Ability grouping	Y	HLM	Students who were overestimated were more likely to be placed into upper level groups, and students in upper level groups gained more literacy skills

Note: DV = dependent variable; T = teacher; S = student; Y = student prior achievement/baseline data controlled; N = student prior achievement/baseline data not controlled; "+" represents statistical significant positive mediation effects; "−" represents statistical significant negative mediation effects; "0" represents non-significant mediation effects.

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Moderating factors	Prior achievement/ baseline data controlled	Analytic method	Findings
Jussim et al.	1996	US	Grades 5–7	S: 1,765 (gender), 1020–1060 (SES), 1609–1663 (ethnicity)	Mathematics grade	Student gender, SES, & ethnicity	Y	Regression	Gender female (+), lower SES (+), African American (+)
Smith et al.	1998	US	Grade 6	T: 97 S: 1,701	Mathematics achievement	Ability grouping: type (between-class, within-class, & no grouping) & level (high-ability, low-ability, & no grouping)	Y	Regression	Type: within-class ability grouping (0), between-class ability grouping (+); level: students in low-ability within-class grouping (+), levels of between class grouping (0)
Kuklinski & Weinstein	2001	US	Grades 1, 3, & 5	T: 48 S: 376	Reading achievement	Classroom perceived differential treatment & developmental differences (grade level)	Y	Path analysis	High perceived differential treatment classroom (+), grade level (−)
McKown & Weinstein	2002	US	Grades 1, 3, & 5	T: 30 S: 561	Reading & mathematics achievement	Gender & ethnicity	Y	HLM & loglinear models	In Grades 3 and 5, ethnicity (African American +) moderated expectation effects in reading. In Grade 5, gender (female +) moderated expectation effects in math.
Liu & Wang	2008	Singapore	Secondary (aged 13)	S: 495	Academic self-concept	Ability stream (high & low)	N	Correlations & regression	Low-ability stream students (+)
McKown & Weinstein	2008	US	Elementary	S: 1,872	Reading & mathematics (ethnic achievement gap)	Classroom perceived level of differential teacher treatment (high & low)	Y	HLM	High perceived differential teacher treatment (+)
Hinnant et al.	2009	US	Grades 1, 3, & 5	S: 2,892	Reading & mathematics achievement	Student gender, ethnicity, & SES	Y	Hierarchical regression analyses	Students from low SES (+), minority boys (+)

Appendix 3. Continued.

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Moderating factors	Prior achievement/ baseline data controlled	Analytic method	Findings
De Boer et al.	2010	Netherlands	Primary	S: About 11,000	Education ladder score corresponding to track recommendation	Prior achievement, IQ, SES, parents' aspirations, grade repetition, gender, ethnicity, & achievement motivation	Y	HLM	Prior achievement (+), IQ (−), SES (+), parents' aspirations (+), grade repetition (−), gender, ethnicity, & achievement motivation (0)
Speybroeck et al.	2012	Netherlands	Kindergarten	S: 3,948	Language & mathematics achievement	Ethnicity (majority & minority)	Y	SEM	Language: ethnicity (0); mathematics: majority (+)
Bohlmann & Weinstein,	2013	US	Grade 1	S: 193	Student self-perceptions of ability in mathematics	Classroom ability-based practices (high & low)	Y	HLM	High perceived ability differentiating classrooms (+)
Karwowski et al.	2015	Poland	Middle school	T: 189 S: 1,614	Creativity	Gender	Y	CFA & SEM	Gender female (+)
Boerma et al.	2016	Netherlands	Grades 5 & 6	S: 160	Reading motivation (self-concept, task value, & attitude)	Gender	N	Correlation & hierarchical step-wise regression analyses	Self-concept & task value: gender female (+)
Pesu et al.	2016	Finland	Grade 1	S: 152	Students' self-concept of ability in reading & mathematics	Student performance level (high & low)	Y	Hierarchical regression analyses & simple slopes comparison	High-performing students (+)
Goldstein, McCoach, & Yu	2017	US	Kindergarten–Grade 3	S: about 30,000	Reading, mathematics, & writing achievement	School SES (the percentage of free lunch eligible students)	N	HLM	School SES (−)
Intervention studies									
Gottfredson et al.	1995	US	Elementary	T: 20	Reading & mathematics	15 classroom behaviours/ effective teaching practices (response opportunities, feedback, & personal regard)	NA	ANCOVA	Mixed: non-significant & negatively significant
Timperley & Phillips	2003	New Zealand	Primary	T: 31	Literacy	Teacher beliefs on student achievement and self-efficacy, teachers'	NA	t tests	Positively significant

						conception and teaching of the task			
Rubie-Davies et al.	2015	New Zealand	Elementary	T: 84 S: 2,408	Reading & mathematics	Behaviours and practices of high-expectation teachers (grouping and learning activities, class climate, motivation, evaluation, feedback, & enhancing student autonomy)	NA	Bayesian multilevel latent growth models	Reading (non-significant), mathematics (positively significant)

Note: DV = dependent variable; T = teacher; S = student; Y = student prior achievement/baseline data controlled; N = student prior achievement/baseline data not controlled; "+" represents statistical significant positive moderation effects (the magnitude of teacher expectation effects were increased by the moderator); "−" represents statistical significant negative moderation effects (the magnitude of teacher expectation effects was decreased by the moderator); "0" represents non-significant moderation effects.

Appendix 4. A list of studies on analytical Theme 4: student outcomes of teacher expectation effects

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Prior achievement/ baseline data controlled	Analytic method	Findings
I. Socio-psychological outcomes								
Jussim	1989	US	Grade 6	T: 27 S: 429	Student self-concept of mathematics ability	Y	Path analyses	+
Haraoka	1991	Japan	Grade 6	S: 216	Student self-expectations & attribution of performance in arithmetic	N	Chi-square test & t test	Student self-expectations (+), effort (+), luck (−),
Blöte	1995	Netherlands	Elementary (Grade 5)	S: 529	Student self-concept	N	Correlations	Mixed and moderate
Keller	2001	Switzerland	Grades 6, 7, & 8	T: 321 S: 6,602	Students' stereotyping beliefs in mathematics	Y	HLM	+
Kuklinski & Weinstein	2001	US	Grades 1, 3, & 5	T: 48 S: 376	Students' self-expectations in reading	Y	Path analysis	In Grade 5 high-perceived differential treatment classrooms (+); In Grades 1 & 3 (0)
Trouilloud et al.	2002	France	Junior high (Grades 8–11)	T: 7 S: 173	Student-perceived ability in physical education	Y	Path analysis	+
Cavanagh & Waugh	2004	Netherlands	Secondary	S: 988	Student educational values	N	Correlations & multiple regression analyses	+
P. P. Chen	2006	US	Grade 7	T: 4 S: 107	Student self-efficacy	N	Path analyses	+
Rubie-Davies	2006	New Zealand	Elementary	S: 256	Student self-perceptions (reading, mathematics, physical abilities, & peer relations)	Y	ANOVA	Reading (+), mathematics (+), physical abilities (0), peer relations (0)
Benner & Mistry	2007	US	Aged 9–16	S: 522	Student expectations, expectations for success, self-concept of ability, & attainment values	N	Path analyses	Student expectations (+), expectations for success (+), self-concept of ability (+), attainment values (+)

Kuperminc et al.	2008	US	Middle & high school	S: 324	Student academic competence	N	Path analyses & correlations	+
Liu & Wang	2008	Singapore	Secondary (aged 13)	S: 495	Student academic self-concept (confidence)	N	Correlations	+
Tyler & Boelter	2008	US	Middle school (Grades 6, 7, & 8)	S: 262	Student academic self-efficacy	N	Hierarchical regression analyses	+
Vekiri	2010	Greece	Grades 8 & 9	T: 7 S: 301	Student self-efficacy in computer information science	N	Correlations & regressions	+
Woolley et al.	2010	US	Middle school (Grades 6, 7, & 8)	S: 933	Student motivation (confidence, interest, & anxiety) & self-expectations in mathematics	N	Correlations & SEM	Confidence (+), interest (+), anxiety (−), self-expectations (+, indirect)
Y.-H. Chen et al.	2011	Taiwan	Grades 3–6	S: 1,598	Student self-concept (general, academic, & non-academic)	N	CFA & SEM	+
Urhahne et al.	2011	Germany	Grade 4	T: 14 S: 235	Student self-expectations for success, academic self-concept, & test anxiety	Y	t tests	Student self-expectations (+), academic self-concept (+), test anxiety (−)
Prihadi et al.	2012	Indonesia	High school (aged 15–17)	S: 800	Student self-esteem	N	Regression	Partially significant (−)
Agirdag et al.	2013	Belgium	Primary	T: 706 S: 2,845	Students' feelings of academic futility	Y	Path analyses	−
Bohlmann & Weinstein	2013	US	Grade 1	S: 193	Student self-perceptions of ability in mathematics	Y	HLM	+
Zhou & Urhahne	2013	Germany & China	Grade 4	S: 144 (German) & 272 (Chinese)	Students' self-expectations, self-concept, & test anxiety in mathematics	Y	Correlations	Students' self-expectations (+), self-concept (+), test anxiety (−)
Gilbert et al.	2014	US	Middle school	S: 979	Mathematics motivation (achievement goals, utility, & self-efficacy)	N	SEM	+

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Prior achievement/ baseline data controlled	Analytic method	Findings
Karwowski et al.	2015	Poland	Middle school	T: 189 S: 1,614	Students' creative self-efficacy in mathematics & language	Y	CFA & SEM	+
Lazarides & Watt	2015	Australia	Grades 10 & 11	S: 438	Students' mastery and performance-approach goal orientation & self-expectations for success in mathematics	Y	Multilevel SEM	Students' mastery goal (+), performance-approach goal (+), self-expectations for success (+)
Upadyaya & Eccles	2015	US	Kindergarten through Grade 6	S: 849	Students' self-concept of ability in mathematics and reading	Y	Latent growth curve models	Mathematics ability self-concept (+), reading ability self-concept (+)
Wu & Bai	2015	Taiwan	Grade 9	S: 1,595	Students' university aspirations	Y	Logistic regression	+
Zhu & Urhahne	2015	China	Grade 5	T: 16 S: 505	Students' self-expectations, self-concept, anxiety, & shame about English learning	Y	t test	Students' self-expectations (+), self-concept (+), anxiety (−), shame (−)
Boerma et al.	2016	Netherlands	Grades 5 & 6	S: 160	Students' reading motivation (self-concept, task value, & attitude)	N	Correlation	For boys: (0); for girls: self-concept (+), reading task value (+)
Pesu et al.	2016	Finland	Grade 1	S: 152	Students' self-concept of ability in reading & mathematics	Y	Hierarchical regression analyses	For high performers (+); for low performers (0)
II. Behavioural outcomes								
Cousineau & Luke	1990	Canada	Grade 6	T: 6 S: 36	Academic learning time in physical education	N	ANOVA	+
Tyler & Boelter	2008	US	Middle school (Grades 6, 7, & 8)	S: 262	Academic engagement (cognitive, behavioural, & emotional engagement)	N	Hierarchical regression analyses	Cognitive engagement (+), behavioural engagement (+), emotional engagement (+)
Archambault et al.	2012	Canada	Secondary school	T: 79 S: 1,364	Mathematics cognitive engagement	Y	HLM	0
Demanet & Van Houtte	2012	Belgium	Secondary school	T: 2,104 S: 11,844	School misconduct	Y	HLM	−

III. Achievement outcomes

Jussim	1989	US	Grade 6	T: 27 S: 429	Mathematics achievement	Y	Path analyses	+
Page & Rosenthal	1990	US	University (experimental teaching situation)	T: 12 S: 96	A vocabulary and a quantitative task	N	F tests	0
Haraoka	1991	Japan	Grade 6	S: 216	Arithmetic test scores	N	t test	+
Saracho	1991	US	Grades 2 & 5	T: 40 S: 480	Achievement scores	Y	Multiple regression analysis	+
Jussim & Eccles	1992	US	Grade 6	T: 98 S: 1,731	Mathematics grades & test scores	Y	Path analyses	+
Heath, Colton, & Aldgate	1994	UK	Middle school age (8–14)	S: 107	Reading achievement	N	t tests	+
Robinson	1994	South Korea	Elementary	T: 58 S: 180	Achievement	N	Path analysis	+
Jussim et al.	1996	US	Grades 5–7	S: 1,765 (gender), 1,020–1,060 (SES), 1,609–1,663 (ethnicity)	Mathematics grade	Y	Regression	+
Muller	1997	US	Grade 10	S: 3,442	Mathematics test score gains	Y	Regression	+
Palardy	1998	US	Grade 10	T: 20 S: 384	Reading achievement	Y	ANCOVA	+
Gill & Reynolds	1999	US	Grade 6	S: 712	Reading & mathematics achievement	Y	Path analysis	Reading (+), mathematics (+)
Schiller & Muller	2000	US	High school (Grade 8)	S: about 9,000	Receiving high school diploma	Y	HGLM (hierarchical generalised linear modelling)	+
Ma	2001	US	Grades 7 through 12	S: 3,116	Participation in advanced mathematics	Y	Logistic regression (survival analysis)	0
Trouilloud et al.	2002	France	Junior high (Grades 8–11)	T: 7 S: 173	Physical education achievement	Y	Path analysis	+
Cavanagh & Waugh	2004	Netherlands	Secondary	S: 988	General academic ability & performance	N	Correlations & multiple regression analyses	+

(*Continued*)

Appendix 4. Continued.

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Prior achievement/ baseline data controlled	Analytic method	Findings
DuPaul et al.	2004	US	Grades 1–4	S: 189	Reading & mathematics achievement	N	Hierarchical regression analyses	Reading (+), mathematics (+)
Rumberger & Palardy	2005	US	High school (Grades 8–12)	S: 14,217	Mathematics, science, reading, history achievement	Y	HLM	Mathematics (0), science (marginally +), reading (0), history (0)
P. P. Chen	2006	US	Grade 7	T: 4 S: 107	Mathematics performance	Y	Path analyses	+
Rubie-Davies et al.	2006	New Zealand	Primary	T: 21 S: 540	Reading achievement	Y	ANOVA	+
Benner & Mistry	2007	US	Aged 9–16	S: 522	Reading & mathematics achievement	N	Path analyses	+
Hinojosa	2008	US	Grades 6 & 8	NA	School suspension	N	Logistic regression	−
Kuperminc et al.	2008	US	Middle & high school	S: 324	Reading, language arts, mathematics, science, & history	N	Path analyses & correlations	Grade point average (+)
Martín et al.	2008	Spain	Secondary	S: 965	Language, mathematics, & social science achievement	Y	HLM	Language (+), mathematics (+), social science (+)
McKown & Weinstein	2008	US	Elementary	S: 1,872	Ethnic achievement gap	Y	Hierarchical regression analyses	In high-bias classroom (+), in low-bias classroom (0)
Hinnant et al.	2009	US	Grades 1, 3, & 5	S: 2,892	Reading & mathematics achievement	Y	Hierarchical regression analyses	Reading (0), mathematics (+)
Atnafu	2010	Ethiopia	Grade 10	T: 8 S: 632	Algebra achievement	N	Regression	0
De Boer et al.	2010	Netherlands	Primary	S: About 11,000	Education ladder score corresponding to track recommendation	Y	HLM	+
Hornstra et al.	2010	Netherlands	Grades 2–6	S: 307	Spelling & mathematics achievement	N	HLM	Spelling (+), mathematics (+)
Van den Bergh et al.	2010	Netherlands	Grades 1–4 (aged 7–12)	T: 41 S: 434	Text comprehension & mathematics test scores	N	HLM	Text comprehension (+), mathematics (+)
Whitley	2010	Canada	Grades 1–6	S: 2,367	Achievement	N	Path analyses	+
Woolley et al.	2010	US	Middle school (Grades 6, 7, & 8)	S: 933	Mathematics achievement	N	SEM	Indirect (+)

Author	Year	Country	Level	Sample	Outcome	Y/N	Method	Result
Sciarra & Ambrosino	2011	US	Secondary school	S: 5,353	Post-secondary education status (never enrolled, leaver, enrolled in 2-year institution, & enrolled in 4-year institution)	N	Multinomial logistic regression	+
Archambault et al.	2012	Canada	Secondary school	T: 79 S: 1,364	Mathematics achievement	Y	HLM	+
Speybroeck et al.	2012	Netherlands	Kindergarten	S: 3,948	Language & mathematics achievement	Y	SEM	Language (+), mathematics (+)
Agirdag et al.	2013	Belgium	Primary	T: 706 S: 2,845	Mathematics achievement	Y	Path analyses	Indirect effect (+), direct effect (0)
Becker	2013	Germany	Grade 10	T: 1,701 S: 1,987	High school graduation and university transitions	Y	Bivariate probit model	High school graduation (+), university transitions (0)
Faulkner, Crossland, & Stiff	2013	US	Fifth- and eighth-grade waves	S: over 3,000	Student placement in algebra or above by eighth grade	N	Logistic regression	+
Gregory & Huang	2013	US	Grade 10	T: 3,677 S: 4,094	Post-secondary education status (some high school experience, high school diploma, enrolled in 2-year or less than 2-year college, & enrolled in 4-year college or university)	Y	Cross-classified random effects modelling (CCREM)	+
Jiménez-Morales & López-Zafra	2013	Spain	Secondary (aged 11–16)	S: 193	Academic qualifications of compulsory subjects	N	t tests	+
Paino & Renzulli	2013	US	Grades 3 & 5	NA	Mathematics & reading achievement	N	Ordinary least squares regressions	Reading (+), mathematics (+)
Soland	2013	US	Grade 10	S: 9,482 (dropout analysis) & 7,883 (college analysis)	Dropping out & attending college	Y	Correlation & regression	Dropping out (−), attending college (+)

Appendix 4. Continued.

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Prior achievement/ baseline data controlled	Analytic method	Findings
Troia, Harbaugh, Shankland, Wolbers, & Lawrence	2013	US	Grades 4–10, excluding Grade 8	S: 618	Writing quality	Y	SEM	+
Zhou & Urhahne	2013	China	Grade 4	S: 272	Mathematics achievement	Y	t test	+
Gilbert et al.	2014	US	Middle school	S: 979	Mathematics achievement	N	SEM	Indirect (+)
Matsuoka	2014	Japan	Grades 4 & 8	S: 4,487 (Grade 4) & 4,414 (Grade 8)	General academic achievement gap between schools	N	Multilevel regression analyses	Grade 4 (0); Grade 8 (+)
Rubie-Davies et al.	2014	US	Preschool–Grade 4	S: 110	Verbal ability and achievement (reading & mathematics)	Y	Cross-lagged panel design (CLPD)	+
Wanzek et al.	2014	US	Kindergarten	S: 109	Reading achievement	Y	SEM	+
De Boer & Van der Werf	2015	Netherlands	Grades 7–11	S: 10,433	Education ladder score corresponding to track recommendation	Y	HLM	+
Friedrich et al.	2015	Germany	Grade 5	T: 73 S: 1,289	Mathematics grade & achievement	Y	HLM	Individual level (+); class level (0)
Holwerda et al.	2015	Netherlands	Aged 17–20	S: 341	Future work outcome (entering competitive employment)	N	Logistic regression analyses	+
Kim	2015	US	Kindergarten– Grade 5	T: 329 S: 1,522	Mathematics & reading achievement gain	Y	Multilevel regression analyses (lagged change score model)	Mathematics (+), reading (+)
Ready & Chu	2015	US	Kindergarten	S: About 14,000	Literacy achievement gain	Y	HLM	+
Wu & Bai	2015	Taiwan	Middle school (Grade 9) through university	S: 1,595	University aspirations and attainment	Y	Logistic regression	University aspirations (+), university attainment (+)
Peterson et al.	2016	New Zealand	Grades 3–7	T: 38 S: 1,060	Reading & mathematics	Y	Multilevel models	Reading (+), mathematics (0)

Byun et al.	2017	US	High school	S: 2,112	College attendance pattern (attended a 2-year college only, attended a 2-year college and then a 4-year college, attended a 4-year college only, & attended a 4-year college and then a 2-year college)	Y	Multinomial logistic regression analyses	+
Goldstein et al.	2017	US	Kindergarten–Grade 3	S: about 30,000	Reading, mathematics, & writing achievement	N	HLM	Reading (+), mathematics (+), writing (+)
Li & Rubie-Davies	2017	China	University	T: 50 S: 4,617	English-as-a-foreign-language achievement	Y	HLM	+
Perin, Lauterbach, Raufman, & Kalamkarian	2017	US	Community college	S: 211	Text-based writing skills (proportion of functional persuasive elements in the essay, essay quality, percentage of academic words in the essay, proportion of main ideas from the source text in the summary, summary quality, percentage of academic words in the summary)	Y	HLM	Proportion of functional persuasive elements in the essay (0), essay quality (0), percentage of academic words in the essay (0), proportion of main ideas from the source text in the summary (+), summary quality (+), percentage of academic words in the summary (+)
Thomas & Strunk	2017	US	Grades 3–5	S: 153	Science achievement	N	Regression	0
Jamil et al.	2018	US	Kindergarten–Grade 8	S: 8,503	Mathematics achievement	Y	Cross-lagged model	−

Note: DV = dependent variable; T = teacher; S = student; Y = student prior achievement/baseline data controlled; N = student prior achievement/baseline data not controlled; "+" represents statistical significant positive association; "−" represents statistical significant negative association; "0" represents non-significant association.