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Pygmalion in Chinese Classrooms: Links Between Teacher Expectations, Teacher Behaviours, and Student Academic Achievement

Shengnan Wang

A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy in Education, The University of Auckland, 2019.

ABSTRACT

The 5 decades of research on teacher expectations has established knowledge and deepened our understanding of teacher expectations and the associated classroom effects. However, many research gaps remain. This doctoral research aimed to examine the stability of teacher expectations, student- and teacher-level teacher expectations, and their effects on student achievement in the underresearched Chinese context.

The thesis begins with a systematic review of the literature over a 30-year period from 1989 to 2018 which has identified new research topics raised in the past 3 decades as well as the existing research gaps in the literature.

The first study investigated individual student-level and teacher-level teacher expectation effects on student academic achievement in the Chinese junior high school context. Both student- and teacher-level expectations (controlling for achievement) positively predicted student academic achievement. Teacher expectations at the student level showed a stronger influence on student-achievement outcomes than teacher-level expectations. In addition, teachers tended to hold higher expectations for girls than for boys and were more likely to have lower expectations for students who were children of migrant workers.

The second study explored and compared the instructional practices and classroom interactions of teachers who had correspondingly high or low expectations for all their students. Classroom observations revealed meaningful differences in the instructional practices and the socioemotional classroom environment created by high and low expectation teachers.

Using three time points of teacher expectation data, the third study examined the stability of teacher expectations within a school year. The stability of individual student-level teacher expectations varied across different classrooms, ranging from very flexible to very

stable. High-achieving students were systematically and increasingly overestimated over the year, whereas low-achieving students were systematically underestimated across the school year.

Collectively, the research suggested that teachers' expectations may affect their classroom teaching behaviours and in turn either facilitate or hinder student academic growth. Teacher professional development should aim to ensure teachers are more aware of their expectations, especially low expectations towards low-achieving students, in order to prevent the detrimental effects of negative-expectation bias and to promote educational equity.

DEDICATION

To those who are fighting for a better tomorrow:

"Success is not final, failure is not fatal: it is the courage to continue that counts."

—Winston Churchill

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journey. Thank you for feeding me when I was too busy to prepare food—otherwise I might have been too starved to reach to the end. I will always cherish the good memories that we have had, laughing together, and supporting each other during difficult times. Thanks to all the other doctoral students in the supervision teams of Christine and Kane, from whom I have learnt a lot and have received brilliant feedback and continued encouragement.

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Finally, to my parents and beloved family members, your unconditional love and enduring support is what that has kept me kind and strong.

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Nature of contribution by PhD candidate	Literature search and data coding, write up the manuscript
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CO-AUTHORS

Name	Nature of Contribution
Professor Christine Rubie-Davies	Conception and design, provided feedback, edited manuscript
Dr Kane Meissel	Provided feedback, edited manuscript

Certification by Co-Authors

The undersigned hereby certify that:
❖ the above statement correctly reflects the nature and extent of the PhD candidate's contribution to this work, and the nature of the contribution of each of the co-authors; and
❖ that the candidate wrote all or the majority of the text.

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Nature of contribution by PhD candidate	Research design, data collection, data analysis, write up the manuscript
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CO-AUTHORS

Name	Nature of Contribution
Dr Kane Meissel	Statistical advice and support, provided feedback, revised and edited manuscript
Professor Christine Rubie-Davies	Conception and design, provided feedback, revised and edited manuscript

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CHAPTER ONE: INTRODUCTION AND OVERVIEW

Expectations are our evaluation of what is likely to happen in the future. When we expect something, we strongly believe that this thing will happen or be the case. According to the theory of the self-fulfilling prophecy (Merton, 1948), people's beliefs and expectations about what will happen in the future, although not true in reality, may trigger behaviours that make the original expectations come true (i.e., people do things to fulfil their own prophecy). Placing this theory within the context of education, if a teacher expects a student to succeed, the teacher is likely to behave in a way that will help realise his/her expectation, and the student is, in turn, likely to achieve the expectation and succeed. This self-fulfilling prophecy effects of teachers' expectations on student learning outcomes is also known as *teacher expectation effects*. The focus of this thesis is on teacher expectation effects in the Chinese junior high school context. Specifically, it investigates the expectations that teachers have for their students and whether these expectations, for individual students and for all students in their class/classes as a whole, could be related to student academic achievement, and, if that is the case, in what way?

This chapter provides a general introduction to the thesis. It starts with a broad overview of the research field of teacher expectations, including the major knowledge that has been achieved during the past decades. Next, it reports on some of the important gaps existing in the current literature, which were identified through a systematic literature review. In responding to the presented research gaps, the aims of the current research project are then specified, and the significance of the research is elaborated. This is followed by the ethical considerations for conducting the research. The chapter concludes with an explanation about the thesis format and the outline of the thesis structure.

1.1. Background: Set the Context

Rooted in the concept of the self-fulfilling prophecy (Merton, 1948), Rosenthal and Jacobson's (1968) seminal experiment *Pygmalion in the Classroom* kindled considerable research enthusiasm and seeded the research area of teacher expectation effects. Five decades have passed since the Pygmalion study, and these years have produced extensive literature examining whether and how teacher expectations influence student achievement.

Teachers generally form their academic expectations based on student ability and achievement motivation (Brophy, 1983). If teacher expectations were formed objectively and based only on student ability and achievement, the expectations would tend to be relatively accurate and would be unlikely to function as a self-fulfilling prophecy. However, the research evidence has shown that teacher expectations can be biased by students' sociodemographic characteristics, such as gender, race, ethnicity, socioeconomic status, appearance, and various special education labels (Dusek & Joseph, 1983; S. Wang, Rubie-Davies, & Meissel, 2018). Once teacher expectations are formed, teachers may act upon their expectations and treat high- and low-expectation students differently (Good, 1987; Harris & Rosenthal, 1985). The differential teacher treatment and learning opportunities provided to students will make a difference in what the students are able to learn and how well they will learn.

Individual differences that exist among teachers and students means that not all teachers influence their students with their expectations in the same way, and not all students are affected by their teachers' expectations to the same extent. Researchers have explored both teacher and student characteristics which may function as moderators in teacher expectation effects. Teachers with certain beliefs and characteristics such as having dogmatic personalities (Babad, Inbar, & Rosenthal, 1982), being more differential between high- and low-expectation students (Brattesani, Weinstein, & Marshall, 1984), or

holding a fixed notion of intelligence (Eccles & Wigfield, 1985) are more likely to produce expectation effects. In addition, students can be different in their sensitivity to teacher expectations and differential teacher behaviours which may influence whether expectation effects occur and also the size of the effects (Hinnant, O'Brien, & Ghazarian, 2009; Jussim, Eccles, & Madon, 1996; McKown & Weinstein, 2002).

Despite these individual differences among teachers and students, abundant research evidence from the past decades has indicated that, in ordinary classrooms, teachers' expectations for their students can exert an influence on students' sociopsychological factors such as academic motivation and self-efficacy (Bohlmann & Weinstein, 2013; Woolley, Strutchens, Gilbert, & Martin, 2010), learning behaviours (Demanet & Van Houtte, 2012), academic achievement (Friedrich, Flunger, Nagengast, Jonkmann, & Trautwein, 2015), and future education status (Gregory & Huang, 2013). To understand the mechanisms by which teacher expectations work as self-fulfilling or sustaining prophecy effects, researchers have built various expectation communication models to depict the possible mediating processes of expectation effects (e.g., Brophy & Good, 1970; Harris & Rosenthal, 1985; Rosenthal, 1974). Some of these models have suggested that teacher expectations can be transmitted to students through teachers' verbal behaviours (e.g., academic interactions) and feedback (e.g., praise and criticism; Brophy & Good, 1970), whereas other models have also included teachers' nonverbal behaviours (e.g., eye contact, head nods, smiles; Rosenthal, 1974) and the socioemotional climate that teachers create for their students (Harris & Rosenthal, 1985).

The rich literature that has been produced in the past decades in the teacher expectation field required a summary to synthesise the vast body of research and identify important research gaps that point to directions for future studies. Questions that needed to be answered included, for example, what topics have been examined in the existing

literature? What arguments have been supported by an abundance of evidence? What hypotheses have resulted in contradictory evidence and need further research to be better understood? What topics have been seldom investigated or completely left out of studies and hence knowledge about these areas remains unknown?

Therefore, this doctoral project started by conducting a systematic literature review of the teacher expectation literature over the past 3 decades, which aimed to identify the existing research gaps in the field. After the important gaps were identified, three empirical studies were designed and conducted in order to fill some of the gaps and assist in understanding the less frequently examined aspects of teacher expectation theory. The following section will provide a brief introduction to the gaps in the literature that will be focussed on in this thesis.

1.2. The Research Gaps

1.2.1. Class-level and Generalised Teacher Expectations and Expectation Effects

Among the existing studies on teacher expectation effects, almost all have investigated teacher expectations from an individual perspective—teachers' expectations for each of their individual students. However, it has been contended that teachers not only have expectations for individual students, but they also form expectations for their class/classes of students as a whole (e.g., Brophy, 1983; Rubie-Davies, 2006, 2007). Yet, so far, very few studies have examined teacher expectations at the class level, or investigated teacher expectations from the teachers' perspective. In recent years, there have been a few studies conducted on class-level teacher expectation effects, which have consistently indicated that the overall expectations that teachers held for all their students were positively associated with not only student achievement (Z. Li & Rubie-Davies, 2017) but also students' academic self-concept (Rubie-Davies, 2006). Given the potential

influences that overall teacher expectations can exert on student learning and achievement, more studies are needed to better understand this issue.

Furthermore, if both individual- and overall teacher expectation effects exist, it is likely that they work congruently and affect student learning together in a complex manner. Thus, it would be meaningful to study these two types of expectation effects together to gain a more holistic understanding of the way that expectation effects function in everyday classrooms. Yet, studies that have examined both individual student-level and class-level teacher expectations at the same time are scarce. Only three such studies could be identified, and the findings from these studies were inconsistent—two showed that the student-level teacher expectation effects on student achievement were stronger than the expectation effects at the class level (L. Fan & Jin, 2008; Friedrich et al., 2015), but the other one indicated the opposite (Z. Li & Rubie-Davies, 2017). Therefore, more studies are needed in order to compare these two types of expectation effects, and to determine the possible factors that may affect the weight of these two types of expectation effects in influencing student achievement.

1.2.2. Transmission and Mediation of Class-Level Teacher Expectations

The systematic review (see Chapter 3) showed that the literature exploring the mediation of teacher expectation effects was conducted mostly before the 1990s (S. Wang et al., 2018), and there is a dearth of studies that have explored the transmission process of class-level teacher expectation effects. Understanding how high- and low-overall teacher expectations are communicated to students is an issue of great importance, as the knowledge about how class-level expectations function would enable particular teacher behaviours that are associated with general high or low expectations to be identified.

However, following an extensive search of the literature, the only two existing studies that could be located which examined the mediation of class-level teacher

expectations were one by Rubie-Davies (2007) and another by Z. Li (2014), which were conducted in the New Zealand primary and Chinese university context, respectively. Given the limited evidence that we have and the low variety in the research settings, the ways in which teacher expectations for a whole class of students are transmitted to students, and thus influence students' psychological and learning outcomes, are still unclear.

1.2.3. Longitudinal Studies: How Do Teacher Expectations Change Over Time?

In most of the existing studies in the field, teacher expectation information was gathered at a single time point, whereas longitudinal investigations are relatively scarce (Weinstein, 2018). Nevertheless, children's experience in school is consecutive and interrelated rather than disconnected and disparate (Weinstein, 2002). Therefore, teacher expectation data at one time point may not be sufficient to capture the whole picture of the interactive relationships between teacher expectations and student learning outcomes. Longitudinal studies are needed in order to deepen our understanding of the long-term stability of teacher expectations, any changes in the accuracy of teacher expectations, and the accumulation or dissipation of teacher expectation effects.

1.2.4. A Different and Underresearched Context

The tradition of researching teacher expectation effects started in the US. Until now, most studies have been conducted in a Western research context, whereas studies in other cultural backgrounds are comparatively limited. Hence, it would be helpful to examine the previous findings in different contexts in order to determine the cross-cultural applicability of current knowledge, which would enable teachers and researchers from other cultural backgrounds to make use of teacher expectation theory to inform their own teaching and learning.

In the Chinese context, the topic of teacher expectation effects was first introduced to Chinese academics in the 1980s. Before the 21st century, only a few studies had been conducted around the topic of teacher expectations—most of which were non-empirical studies aimed to introduce the theory and framework of teacher expectation effects, to summarise the existing research findings (literature review), or to discuss the implications of teacher expectation effects within the Chinese education system. The 21st century has witnessed a growing number of empirical teacher expectation studies being conducted in China. However, most of the existing Chinese studies have been based on a small data sample, and a considerable number of these studies suffered from design and/or analytical flaws (see Chapter 4 for more details).

In addition, although positive associations have been found between higher teacher expectations and better student academic achievement in the Chinese context (L. Fan & Jin, 2008; B. Zhao, 2013), some recent studies have shown that high teacher expectations could be a source of student academic stress for Singaporean Chinese students (Ang & Huan, 2006; Tan & Yates, 2011). In China, excelling academically and fulfilling the expectations of parents and teachers may be more important for students than in Western countries. It is possible that overly high parental and teacher expectations place excessive academic stress upon Chinese students (Tan & Yates, 2011), which may impede students' academic success. Therefore, it was of interest to determine how teacher expectations function within such a context of different cultural and educational values compared to the Western context.

1.3. Research Aims: What the Project Does to Fill the Gaps

This doctoral thesis aimed to fill the aforementioned research gaps in the teacher expectation literature by investigating both student-level and teacher-level teacher expectations and their effects in a non-Western educational context. The main aim of the

project was to extend our understanding of the existence of class-level teacher expectation effects and how the findings compared with the more traditional perspective of individual student-level expectation effects. In addition, the project took a step further to investigate how the class-level teacher expectation effects function by exploring the possible transmission process of class-level teacher expectations. The project was also dedicated to examining the stability of teacher expectations across a school year.

This research project began with a systematic review of the teacher expectation literature over the past 3 decades. The review was designed to develop a clear understanding of the current state of knowledge within the field of teacher expectation research both for the researcher as well as for future readers. The review aimed to provide a general picture of what has been achieved in the teacher expectation field, and what needs more attention and effort in the future. Several research gaps appeared during the process of conducting the review, which have been developed into the research questions for the three studies that comprise the major body of this thesis.

Due to the dearth of studies on class-level teacher expectation effects, Study 1 was designed to investigate class-level and teacher-centred expectation effects in Chinese junior high school classrooms. The study aimed to integrate the tradition of studying individual student-level and class-level teacher expectation effects on student academic achievement. By combining the expectation effects at the two different levels into the same model, it allowed a comparison between the strength of the two types of effects. The study also aimed to examine the possible influence of two student characteristics on the formation of teacher expectations—student gender and family background.

Following the identification of high and low expectation teachers in Study 1, Study 2 aimed to investigate the transmission of class-level teacher expectations by exploring the classroom teaching and interaction behaviours of these two types of teachers. Of interest

was whether high and low expectation teachers differed in how they gave instructions, provided feedback, and interacted with their students during classes.

Based on the findings from the first two studies, which both suggested the existence and importance of teacher expectation effects in the Chinese junior high school context, the focus of the third study was on whether teacher expectations would stay stable or change across a school year. Thus, this final study aimed to add more research evidence about the stability or longitudinal change of teacher expectations. The (in)stability of teacher expectations could have implications for some important yet unresolved issues in the field, such as the accuracy of teacher expectations, and the magnitude and direction of teacher expectation effects.

1.4. Significance of the Research

This research project advances the field of teacher expectations from several perspectives. First, the project includes a comprehensive published systematic review of the teacher expectation literature that was conducted over the past 3 decades. This systematic synthesis of literature could be helpful for people who are outside the field (e.g., teachers, educators, and researchers in other fields) to quickly grasp the major findings around teacher expectations. It may also help researchers who are in the field of teacher expectations by providing a clear indication of the findings that have been well-established in the literature and identifying what needs to be explored further in future research.

Second, the study is among the very first studies to examine both individual- and class-level teacher expectations together in the same study. The results of the comparison between the two types of expectation effects may have important implications for future teacher expectation research as well as classroom teaching and learning in Chinese junior high schools.

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Third, the study involved a potentially stigmatised and vulnerable group in China—migrant workers and their children, a group that has never been explored in similar research before. Hence, the study could contribute by proposing an awareness of social justice and promoting education equality in the Chinese context.

Fourth, the study of teacher behaviours that may be associated with overall-high and -low teacher expectations could enable interventions such as teacher training programmes to be created and launched. The ultimate aim is to train teachers in the behaviours of high expectation teachers, avoiding behaviours that express low expectations, and eliminating the detrimental effects of low teacher expectations on student learning and achievement.

Finally, the longitudinal study, which examined the stability of teacher expectations, provides evidence for an important research topic that has been severely overlooked in the field. In addition, the study has introduced an innovative research design for exploring the stability of teacher expectations, by examining teacher expectations for differently achieving student groups. The findings have implications for future studies to take teacher and student characteristics into consideration when investigating the stability of teacher expectations. In addition, the findings also have implications for both preservice and in-service teachers in China and worldwide on the importance of treating students equally and holding high expectations for all.

1.5. Ethical Considerations

Approval for this study was granted by the University of Auckland Human Participants Ethics Committee (Reference number: 015377). In order to conduct both a methodologically and ethically sound study, attention was paid to the ethical issues when planning, conducting the research, and when applying the research results. There are three primary responsibilities that the researcher has for the participants/informants: obtaining

consent, protection from harm, and ensuring privacy (Drew, Hardman, & Hosp, 2008). The ethical considerations taken into account in conducting this research, and in utilising and reporting the research results will be discussed in this section.

1.5.1. Obtaining Consent

Since this research involved secondary school teachers and their students as its participants, consent and assent were sought from the principals, teachers, students' parents/caregivers, and students in the 10 participant schools (see Appendix A for the participant information sheet and consent form for school principals). The researcher contacted the principals of the targeted schools to seek their permission for conducting the research in their schools. After permission was granted, the researcher then sent the information sheets, consent forms, and assent forms for teachers, parents/caregivers, and students to the administration office. The staff in the office helped the researcher send the information sheets and consent forms to the teachers and parents/caregivers, and participant information and assent forms to students. Those teachers, parents/caregivers, and students who wished to participate were asked to return their consent/assent forms to the administration office, and the researcher collected all the forms from the office.

Teachers' consent to participate in the current project included agreeing to completing a teacher survey and allowing a classroom observation. Parents'/caregivers' and students' consent related to agreeing to students' participation in the research, and for students' grades in the four examinations during the school year to be accessed. Each principal, potential participant teacher, student, and parent/caregiver was given a consent/assent form together with an information sheet which clearly described the purposes of the study, the research methods used, the risks that might be involved, the demands from the participants, the obligations of the researcher, and the intended use of the research findings. The participation in the research was entirely voluntary, and the

participants had freedom of choice without any forms of constraint. In addition, the potential participants were informed that they had the right to withdraw their consent and discontinue their participation without giving any reason.

1.5.2. Protecting from Harm

The primary concern for conducting all research is that serving as participants will not harm the groups or individuals (Drew et al., 2008). Given the nature of the current research (non-experimental research) and the methods of data collection (teacher survey and classroom observation), it was not very likely for harm such as physical pain to happen; however, the researcher was still cautious about possible psychological stress and personal embarrassment that might occur for participants during the research process. The researcher endeavoured to plan and conduct the studies in a manner that would have minimised any possibility of harm to the participants.

1.5.3. Ensuring Privacy

Even with consent, some invasion of the privacy of participants during the research is inevitable, especially in observational studies. Therefore, the researcher made every effort to protect the privacy of the participants. Real names and identifying information of participants were not included in the research findings. Anonymity was used to protect individual participants by using codes when reporting the results of the research studies. In addition, the researcher ensured the confidentiality of the data collected. All hard-copy data were stored in a locked cabinet in the researcher's office at the University of Auckland, and the electronic data was securely stored in the researcher's password-protected computer in her office. Only the researcher and her supervisors have had access to the data. The data will be kept in a safe place until being destroyed 6 years after the submission of the researcher's thesis.

1.5.4. The Use of the Research Results

The results of this research have been and will only be used for academic purposes. The predominant use of the results is for completion of the researcher's PhD thesis at the University of Auckland. Data have also been used in the researcher's relevant academic publications and conference presentations. These purposes for dissemination of the findings were disclosed in the information sheet and the consent/assent forms.

1.6. Thesis Format and Outline

This doctoral thesis comprises a systematic literature review and three empirical studies which have been turned into four articles for publication, under the University of Auckland Revised 2016 PhD Statute and Guidelines. Chapters 3 and 5 are two already-published articles co-authored with the thesis supervisors, Professor Christine Rubie-Davies and Dr Kane Meissel (2018, 2019). Specifically, Chapter 3 has been published in the *Journal of Educational Research and Evaluation,* and Chapter 5 has been published in the *Journal of Social Psychology of Education*. Chapters 4 and 6 of this thesis have also been submitted as articles to the *American Educational Research Journal* and the *Journal of Learning and Individual Differences*, respectively. Given the nature of a thesis with publications, this thesis has some repetitive elements across the chapters, especially with regard to the literature review and research context sections. A brief introduction to each of the chapters can be found below.

Chapter 2 introduces a definition for the self-fulling prophecy effects and discusses the origin of the teacher expectation field—the seminal study *Pygmalion in the Classroom* (Rosenthal & Jacobson, 1968). The experimental and naturalistic studies conducted in the first 20 years following the Pygmalion study are explored and briefly reviewed. This is followed by an introduction to the theoretical models that show the development of ideas within the field of teacher expectations.

Chapter 3 presents the published systematic review which aimed to illustrate developments in the teacher expectation literature and discuss the major avenues of research in the teacher expectation field in the past 3 decades. Two databases (PsycINFO and ERIC) were systematically searched using the chosen search terms. Thematic synthesis was then 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. New research areas that have arisen in the past 3 decades were identified. This chapter concludes with a set of recommendations for possible future research directions in the teacher expectation field.

Chapter 4 presents the first study, which aimed to explore and compare individual student-level and teacher-level teacher expectations in the Chinese junior high school context. It focussed on the existence of normative teacher expectations, and possible student- and teacher-level expectation effects on student academic achievement. With differences in student baseline achievement controlled for, teacher expectations and student year-end achievement data were analysed using hierarchical linear modelling to see if early-year teacher expectations predicted year-end student achievement.

Chapter 5 is the second study, which was a follow-up of Study 1. Following the identification of teachers who held overall-high and -low expectations for all their students, this study aimed to compare the instructional practices and classroom interactions of those high and low expectation teachers. Thirty-two classroom observations were conducted using a classroom observation schedule to record the classroom instructional behaviours and teacher–student interactions in the high and low expectation teachers' classrooms. Frequencies of different types of classroom behaviours and interactions in the classrooms of high and low expectation teachers were analysed by performing a Mann-Whitney U test and logistic regression, respectively.

Chapter 6 presents the final study of this doctoral research. It was a longitudinal study which aimed to examine the stability and trajectories of teacher expectations within a school year using three time points of teacher expectation data. The issue of the stability of teacher expectations was explored at the individual-student level and student-group level, using Spearman's rank order correlation and piece-wise hierarchical linear modelling, respectively.

The final chapter, Chapter 7, presents a general discussion of the research findings pertaining to the three studies. It discusses the contribution this thesis has made to the teacher expectation research field, its implications for research and teaching practices, and also its limitations, with some future research directions recommended. The chapter closes with some final thoughts related to the whole doctoral project and its findings.

CHAPTER TWO: THE ORIGINAL PYGMALION STUDY AND THE THEORETICAL MODELS OF TEACHER EXPECTATION EFFECTS

In this chapter, a historical view of the construct of expectancy effects and the self-fulfilling prophecy will be presented, followed by an introduction to the early studies on experimenter effects and the original Pygmalion experiment. The critiques of the Pygmalion study are discussed, and the experimental and naturalistic studies conducted in the 2 decades following Pygmalion are briefly reviewed. The last part of this chapter introduces several theoretical models of teacher expectation effects.

2.1. Expectancy Effects and the Self-Fulfilling Prophecy

The phenomenon of expectancy effects had been studied by researchers under various labels before Merton (1948) defined the concept as the "self-fulfilling prophecy." According to Merton, the concept illustrated the phenomenon that a false explanation of a situation could bring about new behaviours which could make the original false perception come true. In other words, if a person expects something to happen, they then behave in a way that could make it happen. They do things to realise their prophecies, consciously and/or unconsciously. One of the examples Merton gave in his article was about examination neurosis. An anxious student who is convinced that he is destined to fail may spend more time worrying than studying and fail the examination. Despite its great value in the research field, the concept of the self-fulfilling prophecy was not explored systematically until Rosenthal's series of studies examining experimenter bias and the ground-breaking experiment that followed—*Pygmalion in the Classroom*.

2.2. Pygmalion in the Classroom

In the 1950s, when Rosenthal was doing his own dissertation, he noticed a critical problem with his research findings. The problem made him consider the possibility that

his experimental hypothesis or his expectation for the research finding may have exerted an influence on the research outcomes. Being aware of this, Rosenthal (1966; Rosenthal & Fode, 1963) initiated several laboratory experiments, using both human and animal subjects, in order to test the "unconscious experimenter bias" (Rosenthal, 1994, p. 176). In one of his experiments, he found that when the experimenters were led to believe their rats were smarter and could learn better, their rats did turn out to appear more intelligent and did learn better, as the experimenters expected. In other words, the expectancy effect did exist in the laboratory environment and could affect the findings.

Wondering whether the expectancy effect could work similarly between teachers and their students, Rosenthal and Jacobson (1968) conducted the well-known study, *Pygmalion in the Classroom*, which opened up a new research area, aroused enormous research interest, but also evoked heated debate and intense controversy about self-fulfilling prophecies and the teacher expectation effect. In their study, children in 18 classrooms (Grades 1–6) in an elementary school were given a nonverbal intelligence test, Test of General Ability (TOGA; Flanagan, 1960), which was claimed as a test that would be able to identify those children whose intellectual competence would spurt in the near future. Teachers were then given a list of names of these potential "late bloomers" who were, in fact, chosen at random from the 18 classrooms. Eight months later, when the children were tested again with the same test, the randomly labelled late bloomers did show a greater improvement in their IQ compared with the others. Based on this finding, Rosenthal and Jacobson concluded that teachers' beliefs and expectations of their students' potential worked as a self-fulfilling prophecy and influenced students' intelligence.

The results of Pygmalion kindled enthusiasm among academics for researching teacher expectations. In the decades following Pygmalion, hundreds of teacher expectation studies were conducted. Some inspired researchers utilised the theory as a

means to interpret and eliminate the existing education injustice and inequalities between different social classes and ethnic groups in schools and classrooms (Jussim et al., 1996). These studies have had a profound effect not only in the educational and psychological research field but also in social and educational policy deliberations. Pygmalion was subsequently used in several court cases in the US, causing ability tracking to be abolished in Washington, D.C. and a ban on using intelligence tests in determining children with special educational needs in California (Spitz, 1999).

However, the Pygmalion experiment was also critically questioned by sceptics. One of the critics was concerned about the inconsistency between what teachers were told to expect from the chosen students (academic blooming) and what the researchers were interested in, tested, and claimed to find out about as a result: intellectual growth (Spitz, 1999). In addition, the interpretation of the study outcome was also seen as problematic. In fact, the finding of the four IQ-point improvement overall was almost entirely contributed to by Grades 1 and 2 classes, with no statistically significant group differences in Grades 3 to 6 respectively, or when these classes were combined. The statistically reliable findings within two grades, however, were interpreted by Rosenthal as occurring within the experimental group as a whole (Brophy & Good 1970; Rubie-Davies, 2008a; Spitz, 1999). With regard to the reliability of the data collected in the study, it was argued that some students' intelligence growth, shown by their pre- and post-test scores, was too large to be realistic (from below average to superior and from superior intelligence to genius within only 8 months; Spitz, 1999). Other concerns about the initial Pygmalion experiment included the validity of the TOGA (Snow, 1969; Thorndike, 1968), the appropriateness of using the TOGA due to not having well-established norms for the youngest children and children from lower socioeconomic families (Snow, 1969), and the

inadequacy of understanding IQ as equivalent to intelligence and academic ability (Elashoff & Snow, 1971).

Despite numerous doubts and critiques about the original Pygmalion study and the failure of attempts to replicate the study (e.g., Fielder, Cohen, & Feeney, 1971), most researchers in the field reached a consensus about the scientific importance of the possible self-fulfilling-prophecy effects of teacher expectations. Snow (1969, p. 199), for example, noted that "teacher expectancy may be a powerful phenomenon which, if understood, could be used to gain much of positive value in education." Similarly, Brophy (1983) also expressed his own belief in the existence of the self-fulfilling-prophecy effects of teacher expectations despite the criticisms and rebuttals of the Pygmalion study. He contended that teacher expectations do not always function as self-fulfilling prophecies, and, when they do, the process does not happen automatically. Nonetheless, he argued, teacher expectations "can and often do have such effects" (p. 4). This is to say that when a teacher holds an expectation for a particular student's performance, it is more likely that the student's real achievement will move in the expected direction rather than in the opposite direction.

2.3. Teacher Expectation Effects: Experimental and Naturalistic Studies

2.3.1. Expectancy Effects in the Educational Contexts

Teachers generally form expectations for their individual students as well as for their class as a whole. According to Good and Brophy (1997), teacher expectations are "inferences that teachers make about the future behaviour or academic achievement of their students, based on what they know about these students now" (p. 79). The formation of teachers' expectations might be influenced by factors such as students' characteristics and previous performance, teachers' pedagogical beliefs, teachers' self-efficacy, and

teaching experience. Once teacher expectations are formed, they may affect the ways in which teachers interact with students. Teachers' differential expectations may be transmitted by differential teacher behaviours, different teacher–student interaction patterns, variations in the learning opportunities provided, and the classroom climate provided for students. These differential behaviours and treatments may, in turn, affect students' learning behaviours and self-perceptions, academic achievement, and personal development.

2.3.2. Experimental Studies

Several experimental studies were conducted to examine teacher expectation effects in the pedagogical context following the original Pygmalion study. Among these studies, a few found positive variations in students' IQ (Carter, 1970). However, most attempts to replicate the original study failed with either no statistically significant IQ improvement in students or even opposing findings (Fielder et al., 1971; Spitz, 1999). Raudenbush (1984) conducted a meta-analysis on 18 experimental studies and found that teachers' prior acquaintance with students may prevent them from being affected by the expectation-manipulation information. That is, the better the teachers knew their students at the time of inducing the expectations, the smaller the expectation effects would be. The findings from this meta-analysis helped researchers understand why experimental studies where expectations had been manipulated before or within the first week of school had been successful whereas others had not.

Some experimental studies (e.g., Maxwell, 1971; Pellegrini & Hicks, 1972) provided support for the existence of expectancy effects as well as the possibility that teacher expectations could function as self-fulfilling prophecies and influence student academic achievement. Yet, being manipulated experimental studies, these studies had their innate shortcomings and inevitable limitations. Firstly, for ethical reasons,

researchers could only manipulate positive expectations about students' performance in experimental studies. That is, when researchers gave teachers fake information about student ability/potential in order to manipulate teachers' expectations, they could only give positive information. It would be unethical to give fake negative information about students. It might be inferred that, if positive teacher expectations could enhance students' learning, negative expectations could, conversely, hinder their performance (Babad, 2009). However, this assumption cannot be justified without empirical evidence (Rubie-Davies, 2008a). In addition, in experimental studies, teachers' expectations were induced by fabricated information about students' ability or potential. Therefore, the premise of getting a valid result from these studies is that the teachers involved must accept the false information and then act upon it. However, this may not always be the case (Rubie-Davies, 2008a). Some teachers may be more open to having their expectations manipulated than others (Babad, 2009). This kind of validity problem with experimental studies was suggested by Brophy (1983) as one of the possible causes for the failures in replicating Pygmalion. Another limitation associated with experimental studies concerns external validity, or generalisability, since real classrooms are much more complicated and dynamic in comparison to laboratory conditions which are controlled by experimenters (Mitman & Snow, 1985). Therefore, it can be very hard to generalise the findings in experimental studies to ordinary classrooms.

2.3.3. Naturalistic Studies

In order to overcome the shortcomings of the experimental studies, as well as to deepen understanding about the entire process of expectancy effects, researchers started to conduct studies in natural classroom settings to investigate naturally occurring teacher expectations for their students. The naturalistic studies in the first 2 decades following Pygmalion mainly fell into three different categories—those that studied student

characteristics that might lead to teachers' high or low expectations, those that studied differential teacher behaviours that potentially demonstrated and communicated their expectations to their students, and those that investigated students' awareness and perceptions of teachers' expectations.

A large amount of research has explored the nature of the information that influences the formation of teacher expectations. It is stated that teachers make use of information that is related to individual students' characteristics in forming their expectations (Rubie-Davies, Hattie, & Hamilton, 2006). Studies have suggested that teachers generally anticipate students' ability and performance on the basis of students' previous academic achievement (Hoge & Coladarci, 1989). In addition to test performance, some studies have shown that expectations can be affected by other factors such as information about students' socioeconomic status, ethnicity, physical appearance, group placement, special education labels, and other personal characteristics of students (Dusek & Joseph, 1983).

Researchers have also endeavoured to identify teacher behaviours that may act as mediating factors of teacher expectation effects. Based on a review of the literature, Brophy (1983) suggested 17 teacher behaviours that might be seen as indicators of teachers' differential treatment towards high- and low-expectation students. Similarly, in Harris and Rosenthal's (1985) meta-analysis of 136 studies, 31 behaviours were revealed to be important in the mediation of expectancy effects. The specific differential behaviours towards high- and low-expectation students will be introduced in more detail in section 2.4.

Students generally use behavioural information generated by their teachers to draw conclusions about their own ability levels, their perceived interest, and the respect they receive from the teachers, as well as what is expected from them academically (Murdock,

1999). Studies have provided evidence of students' sophistication in observing and appraising teachers' differential behaviours towards high- and low-achieving students (Babad, 1990a; Weinstein, 1976, 1983, 1985; Weinstein & Middlestadt, 1979). Therefore, students' perceptions of their teachers' differential behaviours and expectations can act as an important mediating factor for teacher expectation effects.

Overall, compared with experimental studies, naturalistic studies allow for both positive and negative beliefs and expectations of teachers for their students' performance to be examined. Though attributions of causality cannot be made, since potential uncontrolled variables may exist (Mitman & Snow, 1985), the evidence in both experimental and naturalistic studies was quite consistent: teacher expectations can have effects on students' academic performance by functioning as self-fulfilling prophecies.

2.4. Theoretical Models of Teacher Expectation Effects

To better understand the functioning mechanism of teacher expectation effects, some researchers have endeavoured to build theoretical models to illustrate the possible ways for teacher expectations to be transmitted to students and influence student learning. In this section, different theoretical models of teacher expectation effects will be introduced.

2.4.1. Brophy and Good's Model

Brophy and Good (1970) initiated their first model in order to explain the possible working mechanism of teacher expectation effects in ordinary classrooms. Consisting of six main steps, their model was designed to depict the entire functioning process of teacher expectation effects: (1) teachers form expectations for student performance; (2) teachers behave differently based upon their expectations; (3) differential teacher behaviours communicate to students how they are expected to behave and perform; (4) students' self-

concept and academic motivation can be affected by teachers' consistent treatment; (5) teachers' original expectations are reinforced by these effects; (6) students' achievement and other outcomes are affected (Brophy, 1983).

The emphasis of this model was placed on the proximal behaviours of teachers (or the *direct effect* of teacher expectations through differential teacher behaviours and dyadic teacher–student interactions), with the effects of the distal teacher behaviours (or the *indirect effect* of teacher expectations through the different learning opportunities teachers provide) largely neglected (Rubie-Davies, 2008a). Further, the model focussed only on the expectation effects on individual students, giving no recognition to teacher expectation effects on the group or class as a whole. Nevertheless, Brophy and Good's model made an important contribution in providing a theoretical framework for later researchers to observe teachers' differential treatment and study expectation effects in the classrooms.

2.4.2. Rosenthal's Four-Factor and Two-Factor Theory

Rosenthal (1974) proposed his four-factor theory, which identified four general ways that teacher expectations can be communicated to students. According to his four-factor theory, teachers' different expectations for high- and low-expectation students can be communicated and mediated by four main factors: (1) climate—creating a warmer socioemotional classroom climate for the high-expectation students; (2) feedback—giving high-expectation students more informative feedback on their performance; (3) input— teaching high-expectation students more material; (4) output— giving more opportunities to high-expectation students to respond, ask, and answer questions.

Different from the Brophy and Good model, the four-factor theory concentrated on identifying the mediating variables of the expectancy process. One of the main characteristics and chief contributions of this model was the emphasis it placed on the importance of teachers' nonverbal behaviours. In fact, the nonverbal interactions and

affective factors were suggested to have equal importance with the verbal interactions between teachers and students in communicating teachers' differential expectations (Rubie-Davies, 2008a). Rosenthal (1994) concluded that teachers tend to teach more and teach in a warmer way to those students for whom they have higher expectations.

By conducting a meta-analysis of 136 studies, Harris and Rosenthal (1985) identified 31 teacher behaviours that were the most promising mediators of teacher expectation effects. These teacher behaviours, which included, for example, the contrasting negative and positive climate for high and low achievers, the duration and frequency of interactions, the differential input students received, and eye contact, were also grouped into the four factors mentioned in Rosenthal's four-factor theory. Harris and Rosenthal then worked out the significance level and effect size of each of the four factors. The results showed that the climate and input factors had much larger effect sizes than those of output and feedback. This meta-analysis helped to test the rigour of the four-factor theory in classrooms and confirmed the utility of those four factors. However, the effect size for feedback reported by the meta-analysis was low, which the researchers suggested indicated its minor role in the mediation process of teacher expectation effects. The discovery of the low effect size for the feedback factor led to an amendment of the original four-factor theory into a two-factor theory by Rosenthal (1991). In this renewed theory, Rosenthal removed the feedback variable, renamed climate as *affect*, and combined input and output together to create a new factor named *effort*. The affect factor referred to teachers' socioemotional behaviours, whereas the effort factor represented teachers' instructional behaviours.

2.4.3. Cooper's Model

Cooper (1979, 1985) proposed a theory that teachers' sense of control over their students' classroom behaviours and academic performance could act as a determining

factor of teachers' differential behaviours. According to his theory, a sense of control and predictability is of great importance for teachers in classroom interaction situations. Compared to high-achieving students, low achievers tend to be those students who are likely to disrupt lessons, cause teachers problems and challenge the normal classroom discipline. Therefore, teachers generally have a positive and high sense of control over high achievers, who they believe are well-behaved and easily monitored, but have a lack of control over low achievers. In order to maintain their sense of control and to minimise the potential of getting their classes disrupted, teachers tend to reduce the frequency and duration of interaction with low achievers in public. Moreover, teachers may also criticise low achievers more often for their weak performance and/or lack of effort because they see such criticism as a strategy for strengthening their control over the behaviours of low achievers (Good, 1987). Thus, low-achieving students are generally provided with a less warm socioemotional environment, where they get more criticism and less praise for their efforts.

This model has focussed on the indirect mediation of teacher expectation effects. It deepened our understanding of the expectation process not only because it provided a psychological explanation for teachers' differential behaviours towards students achieving at different levels, but also because it recognised the important role that the socioemotional environment could play in mediating teachers' expectations. This model, however, was built on the assumption that all differential behaviours towards students were reflections of teachers' need for control. Hence, the model made an overgeneralisation by assuming a correlation between teachers' need for control and every individual teacher–student interaction.

2.4.4. Attribution Theory Models

Attribution is a person's perception of the causality of an incident, and attribution theory concerns how individuals interpret events and how this relates to their thinking and future behaviour. Weiner (1974, 1986) identified four main factors affecting the attributions for achievement, namely, ability, effort, task difficulty, and luck. In the teacher expectation field, there have been some researchers who have utilised attribution theory to explore the mediation of expectation effects (Darley & Fazio, 1980; Dweck & Elliott, 1983; Eccles & Wigfield, 1985). These researchers suggested that teachers' expectations may affect students' learning and performance by influencing students' attributions of their academic successes and failures. Some teacher behaviours could convey messages to students which may lead students, especially low-achieving students, to attribute their failure to a lack of ability instead of insufficient effort or problematic learning strategies (e.g., "I cannot do it because I am dumb"). If this kind of attribution of a lack of ability accumulates, students could fall into a learned helplessness pattern and give up trying (Good, 1987).

The attribution theory models underlined the important role that students played in the mediating process of teacher expectation effects. Darley and Fazio's model, for example, illustrated that the ways that teachers and students interpreted each other's behaviours and their interactions could mediate expectation effects. The attribution theory models, however, focussed merely on teacher–student interactions (teachers' proximal behaviours) and their effects on students' learning, leaving the mediating role of the socioemotional environment unrecognised (Rubie-Davies, 2008a). The relationships between teacher beliefs, teacher expectations, and teachers' instructional objectives and their behaviours were also left unaddressed (Brophy, 1983).

2.4.5. Rubie-Davies's Model of Class-Level Teacher Expectations

The aforementioned models all investigated teacher expectations from an individual and student-centred perspective. It has been suggested that teachers not only hold expectations for individual students but that they also have expectations for their class/classes of students as a whole (Good, 1987). In his 1982 article, Brophy suggested that "differential teacher treatment of intact groups and classes may well be a much more widespread and powerful mediator of self-fulfilling prophecy effects on student achievement than differential teacher treatment of individual students within the same group or class" (p. 29). Several research studies have identified the existence of generally low teacher expectations for groups of students who are ethnic minorities or those with low-socioeconomic status (Delpit, 2006; Ennis, 1995; Timperley & Phillips, 2003). Little research, however, has examined teacher expectations at the class level and their possible influences on student achievement.

To fill this gap, Rubie-Davies, Hattie, Townsend, and Hamilton (2007) asked 21 teachers to rate their expectations for their students' achievement in reading by the year's end. Six teachers were then identified as high expectation teachers (i.e., teachers whose overall expectations for all their students were significantly above students' baseline achievement), whereas three of them were noted as low expectation teachers (i.e., teachers whose overall expectations for all their students were significantly below students' baseline achievement). The researchers compared the end-of-year achievement gains of students who were in classes with high expectation teachers with those who had low expectations teachers. The results showed that whereas students with high expectation teachers made significant gains in their reading achievement across the year, the students in the classes of low expectation teachers made small or no gains. It was also found that students with high expectation teachers improved their self-perceptions in reading,

whereas the self-perceptions of students with low expectations teachers declined considerably.

Based on her study of teacher expectation effects at the class level, Rubie-Davies (2015) initiated a new model—a contextual model of teacher expectations. This model identified both the psychosocial and instructional environments as the two main mediating factors for class-level teacher expectation effects on students' social and academic outcomes. Her model also emphasised the significant role that teacher beliefs play in affecting teacher expectations, the instructional practices adopted by the teacher, and, ultimately, students' opportunities to learn. Rubie-Davies's model was designed to show the expectation process both for individual students as well as for expectations at the class level.

All these teacher expectation models have made great contributions in advancing our understanding of the function of teacher expectations in ordinary classrooms. For the current thesis, Rubie-Davies' teacher expectation model has been chosen as the theoretical framework, because the thesis focuses on both individual-student level and class-level teacher expectation effects in the Chinese junior high school context.

CHAPTER THREE: A SYSTEMATIC REVIEW OF THE TEACHER EXPECTATION LITERATURE OVER THE PAST 30 YEARS

The previous chapter has provided a brief narrative review of the original Pygmalion study and the early teacher expectation literature that followed and has introduced the development of several theoretical models of teacher expectation effects. In this chapter, a systematic review of the more recent teacher expectation literature will be presented. This systematic review focussed on the teacher expectation research conducted in the past 3 decades, from 1989 to 2018. It aimed to identify the new research topics and directions raised in the 30-year period in the teacher expectation field. The review concludes with the existing research gaps and possible future research directions. This chapter has been published in the *Journal of Educational Research and Evaluation.* The citation is as follows: Wang, S., Rubie-Davies, C., & Meissel, K. (2018). A systematic review of the teacher expectation literature over the past 30 years. *Educational Research and Evaluation*, *24*, 124–179. doi:10.1080/13803611.2018.1548798

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 sociopsychological, behavioural, and achievement outcomes. On the whole, most studies confirmed earlier research findings regarding the four 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 sociopsychological and behavioural outcomes of the expectation effects. The review concludes with a set of recommendations for future research directions on teacher expectations.

Keywords: Teacher expectations, formation, mediation, moderation, student sociopsychological factors, student-achievement outcomes

3.1. 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 understanding about teacher expectations provided a solid foundation for later research to build on (see Good, Sterzinger, & Lavigne, 2018 for a review of the first 20 years).

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 an avenue 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, and future research directions will be discussed for each theme.

3.2. Method

3.2.1. 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 include only 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. Firstly, most work in the teacher expectation field has involved quantitative research. Secondly, 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);

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(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 was measured together with other factors using one measurement tool, for example, teacher expectations and responsiveness to developmental needs, teacher expectations and encouragement, and peer and teacher expectations.

The entire process of the literature search is shown in Figure 3.1.

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┌─────────────────────────────────────────┐
│ Potentially relevant abstracts extracted │
│ from the two databases using the search  │
│ terms (n = 1,647)                        │
└─────────────────────────────────────────┘
                    │
                    │      ┌──────────────────────────────────┐
                    ├─────▶│ Stage 1 selection: 1,390         │
                    │      │ abstracts excluded due to repeat │
                    │      │ and/or did not meet the          │
                    │      │ inclusion criteria specified     │
                    ▼      └──────────────────────────────────┘
┌─────────────────────────────────────────┐
│ 257 abstracts left for further full-text │
│ review                                   │
└─────────────────────────────────────────┘
                    │
                    │      ┌──────────────────────────────────┐
                    ├─────▶│ Stage 2 selection: 113 articles  │
                    │      │ excluded due to full text not    │
                    │      │ available (n = 11), low quality  │
                    │      │ (n = 1), teacher expectation     │
                    │      │ measured together with other     │
                    │      │ factors (n = 3), and due to full-│
                    │      │ text examination based on Stage 1│
                    │      │ exclusion criteria (n = 98)      │
                    ▼      └──────────────────────────────────┘
┌─────────────────────────────────────────┐
│ 144 articles were selected and included  │
│ in the final review                      │
└─────────────────────────────────────────┘
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Figure 3.1. Flow chart of the literature selection process.

3.2.2. 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 3.2 shows how these 144 studies were distributed over the past 30 years in 5-yearly increments. 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 (James 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 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.
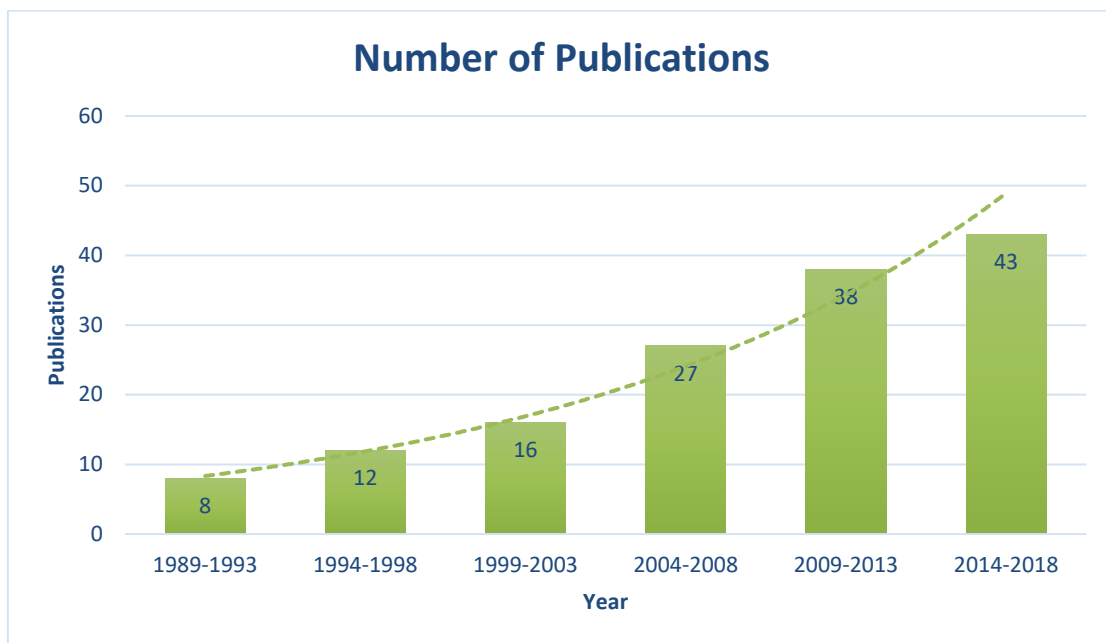
Figure 3.2. Number of empirical quantitative publications on teacher expectations for student academic performance in every 5-year period from 1989 to current (May 2018).

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 SES 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 sociopsychological outcomes, (10) teacher expectation effects on student achievement, and (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 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 (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 to include themes on teacher expectation effects on student academic achievement, school/learning behaviours, as well as sociopsychological 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 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; and (4) teacher expectation effects on student sociopsychological, behavioural, and achievement outcomes. Figure 3.3 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 B, C, D, and E at the end of the thesis (one appendix for each theme).
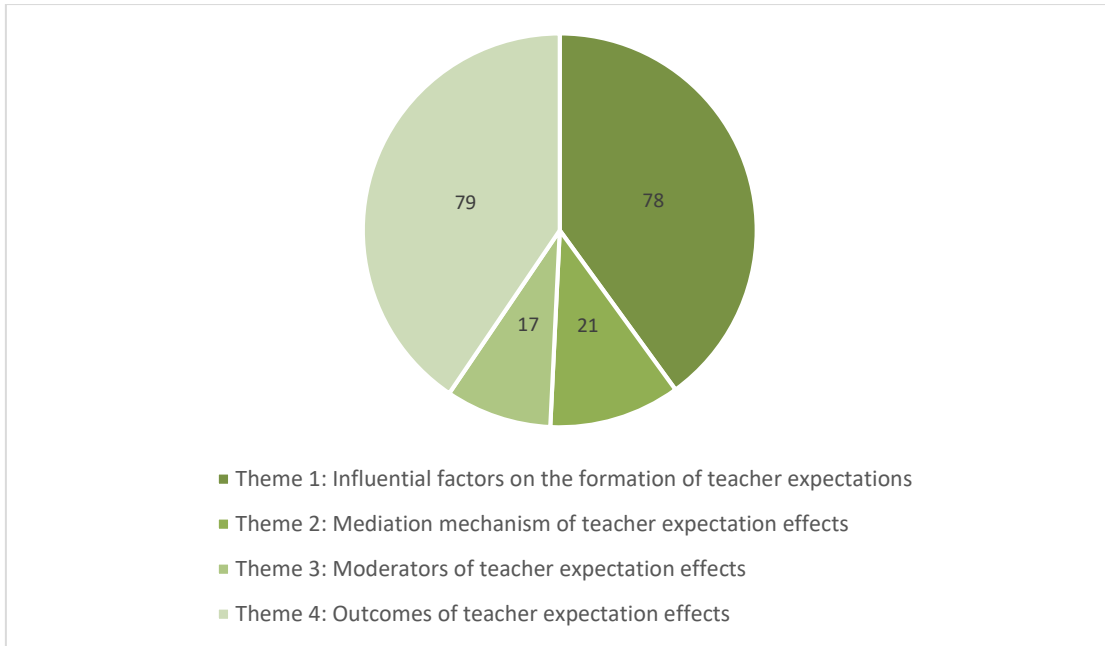
Figure 3.3. Number of empirical quantitative publications on teacher expectations for student academic performance from 1989 to current (May 2018) by analytical theme.

3.3. Results and Discussion

3.3.1. Analytical Theme 1: Influential Factors on the Formation of Teacher Expectations

  3.3.1.1. 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, SES, and other personal characteristics of students. From the 1990s onward, researchers continued to investigate 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 B). 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 Native 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 et al., 2006; Turner, Rubie-Davies, & Webber, 2015), and for students with immigrant 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 et al., 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 at 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 the relationships of student gender and ethnicity to 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 LD (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 LD. 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

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knowledge of the student's LD status. In addition, Jenkins and Demaray's (2016) study showed that teachers overestimated reading and mathematics performance for student groups both 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 aforementioned student demographic characteristics (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 sociopsychological 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 are 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 sociopsychological 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.

3.3.1.2. Teacher-, class-, and school-related factors. The area of teacher factors influencing their expectations is vastly underresearched 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,

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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.

3.3.1.3. 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, personality similarities between students and teachers were 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 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.

3.3.1.4. 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 sociopsychological characteristics, student classroom behaviours and engagement, teacher attitudes, and 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 some inconsistent evidence has been 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 B). 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.

3.3.2. Analytical Theme 2: Mediating Mechanisms of Teacher Expectations

After teacher expectations are formed, they must be transmitted to students in some way in order to function as self-fulfilling or self-maintaining effects. Self-fulfilling 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 C). Existing studies over the past 30 years have addressed this issue in three main ways, which are depicted by the paths shown in Figure 3.4. Those studies focussing 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 sociopsychological 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.

Teacher forms expectations for students	Teacher behaves differently based on expectations	Student perceives teacher expectations	Student sociopsychological factors are influenced	Student achievement outcomes are influenced
A	B	C	D	E
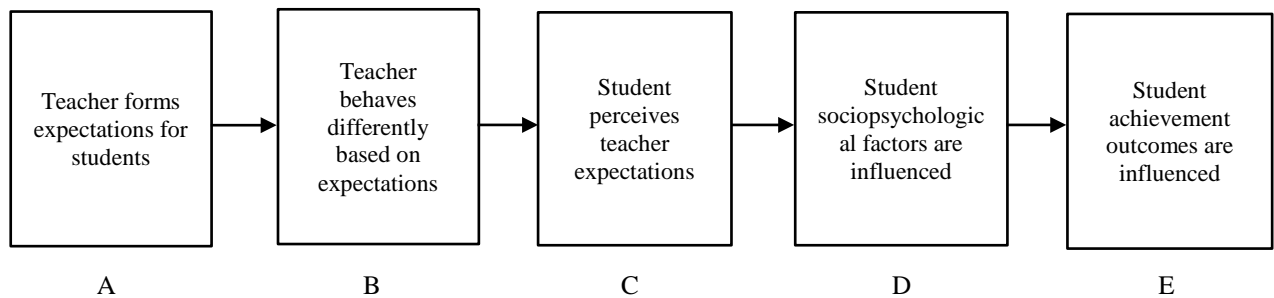
Figure 3.4. Flow chart of the mediation mechanism of teacher expectation effects.

3.3.2.1 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 classrooms (Weinstein, 2002). In 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's (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.

3.3.2.2. Transmission Path B–C: Student perceptions of teacher expectations through differential teacher behaviours and treatment. As shown in Figure 3.4, differential teacher behaviours and interaction patterns can exert an influence on student outcomes by affecting student sociopsychological 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 nonverbal 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 S. 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.

3.3.2.3. Mediation Path C(A)–D–E: Student sociopsychological 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 et al., 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 sociopsychological factors acting as mediators of teacher expectation effects have included student academic motivation (Woolley et al., 2010), locus of control (Prihadi, Hairul, & Hazri, 2012), and student attribution style (Zhou & Urhahne, 2013).

3.3.2.4. 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 nonverbal 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 sociopsychological 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 3.4. Future studies should be designed with the aim of covering the entire mediating process of teacher expectation effects.

3.3.3. 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 D). 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.

3.3.3.1. Student-related moderating factors. Studies have shown that students' demographic characteristics may affect their susceptibility to teacher expectation effects. Jussim et al.'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,

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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 (W. C. Liu & Wang, 2008).

3.3.3.2 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-bias 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 et al. (1989a, 1989b) conducted, the leakage of nonverbal 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-bias 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 instructions, 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' final 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 deviation 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's studies showed that students with high-expectation teachers made much larger academic gains than did students who had low-expectation teachers (Z. Li & Rubie-Davies, 2017; Rubie-Davies et al., 2007).

3.3.3.3 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 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.

3.3.3.4 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 were essentially descriptive studies; that is, they 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, 2018 for a more comprehensive review of the teacher expectation intervention studies).

3.3.4. 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 E). Studies of this theme have mainly focussed on three student outcome factors: student sociopsychological 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.

3.3.4.1. Sociopsychological outcomes. Empirical studies have been conducted to explore the possible influential relationships between teacher expectations and student sociopsychological 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 (M. 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 performers 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 expectations for themselves. Lazarides and Watt (2015) also found that perceived high mathematics-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 conclusion in both the German and Chinese context.

Woolley et al. (2010) found that students who reported higher levels of teacher expectations showed more desirable levels of mathematics learning motivation—teacher expectations had significant and positive correlations with students' confidence in mathematics and interest in mathematics, and were significantly and negatively associated

with students' 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 expectations 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 themselves can be important consequences of differential teacher expectations on students' sociopsychological and personal development as well.

3.3.4.2. Behavioural outcomes. Teacher expectations cannot just influence student sociopsychological 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-negligible part of 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.

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3.3.4.3. 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; H. S. 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; Julie 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 E). 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 of 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 post-secondary education.

In addition, some studies have investigated possible links between teachers' expectations, implicit prejudiced attitudes, and 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).

3.3.4.4. Conclusion Theme 4. Research evidence has been provided on the positive relations between teacher expectations and student sociopsychological, 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 that higher achieving students would 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 sociopsychological 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.

3.4. 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 mentioned, 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 (see

Appendices B–E). 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 sociopsychological characteristics, classroom behaviours and engagement, and 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.

CHAPTER FOUR: INDIVIDUAL STUDENT- AND TEACHER-LEVEL TEACHER EXPECTATIONS AND EXPECTATION EFFECTS IN CHINESE JUNIOR HIGH SCHOOLS

The previous two chapters have together provided a comprehensive review of the teacher expectation literature over the past 5 decades. Built on the review of the literature, the current chapter (Chapter 4), together with the two chapters that follow (Chapter 5 and 6), present the three empirical studies designed with the aim to fill some of the existing gaps in the teacher expectation field. This chapter (Chapter 4) presents the first empirical study of this doctoral project. In the chapter, teacher expectations for their individual students and their class/classes of students as a whole within a Chinese junior high school context were examined, and their influences on student academic achievement were investigated and compared. This chapter has been submitted to the *American Educational Research Journal*. The proposed citation is: Wang, S., Meissel, K., & Rubie-Davies, C. Individual student- and teacher-level teacher expectations and expectation effects in Chinese junior high schools. *American Educational Research Journal*. Manuscript submitted for publication.

Abstract

This study aimed to explore and compare individual student-level and teacher-level teacher expectation effects on student academic achievement in the Chinese junior high school context. The participants were 50 teachers and their 1,199 students from 10 junior high schools. With differences in student baseline achievement controlled, hierarchical linear modelling was employed to see if early-year teacher expectations predicted student year-end achievement. Results showed that both student- and teacher-level expectations (relative to achievement) positively predicted student academic achievement. Teacher expectations at the student level showed a stronger influence on student-achievement outcomes. The results also indicated that teachers tended to hold higher expectations for girls than for boys and were more likely to hold lower expectations for students who were children of migrant workers.

Keywords: teacher expectations, teacher expectation effects, student academic achievement, Chinese junior high schools, hierarchical linear modelling

4.1. Introduction

The phenomenon of expectancy effects had been studied by researchers in the fields of psychology, sociology, and philosophy, before Rosenthal and Jacobson (1968) started the tradition of researching expectancy effects in the education field. In their ground-breaking but also controversial experiment, *Pygmalion in the Classroom*, children in 18 classrooms (Grades 1–6) in a school were given a nonverbal intelligence test (Flanagan, 1960) which was promoted to teachers as a test that would predict those children who would have a great progress in their intellectual competence in the near future. Teachers were then given the list of names of the students with the potentials, who were in fact, randomly chosen from the classrooms. When the children were tested again after eight months, the randomly labelled children did show greater improvement in their IQ compared with the others.

Based on their findings, Rosenthal and Jacobson concluded that teachers' beliefs and expectations of their students' potential could work as a self-fulfilling prophecy (i.e., a situation when a false perception triggers novel behaviours that make the original false perception come true; Merton, 1948) and influence students' intelligence and academic outcomes. Although some researchers criticised this initial experiment, even the staunchest critics of the methodology (e.g., Thorndike, 1968) did not question the likely existence of teacher expectations and their potential to influence student outcomes.

Teachers form expectations for their individual students, groups, and whole classes based on their knowledge about students, as well as their own beliefs, prejudices, or stereotypes (Brophy, 1983; Good, 1987). According to Good and Brophy (1997), teacher expectations are "inferences that teachers make about the future behaviour or academic achievement of their students, based on what they know about these students now" (p. 79). Once teacher expectations have been formed, they can affect the ways in which teachers

interact with students (Brophy & Good, 1970). Teachers' differential expectations may be

transmitted by differential teacher behaviours (e.g., Brophy, 1983), different teacher–

student interaction patterns with individual students (e.g., Brophy & Good, 1974),

variations in the learning opportunities provided (e.g., Weinstein, Marshall, Brattesani, &

Middlestadt, 1982), and the classroom climate provided for students (e.g., Rubie-Davies,

2015), which may, in turn, affect students' learning behaviours (e.g., Tyler & Boelter,

2008), self-perceptions (e.g., Rubie-Davies, 2006), academic achievement (e.g.,

Archambault et al., 2012), and personal development (e.g., Weinstein, 2002).

For 5 decades, following the Pygmalion study, Western researchers have conducted

abundant research exploring the effects that teacher expectations can exert on student

learning and academic achievement (e.g., S. Gill & Reynolds, 1999; Jussim & Eccles,

1992; Ready & Chu, 2015; Whitley, 2010). In China, from the beginning of the 21st

century, the appearance of the phrases *teacher expectations* and *teacher expectation effects*

has increased rapidly in the academic literature. Researchers have endeavoured to explore

relations between teacher expectations and student achievement in the Chinese education

context, covering the education levels from primary (Ling, Lu, Feng, & Li, 2014; X. Xu &

Zhang, 2015) to tertiary education (Pi, 2013; Ye & Chen, 2012), and studies have included

various academic subjects (e.g., Chinese, mathematics, English, chemistry, and physics).

Regardless of the increasing number of studies investigating teacher expectation

effects in both the Western and the Chinese educational context, a problem has been found

in the existing literature. While exploring teacher expectation effects on student-

achievement outcomes, student prior achievement has been neglected in a considerable

number of studies (S. Wang et al., 2018). Given that student prior achievement has been

found to be one of the most important predictors of student later attainment (Archambault

et al., 2012), with student baseline achievement uncontrolled, it would be difficult to

determine whether the effects found were teacher expectation effects on student achievement or the impact of student achievement on teachers' judgements. That is, if achievement is not controlled, expectations may be high (or low) in line with student achievement. Hence, the self-fulfilling prophecy effects of teacher expectations cannot be determined in those studies that neglected the student baseline data.

In addition, almost all existing studies on teacher expectation effects have investigated teacher expectations from an individual perspective—teacher expectations for each of their individual students. It has been suggested, however, that teachers not only have expectations for individual students, but they also form expectations for their class/classes of students as a whole (e.g., Brophy, 1983; Rubie-Davies, 2006, 2007). Yet, so far, very few studies have looked at teacher expectations at the class level, or have investigated teacher expectations from the teachers' perspective in the Western and especially in the Chinese context (see Z. Li & Rubie-Davies, 2017 as one exception).

The current study aimed to investigate both the individual-student-level and the teacher-level teacher expectations in an underresearched Chinese context using a relatively large research sample. Junior high school education was the area of concern in this study because it was considered an important transition stage in Chinese fundamental education (Gan, 1993). During this period, students move from childhood into their early adolescence, experiencing social and biological changes and rapid cognitive and psychological development (S. Xu, 2002). In addition, junior high school is the period when students can be strongly influenced by their surrounding environments, their peers, parents, and teachers (Gan, 1993). Given the important role that teachers and their expectations could play in student learning, it was deemed worthwhile to investigate how teacher expectations function at this important transition stage.

To the best of our knowledge, the study is the first-ever attempt to examine teacher expectation effects at both student and teacher levels in the Chinese junior high school context and with student baseline data controlled. Controlling for student baseline achievement enabled the true expectation effects (if any) to be detected. In addition, by testing teacher expectation effects at the student- and teacher-level in the same model, the study also enabled a comparison of the strength of teacher expectation effects at these two different levels. If teacher expectation effects on student academic gains can be found, the results of the study could be used to promote educational equity as well as to reinforce teaching and learning in Chinese junior high school classrooms. Such results could also provide evidence of the cross-cultural (in)applicability of the findings from previous research of student- and class-level teacher expectation effects.

The following section provides a review of the literature on individual student-level and class-level teacher expectation effects on student academic achievement in Western and Chinese contexts. This is followed by an introduction to the research context and the research questions of the present study.

4.1.1. Student-Level Teacher Expectation Effects

A plethora of studies has been conducted exploring the possible effects that teachers' expectations could exert on student academic achievement. Although there have been considerable differences in the research designs and statistical analytic methods employed (e.g., regression, analysis of variance, path analysis, structural equation modelling, hierarchical linear modelling, etc.), most of these studies have concluded that teacher expectations are positively associated with student-achievement performance (S. Wang et al., 2018). Only a small number of studies have shown non-significant or negative results (e.g., Ma, 2001; Rumberger & Palardy, 2005; Julie Thomas & Strunk, 2017). As one example of the positive association, Alvidrez and Weinstein (1999) found

that controlling for students' SES, preschool teachers' over- and underestimation of students' intelligence (relative to IQ score) significantly predicted students' GPA (i.e., Grade Point Average) 14 years later. As an example of a non-significant association, Hinnant et al. (2009) found that teacher expectations predicted students' maths but not reading achievement, except for minority boys.

It is noteworthy that, even though studies from the 1980s onwards in the teacher expectation field began to consider student baseline achievement, a systematic review of the teacher expectation literature for the past 30 years indicated that nearly 40 % of studies had not considered or controlled student baseline achievement (S. Wang et al., 2018). This problem seemed to be even more severe in the Chinese context. In fact, almost all existing Chinese studies on teacher expectation effects have not controlled for student prior achievement when examining the relations between teacher expectations and student academic achievement (see Z. Li & Rubie-Davies, 2017 and M. Zhu, Urhahne, & Rubie-Davies, 2018, as the only two exceptions identified).

In some Chinese studies, analytic methods employed have been ANOVA (i.e., comparing teachers' expectations for high-, medium- and low-achieving student groups; e.g., L. Gao, Zhang, & Zheng, 2014; Y. Zhang & Zhang, 2008; X. Zhao, 2014), which fails to take into account student baseline achievement. Given that student prior achievement is an important influential factor on the formation of teacher expectations in naturalistic classrooms (e.g., Ready & Wright, 2011; Timmermans et al., 2016), high-achieving student groups would be expected to receive higher teacher expectations than medium- and low-achieving groups. As a result, the expectation differences between groups identified in these studies may be due to actual student-ability differences and therefore should not lead to the conclusion of self-fulfilling effects of teacher expectations.

Some other Chinese studies have utilised correlational analysis (i.e., investigating the correlations between student-perceived teacher expectations and student academic achievement, e.g., J. Gao, 2013; Liao, Deng, Qian, Zhou, & Wu, 2011; P. Zhang, 2016), which, again, did not allow student baseline achievement to be controlled. In the wider literature, student prior achievement has been found to be not only an important predictor of teacher expectations (see above), but also one of the strongest predictors of student later achievement (e.g., Archambault et al., 2012; Friedrich et al., 2015; Wanzek et al., 2014). A high-achieving student would thus be expected to receive higher teacher expectations and also to achieve at higher levels in subsequent examinations. Hence, it could be argued that the positive associations found between student-perceived teacher expectations and student achievement may not be the result of teacher expectation effects on student achievement, but rather student effects on teachers' expectations and judgement instead.

The only two Chinese studies which controlled student baseline data showed positive associations between teacher expectations and students' future achievement (Z. Li & Rubie-Davies, 2017; M. Zhu et al., 2018). These two studies focussed on teacher expectation effects at primary (M. Zhu et al., 2018) and tertiary levels (Z. Li & Rubie-Davies, 2017), respectively. Hence, whether or not earlier teacher expectations predict later student academic achievement progress within the Chinese junior high school context is still unknown.

4.1.2. Class-Level and Generalised Teacher Expectation Effects

As noted, some researchers have suggested that teachers not only hold expectations for individual students, but that they also have expectations for a group or class of students as a whole (Brophy, 1983, 1985; Rubie-Davies, 2015). Several studies have identified the existence of generally low teacher expectations for groups of students who are ethnic minorities or those with low SES (Dusek & Joseph, 1983). Very few studies, however,

have examined teacher expectations from a teacher-centred perspective (i.e., whether or not particular teachers have high or low expectations for all their students), and their possible influences on student learning and achievement.

Rubie-Davies (2006, 2007, 2015) conducted a series of studies to explore teachers' overall expectations for their students. By comparing the end-of-year achievement gains of students with their beginning-of-year achievement, it was found that whereas students with high expectation teachers made large statistically significant gains in their reading achievement across the year, students in the classes of low expectation teachers made small or no gains (Rubie-Davies et al., 2006). In addition, the results also showed that students with high expectation teachers improved their self-perceptions in reading whereas the self-perceptions of students with low expectation teachers declined considerably (Rubie-Davies, 2006).

Archambault et al. (2012) conducted a longitudinal study and explored the effects of teacher beliefs (teacher expectations and general self-efficacy) on student mathematics achievement. Teacher expectations were measured through a teacher self-report questionnaire which gauged teachers' beliefs about the degree of motivational, academic, or cognitive limitations that their students (as a whole) presented. The results of their study indicated that teachers' self-report beliefs directly related to their students' academic experience. Controlling for student sex, age, and prior achievement, teachers' class-level expectations positively predicted student mean achievement a year later.

In the Chinese context, two studies were identified which explored teacher expectation effects at the class level (L. Fan & Jin, 2008; Z. Li & Rubie-Davies, 2017). In both these studies, researchers investigated individual student-level as well as class-level teacher expectation effects on student achievement. Z. Li and Rubie-Davies's (2017) study showed that both student-level and class-level teacher expectations were

significantly predictive of students' later scores, and class-level teacher expectations had a greater effect compared to teacher expectations at the individual-student level. In contrast, L. Fan and Jin (2008) found that class-level teacher expectations did not significantly affect student achievement when student-level teacher expectations were also included in the same model. However, as L. Fan and Jin's research did not control for student baseline achievement, the influence of teacher- and student-level teacher expectations on student academic attainment was unclear.

The current study aimed to address gaps in the literature by: (1) examining both student- and teacher-level teacher expectation effects on student achievement in the Chinese junior high school context with student prior achievement controlled using hierarchical linear modelling and (2) comparing the strength of teacher expectation effects at the student and teacher level in the given research context.

4.1.3. The Current Study

4.1.3.1. The Chinese context. The research context of the study was Chinese junior high schools. The Chinese education system consists of 6 years of primary education, 3 years of junior high school education, and 3 years of senior high school education, followed by tertiary education. Students need to sit summative examinations at the end of primary, junior high, and senior high schools in order to gain entry into junior and senior high schools, and universities, respectively. A typical Chinese junior high school class usually consists of 40 to 50 students who are taught by the same group of teachers (one teacher teaches one subject). Students normally stay in the same class during the entire junior high school period. Tracking is not commonly used in China especially at primary and junior high school levels, and within-class ability grouping is even rarer.

Instead of having an inequality problem in education across different ethnic groups (such as in the US or some other European countries), in China, the major issue of

educational inequality concerns gaps in financial development levels across provinces and cities, and the SES of families. These gaps mostly exist between eastern and western geographical areas, that is, developed and under-developed provinces, and urban and rural areas (J. Wei, 2000; Y. Zhu & Zhou, 2006). One group involved in the current study are called "migrant workers" in China. They are people who were born and grew up in rural areas but left their hometown to seek job opportunities in the cities. In the last decade, the number of migrant workers has increased rapidly (the number in 2018 was 135,060,000; National Bureau, 2019) and education for their children is increasingly important in Chinese society and has become an area of widespread concern among Chinese policy makers and academics (Ge, 2017; Huang, Li, & Wan; 2010; G. Li, 2009). Therefore, the current study collected students' family background data (urban or rural) as part of students' demographic information.

  4.1.3.2. Purpose of the study. This study was designed to explore teacher expectations and teacher expectation effects in the Chinese junior high school setting. It focussed on student- and teacher-level teacher expectations and possible relations with student academic achievement. Controlling for students' prior achievement, teacher expectations were explored to see if they predicted students' end-of-year achievement.

  The research questions for this study were:

1. Are there teachers who hold correspondingly high or low expectations for all their students (relative to achievement) in the Chinese junior high school context?

2. Is students' year-end achievement predicted by teachers' early-year student-level expectations, after controlling for achievement at the beginning of the year?

3. Is students' year-end achievement predicted by early-year teacher-level teacher expectations, after controlling for achievement at the beginning of the year?

4. Which has stronger effects on student academic achievement: student-level teacher expectations, or teacher-level teacher expectations?

4.2. Method

4.2.1. Participants

Participants in the current study were 50 Year 7 teachers and their 1,199 students from 10 junior high schools in R City, China. The permanent resident population in the city was 132,354 in 2010, and more than 99 % of the population was of the main ethnicity, Han (Office for the Population Census of Hebei Province, 2012). Children generally sit a junior high school entrance examination after they have spent 6 years in their primary schools. They will then enrol in neighbourhood junior high schools and start their high school journey from Year 7. As it has been suggested that the self-fulfilling prophecy effects of teacher expectations are most likely to occur when students are new to their teachers (Good, 1987), and Year 7 is the first year for students in junior high schools, Year 7 teachers and students were selected as participants in this study.

The teachers targeted in this study were those who taught Year 7 Chinese, mathematics, or English in these 10 junior high schools. These three curriculum areas were chosen because they are seen as the core subjects throughout primary and secondary school education in China. They are included in the senior high school and university entrance examinations, and account for a large proportion of the total score in both examinations. Therefore, these three subjects receive the largest attention from schools and teachers, as well as parents and students. On average, lessons for each of these subjects involves 5–7 hours per week (45 minutes for each lesson, 1.5 lessons per day on average), collectively representing about half of the total instruction time. Consistent

interactions over time would likely result in a relatively stable teacher–student relationship.

The 50 teacher participants in this study consisted of teachers from different age groups and with various teaching experience. The number of female teachers (43) was statistically significantly greater than the number of male teachers (7) participating in this study ($\chi^2 = 25.92$, $df = 1$, $p < .001$), reflecting the gender imbalance among teachers at the junior high school level in China. There was no statistically significant difference in the number of Chinese (16), mathematics (17) and English teachers (17), $\chi^2 = 0.04$, $df = 2$, $p = .98$.

Of the 1,199 student participants (aged 12 years) there were significantly more boys (649) than girls (550) ($\chi^2 = 8.174$, $df = 1$, $p = .004$), which represented the gender balance in the researched population—the ratio of boys to girls enrolled in all the primary and secondary schools in the targeted city was approximately 54:46, as it is in the current study. Most of these students came from an urban family background (94.1 %) although nearly 6 % were from migrant-worker families.

Each school allocated their students to different classrooms in a way that ensured that the average prior academic achievement of all classes was similar. To be specific, all incoming students were ranked based on their total scores in their junior high school entrance examination. The first-ranked student was then allocated to Class 1 and the second-ranked student to Class 2. This type of allocation continued until it reached the total number of classes, and then the process was reversed. For example, if there were four Year 7 classes in one school, the student ranked fourth would be in Class 4. The fifth-ranked student would also be in Class 4 and the sixth would be in Class 3.

After students had been assigned for one of these classes, schools randomly allocated teachers to teach different classes. Each teacher taught only one subject (either

Chinese, mathematics, or English) to one or two classes (based on the size of the school). The students stayed in the same class and were taught by the same teachers for 3 years during their junior high school years.

4.2.2. Measures

Students' prior achievement, teachers' expectations for students' year-end performance and students' achievement at the end of the year were measured and collected. In addition, student demographic characteristics were also collected for further analysis. The study was conducted in accordance with human subjects ethics guidelines. Ethical approval to conduct the research was obtained from the institution of the authors. All participants were fully informed about the research and fully informed ethical consent was obtained from the participants.

4.2.2.1. Student achievement. There were two school terms in each school year in the targeted schools: Term 1/Autumn Term (September–December) and Term 2/Spring Term (February–July). During each school term, students were tested twice—once in the middle of the term and once at the end of the term. Therefore, in total, the participant students undertook four examinations during their first year of junior high school. All the examinations were citywide and used uniform examination papers and uniform marking. The full score for each of the chosen subjects was 120 in all these examinations. In this research, students' achievement scores in Chinese, mathematics, and English in the Term 1 mid-term examination and Term 2 final examination were collected and treated as measures of students' baseline achievement and students' year-end achievement, respectively.

4.2.2.2. Teacher expectation survey. In late September 2015, about three weeks after school started, the participant teachers were asked to rate their expectations for their students' achievement in the school-year final examination using a one-item teacher

expectation survey scale. In the scale, teachers were asked to predict the level that each student would achieve by the end of the school year. The scale was divided into 13 levels, covering the range of scores from 60 (half of the total score) to 120 (the total score). Level 1 represented student scores that were under 60 (scores under 60 were grouped together because teachers rarely provided such low expectations for their students). Level 2 represented 60 to 65. Level 3 covered scores between 66 and 70 and so on, with Level 13 the highest level, covering scores from 115 to 120. When teacher expectations were measured, teachers had access to student-achievement scores from their junior high school entrance examinations but had not conducted examinations themselves. Data gathered from the survey were used as the measure of teacher expectations for students' year-end achievement.

  4.2.2.3. Student demographic characteristics. Two student-level demographic variables were collected: student gender and student family background (urban/rural). The data were coded as binary dummy variables with male = 0 and female = 1, urban family background = 0 and rural family background = 1. In both cases, the category with the larger sample size was chosen to be the reference group.

4.2.3. Data Analysis

  Data analysis for this study involved using hierarchical linear modelling (HLM). HLM can be understood as analogous to a linear regression model but with more than one level. It is a means of analysing data with a hierarchical structure. As in other social science domains, data collected within the educational context tend to have a hierarchical structure. In this study, for example, data collected were nested with student-achievement data nested within individual students, students nested within classrooms, and classrooms nested within schools. When data are nested, individuals from the same group (e.g., students from the same class or from the same school) tend to share similarities compared

with those from different groups. These similarities (same teacher, classroom atmosphere, school policies) could potentially explain part of the differences in student academic outcomes (e.g., Meissel, 2014) and violate the assumption of independence necessary for conventional single-level regression. HLM enables contextual influences of different levels on the outcome variable to be identified, and to take account of the hierarchical structure of the data when completing the analyses. An additional reason for using HLM concerned the inclusion of data from more than one level in one equation model, since there were teacher-level variables that needed to be accounted for.

The decision of how many and which levels should be included in the HLM models was made based on a combination of the following considerations: the structure of the data, the purpose of the research and the intra class correlations (ICCs). ICC represents the proportion that a particular higher level explains among all the variations in the outcome variable. For instance, an ICC coefficient at the school level tells how much of the variation in student outcome is at the school level. Data analyses were performed using SPSS Version 25.0 for data preparation and preliminary analyses and MLwiN 3.00 (Charlton, Rasbash, Browne, Healy, & Cameron, 2017) for the HLMs.

4.3. Results

4.3.1. Missing Data Analysis

Fifty teachers were initially recruited for the study. However, the data for two teachers and their students were removed from the study during the data-cleaning process. One teacher (No. 37, mathematics teacher), instead of predicting his students' scores, asked his students to predict their own scores. The other teacher (No. 13, Chinese teacher) left her school during the first school term, so it was not possible to look at expectation effects on her students' Term 2 final achievement.

Before removing the data, two independent sample *t* tests were conducted to compare the prior achievement of the students of these two teachers and all other participant students in their schools. There was no statistically significant difference in the prior mathematics achievement for students of teacher No. 37 (*M* = 78.6, *SD* = 17.4) and the other students (*M* = 80.0, *SD* = 18.8); *t* (321) = -.592, *p* = .554. There was no statistically significant difference in the prior Chinese achievement for students of teacher No. 13 (*M* = 72.8, *SD* = 17.1) and the other students (*M* = 74.2, *SD* = 13.6); *t* (245) = -0.716, *p* = .475.

4.3.2. Standardised Scores for Term 1 Mid-Term and Term 2 Final Examinations in Chinese, Mathematics, and English.

In order to put achievement data in different subjects and different exams onto the same scale and make them comparable, student-achievement data in the three subjects in both the Term 1 mid-term examinations and Term 2 final examinations were standardised by calculating their Z scores. After standardisation, all the achievement data had a mean of 0 and a standard deviation of 1 regardless of different subjects and examinations. In line with the guidelines outlined by H.-Y. Kim (2013) and Kline (2005), the distribution analysis showed that all the standardised achievement data in this study were well within the guidelines for acceptable skewness (< 2) and kurtosis (< 5).

4.3.3. Student-Level Teacher Expectations (Relative to Achievement)

To investigate the levels of expectations held by each teacher for individual students, single-level regression was conducted for each subject with teacher expectations (at individual-student level) as the dependent variable and student baseline achievement (standardised Term 1 mid-term examination scores) as the independent variable. The resulting standardised residual for each student can be interpreted as representing the extent to which each teacher under- or overestimated each of their students (for any given

student, the achievement result contains measurement error). These residuals were treated as student-level teacher expectations (relative to achievement) in this study. As can be seen from Table 4.1, the highest teacher expectation was 3.54 standard deviation units (SDU) above, whereas the lowest was 3.94 SDU below student prior achievement. As SDU is the equivalent of Cohen's *d*, these discrepancies are very large. Skewness (< 1 in all cases) and kurtosis (< 1 in all cases) of the student-level teacher expectation data (relative to achievement) were well within the acceptable range for normal distribution.

Table 4.1.

Range and Distributional Attributes of Standardised Residuals of Student-Level Teacher Expectations (Relative to Achievement)

	N	Max	Min	Skewness	Kurtosis
TE Chinese	1,042	3.08	-3.91	-0.500	0.267
TE Mathematics	1,096	3.54	-3.05	-0.375	0.255
TE English	1,182	2.74	-3.94	-0.836	0.864

Note. TE = Teacher Expectations

4.3.4. Teacher-Level Teacher Expectations (Relative to Achievement)

Among the 48 participant teachers, most teachers (*n* = 42) taught two classes and the rest (*n* = 6) taught only one class. To investigate whether teachers held different expectations for different classes, *t*-tests were conducted to examine each of the 42 teachers' expectations for their multiple classes. Given the increased chance of alpha error due to the large number of comparisons, a corrected alpha would be *p* = .001. As can be seen from Table 4.2, there were no statistically significant between-class differences found in teacher expectations for any of the 42 teachers (*p* > .05 in all cases; well exceeding the .001 adjusted criterion). Therefore, teacher-level expectations could be calculated by averaging teachers' expectations for all their students.

Table 4.2.

T-Tests of Each Teacher's Expectations for Multiple Classes

Teacher	T	Df	Sig.	Teacher	t	df	Sig.
1	.059	83	.953	26	-.395	55	.694
2	-.338	82	.736	27	.515	75	.608
3	-.576	83	.566	28	-.257	73	.798
4	-1.899	81	.061	29	.550	74	.584
5	-.473	83	.638	30	One class only		
6	.433	82	.666	31	One class only		
7	1.685	78	.096	32	One class only		
8	1.444	78	.153	33	1.577	78	.119
9	-.620	78	.537	34	-.077	79	.939
10	-.141	55	.889	35	-.924	78	.361
11	.190	54	.850	36	1.696	81	.094
12	-.721	79	.473	37	Missing data		
13	Missing data			38	-.776	79	.440
14	.791	80	.431	39	1.828	78	.071
15	-.788	77	.433	40	.196	80	.845
16	1.543	81	.127	41	-.335	78	.739
17	-1.508	80	.135	42	-.816	79	.417
18	.450	79	.654	43	1.634	78	.106
19	1.514	84	.134	44	.181	81	.857
20	-.862	79	.391	45	-.460	88	.647
21	-.654	57	.516	46	-.128	91	.899
22	-.701	56	.486	47	-.936	89	.352
23	-1.713	58	.092	48	One class only		
24	.094	57	.925	49	One class only		
25	.233	58	.817	50	One class only		

Based on the standardised residuals for individual students, average residuals at the teacher level were calculated by averaging the residuals for each teacher (see Table 4.3 for the teacher-level residuals for all participant teachers). This method has been used in previous studies as a measure of teacher-level teacher expectations (Z. Li & Rubie-Davies, 2017). The mean standardised residuals for each teacher were used as a measure of teacher-level teacher expectations (relative to achievement) in this study. Skewness (< 1 in all cases) and kurtosis (< 1 in all cases) of the teacher-level teacher expectation data (relative to achievement) were within the acceptable range for normal distribution.

Teacher expectation data were analysed together, regardless of the three different subjects, in the following study. This was because the focus of the study was on possible self-fulfilling effects of teacher expectations on student academic achievement, not on differences in teacher expectations or teacher expectation effects across subjects (if any). Further, aggregation also improved the statistical power by allowing more teachers to be examined in a single model (see more details in section 4.6).

Table 4.3.

Teacher-Level Teacher Expectations Values (Relative to Achievement) (n = 48)

Teacher ID	TE	Teacher ID	TE	Teacher ID	TE	Teacher ID	TE	Teacher ID	TE
1	-0.286	11	-0.069	21	0.127	31	0.140	41	**0.659**
2	-0.262	12	**0.535**	22	*-1.117*	32	0.002	42	0.394
3	0.075	13	Missing	23	**0.520**	33	0.396	43	*-0.691*
4	*-0.662*	14	0.338	24	**0.514**	34	**0.877**	44	-0.321
5	0.339	15	**0.572**	25	*-0.821*	35	0.230	45	*-1.053*
6	*-0.700*	16	-0.091	26	*-0.639*	36	0.286	46	0.359
7	-0.263	17	0.208	27	-0.044	37	Missing	47	-0.545
8	*-0.627*	18	0.128	28	*-1.076*	38	0.116	48	-0.080
9	**0.775**	19	0.274	29	0.190	39	0.265	49	**0.776**
10	-0.211	20	**0.682**	30	**0.491**	40	-0.012	50	0.177

Note. TE = teacher expectation. Overestimations are presented in bold (based on the cluster analysis). Underestimations are shown in italics.

4.3.5. Identifying High, Medium, and Low Expectation Teachers (Research Question 1)

To determine if teacher-level expectations differed across teachers, cluster analysis was conducted. The Ward method and K-means clustering method were used in order to see if teachers could be clustered into different groups based on their teacher-level expectations. The Ward method was used to detect the optimal number of clusters in the group. As shown in Table 4.4, the plausible number of clusters was three since adding a

fourth cluster did not make much difference to the agglomeration coefficients. The next

step was to conduct the cluster analysis with K-means clustering using the chosen number.

Thus, participant teachers were clustered into three groups which were temporarily

labelled as the overestimation group, near-accurate-estimation group, and underestimation

group, respectively. The number of teachers in each group, as well as the mean, median,

and standard deviation for each group are shown in Table 4.5.

Table 4.4.

Agglomeration Coefficients of Clustering the Average Residuals Using Ward Method (n = 48)

Stage	Number of clusters	Agglomeration coefficient last stage	Agglomeration coefficient this stage	Difference
47	1	—	12.458	—
46	2	12.458	4.143	8.315
45	3	4.143	1.657	2.486
44	4	1.657	1.018	0.639
43	5	1.018	0.661	0.357

ANOVA and post-hoc tests were conducted with teacher expectations as the

dependent variables. The results of ANOVA test revealed statistically significant group

differences [$F (2, 45) = 81.254$, $p < .001$]. The post-hoc Scheffé test showed that all three

groups were statistically significantly different from each other ($p < .001$). An assumption

can be made about this finding: teachers in the different groups held different levels of

overall expectations for their students. Thus, teachers in the overestimation group were

identified as high expectation teachers; teachers in the near-accurate-estimation group

were identified as medium expectation teachers; teachers in the underestimation group

were identified as low expectation teachers.

Table 4.5.

Cluster Analysis Results of Teacher Expectation Groups Based on Average Residuals (n = 48)

| Clustering result | All | Teacher Group | | |
		Over	Near-accurate	Under
N	48	10	29	9
Mean	0.02	0.64	0.06	-0.82
SD	0.51	0.13	0.25	0.20

Note. Over = overestimation teacher group; near-accurate = near-accurate-estimation teacher group; under = underestimation teacher group.

4.3.6. Possible Relations Between Teacher Expectations and Student Academic Achievement

Following the identification of high, medium, and low expectation teachers, data were further analysed in order to explore possible relations between various levels of teacher expectations and student academic achievement. HLM was utilised to determine whether, controlling for student initial achievement, early-year teacher expectations predicted end-of-year student achievement. The models were estimated using MLwiN with Markov Chain Monte-Carlo (MCMC) estimation employed (Browne, 2017). MCMC estimation was used since it has been shown to perform better than likelihood methods when the sample size is relatively small (J. Gill, 2002). Reweighted iterative generalised least squares (RIGLS) was used to provide the initial estimates for the MCMC estimation. This was followed by a burn-in of 5,000 with simulation of 10,000 iterations.

Before conducting HLM analysis, data in the original SPSS dataset were restructured into long format (i.e., restructuring variables to cases to allow the clustering to be modelled). Before restructuring, for each student, there were three achievement data variables for the Term 1 mid-term examination (i.e., Chinese, mathematics, and English mid-term examination scores) and Term 2 final examinations (i.e., Chinese, mathematics, and English final-examination scores). In addition, each student also had three teacher expectation variables (i.e., Chinese teacher's expectation, mathematics teacher's

expectation, and English teacher's expectation). After restructuring, student-achievement variables across the three subjects in the two examinations were turned into two new variables (Term 1 mid-term examination score and Term 2 final-examination score) with three different cases (Chinese, mathematics, and English). Similarly, the three teacher expectation variables were turned into one new variable (Teacher Expectations) with the three cases. Subject (Chinese, mathematics, English) was used as the index value for the restructuring. Following this restructuring process, the hierarchical linear model could be built, with Term 2 final examination as the dependent variable, Term 1 mid-term examination as the control variable, and teacher expectations as the independent variable.

      4.3.6.1. Variations and ICCs at different hierarchical levels. The hierarchical structure of the data suggested a possible need for four levels, with achievement data in different subjects nested within students, students nested within classrooms and classrooms nested within different schools. Therefore, subject achievement, student, classroom, and school were selected as the first, second, third, and fourth level respectively in the equation model conducted in MLwiN. An unconditional model was then fitted with Term 2 final-examination score as the dependent variable to check the variations at each of the four levels (see Table 4.6). The largest variation was at the student level, followed by the subject-level variation, the school-level variation, and the class-level variation. Both the subject- and student-level variations were statistically significant whereas neither the school- nor class-level variations were statistically significant.

Table 4.6.

Variations and Intraclass Correlation Coefficients (ICCs) for Term 2 Final Examination

	Variation at each level (SE)
School-level variation	0.066 (0.054)
Class-level variation	0.009 (0.009)
Student-level variation	0.698 (0.033)
Subject-level variation	0.266 (0.008)
ICC at school level	6.4 %
ICC at class level	0.9 %

ICCs at the class and school levels can be found in Table 4.6. According to Bliese (2000), an ICC below 5 % suggests that a multilevel analysis is not necessary. The argument about not being necessary is based on the risk of error in the results. However, a low ICC does not mean that HLM should not be used, nor that it is inaccurate to do so. As class-level teacher expectation was one of the main interests in this study, a decision was made to retain the class level in the HLMs. Further, since this study involved data coming from both student and teacher levels, using HLM enabled data from different levels to be included in the same model. Thus, four-level HLMs were fitted to analyse the data. An unconditional model with four levels has the following structure:

$$Y_{ijkl} = \gamma_{0000} + f_{0l} + v_{0kl} + u_{0jkl} + e_{ijkl} \qquad (1)$$

Where, in the current case, Y_{ijkl} is the Term 2 final achievement in subject i for student j in class k of school l. γ_{0000} is the grand mean of student achievement; f_{0l} is the variance at school level; v_{0kl} is the variance at class level; u_{0jkl} is the variance at student level, and e_{ijkl} is the variance at subject level.

4.3.6.2. Student-level teacher expectation effects (Research Question 2). The first HLM analysis conducted in this study was to predict student Term 2 final-examination results from the Term 1 mid-term examination results, teacher expectations for individual students, and two other student characteristics: gender and family background. First, the Term 1 mid-term examination was added into the model. This

allowed student baseline achievement to be controlled before adding in the expectation variable. Then the rest of the independent variables were added into the equation model one after another.

As shown in Table 4.7, Model 1, all four predictor variables had a statistically significant influence on Term 2 final-examination scores. On average, girls achieved 0.057 SDU higher than boys, after controlling for their prior achievement. Students from a rural family background achieved 0.106 SDU lower than their counterparts from an urban family background. Early-year student-level teacher expectations had a strong and positive influence on student end-of-year academic achievement. Controlling for student baseline achievement, student gender, and family background, a 1 SDU increase in student-level teacher expectations (relative to achievement) resulted in a 0.190 SDU higher score in student final achievement. Put another way, if the teacher had a higher expectation for a particular student, the student would, on the whole, achieve a significantly higher level of achievement by the end of that year.

Table 4.7.

Parameter Estimates for HLMs of the Standardised Term 2 Final Achievement

Parameter	Model 1 Student-level teacher expectation effect	Model 2 Teacher-level teacher expectation effect	Model 3 Student- and teacher-level teacher expectation effects
Fixed effects			
Intercept	-0.041 (0.043)	-0.056 (0.043)	-0.036 (0.044)
Term1 mid-term examination	0.780 (0.012)***	0.746 (0.014)***	0.779 (0.013)***
Student-level teacher expectation	0.190 (0.010)***	—	0.196 (0.012)***
Teacher-level teacher expectation	—	0.160 (0.021)***	-0.030 (0.024)
Female	0.057 (0.023)**	0.103 (0.025)***	0.057 (0.023)**
Child of migrant worker	-0.106 (0.050)*	-0.170 (0.055)***	-0.106 (0.049)*
Random effects			
Between-school variance (f_{0l})	0.011 (0.010) [3.5 %]	0.011 (0.010) [3.2 %]	0.012 (0.011) [3.9 %]
Between-class variance (v_{0kl})	0.010 (0.004) [3.2%]	0.009 (0.005) [2.6 %]	0.009 (0.004) [2.9 %]
Between-student variance (u_{0jkl})	0.051 (0.007) [16.4 %]	0.081 (0.009) [23.5 %]	0.050 (0.007) [16.1 %]
Between-achievement variance (e_{ijkl})	0.239 (0.008) [76.8 %]	0.243 (0.008) [70.6 %]	0.239 (0.008) [77.1 %]
Deviance (MCMC)	4514.895	4588.889	4518.182

Note. *p<.05. **p<.01. ***p<.001.

4.3.6.3. Teacher-level teacher expectation effects (Research Question 3). The second HLM model built was to predict student Term 2 final-examination results with Term 1 mid-term examination results, teacher-level teacher expectations, and the same two student characteristics.

As shown in Table 4.7, Model 2, the influences of all four predictive variables on the Term 2 final-examination results were statistically significant. On average, girls achieved 0.103 SDU higher than boys, after controlling for their prior achievement. Students from a rural family background achieved 0.170 units lower than the others who came from urban families. Early-year teacher-level teacher expectations had a strong and positive effect on student end-of-year academic achievement. Controlling for student baseline achievement, a 1 SDU increase in teacher-level teacher expectations (relative to achievement) resulted in significantly higher student final achievement (SDU = 0.160). This indicates that a student of a teacher with a relatively higher overall expectation for all students, was likely to have greater academic gains compared with those who had a teacher with relatively lower overall expectations—though this model does not take into account individual student-level teacher expectations.

4.3.6.4. Student- and teacher-level teacher expectations in the same model (Research Question 4). The results from the previous two models revealed that early-year teacher expectations, both at the student level and teacher level, had significant and positive effects on student year-end academic achievement. What was not yet clear, however, was which form of teacher expectations had a stronger relation with student achievement: student-level teacher expectations or teacher-level teacher expectations. The third multilevel model aimed to examine this question.

Model 3 of Table 4.7 shows the parameters for the equation model built with Term 1 mid-term examination achievement, student-level teacher expectations (relative to achievement) and teacher-level teacher expectations (relative to achievement) predicting Term 2 final-examination achievement. As can be seen, the Term 1 mid-term examination had a similar coefficient with the prior two models. Student-level teacher expectations had a strong and positive influence on student final achievement, whereas the effect of teacher-

level teacher expectations became non-significant in this model. In this case, student-level teacher expectations played a stronger role in influencing student achievement compared with the teacher-level teacher expectations. When both individual and teacher-level expectations were included in the same model, for students with the same baseline achievement and the same individual-level expectations, having a teacher who held generally high or low expectations did not influence their individual achievement by the end of the school year.

4.3.7. Student-Level Teacher Expectations (Relative to Achievement) and Student Characteristics

A fourth HLM analysis was conducted with student-level teacher expectations modelled as the dependent variable, to determine whether individual-student characteristics predicted teachers' over- or underestimation of individual student's achievement. The results (see Table 4.8) showed that teachers tended to overestimate female students. On average, teachers' expectations (relative to achievement) for female students were 0.190 SDU higher than for male students. In addition, teachers tended to underestimate students from rural family backgrounds. On average, teacher's expectations (relative to achievement) of a child of migrant workers was 0.231 SDU lower than for their peers who came from urban families.

Table 4.8.

Parameter Estimates for HLM of the Student-Level Teacher Expectations

Parameter	Model 4
	Student-level teacher expectations
Fixed effects	
Intercept	-0.103 (0.097)
Female	0.190 (0.034)***
Child of migrant worker	-0.231 (0.077)**
Random effects	
Between-school variance (f_{0l})	0.060 (0.054) [6.0 %]
Between-class variance (v_{0kl})	0.061 (0.023) [6.1 %]
Between-student variance (u_{0jkl})	0.052 (0.015) [5.2 %]
Between-achievement variance (e_{ijkl})	0.831 (0.025) [82.8 %]
Deviance (MCMC)	8804.748

Note. *p<.05. **p<.01. ***p<.001.

4.4. Discussion

4.4.1. Student-Level Teacher Expectation Effects

Results from the HLM analysis suggested that student-level teacher expectation effects existed in the participating Chinese junior high school context. With student prior achievement, student gender, and family background controlled, early-year teacher expectations for individual students positively predicted student year-end achievement.

Differential teacher treatment towards high- and low-expectation students has been considered a major means for student-level teacher expectations to function as self-fulfilling prophecies and influence student learning and achievement (Babad, 1993b; Brophy, 1983, 1985; Weinstein et al., 1982). Once teachers' expectations for individual students are formed, they may affect the ways in which teachers interact with high- and low-expectation students, the learning opportunities they provide, as well as their behaviours and attitudes towards a particular student (Rubie-Davies, 2015; Weinstein, 2002). The differential teacher behaviours and dyadic interaction patterns could ultimately exert an influence on student academic achievement.

This finding was consistent with most of the previous research on student-level teacher expectation effects in both Western and Chinese literature. However, this research distinguished itself from existing teacher expectation effect research in the Chinese context by controlling for student baseline achievement while examining the influential relationships between initial teacher expectations and student final achievement. Therefore, with a more rigorous research design and statistical data analysis method, the current study provided stronger evidence to support the cross-cultural applicability of student-level teacher expectation effects on student academic achievement in the Chinese junior high school context.

4.4.2. Teacher-Level Teacher Expectation Effects

Teacher-level teacher expectation effects on student achievement were also found in this study (though these effects disappeared in the model when both student- and teacher-level expectations were included). The relationship between early-year teacher-level expectations and student final achievement was shown to be significant. Controlling for student baseline achievement, gender, and family background, early-year teacher-level expectations positively predicted student final achievement.

Based on her research findings of class-level teacher expectation effects in the New Zealand primary school context, Rubie-Davies (2007, 2015) suggested that class-level teacher expectations could function as self-fulfilling prophecies and affect learning outcomes in two main ways: (1) by influencing the socioemotional environment that the teacher creates in classrooms which can either promote or restrain student learning, and (2) by affecting the instructional environment—how and what teachers teach and, thus, what students ultimately learn.

More specifically, it was found that high expectation teachers created a warmer and more supportive learning atmosphere in their class compared with low expectation

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teachers. In addition, high expectation teachers were found to have provided more feedback to their students, asked more higher order questions, managed inappropriate classroom behaviours more positively, and encouraged and praised their students more frequently compared with low expectation teachers (Rubie-Davies, 2007). These previous findings could provide insights into explaining and understanding the positive correlation found between teacher-level expectations and student achievement in the current study.

This finding was also in line with most existing literature (Archambault et al., 2012; Z. Li & Rubie-Davies, 2017; Rubie-Davies, 2006, 2007, 2008b). Hence, the finding from the current study could be seen as further empirical evidence to support the positive association between early-year teacher-level teacher expectations and year-end student academic outcomes.

4.4.3. Student- vs Teacher-Level Teacher Expectation Effects in Chinese Junior High School Context

Results from the current study indicated that teacher expectations for individual students had a stronger effect on student academic achievement compared with teacher-level teacher expectations. For students with equal prior achievement and individual teacher expectations, being in a class with a teacher who held generally high or low expectations did not affect individual students' later achievement. This finding was in agreement with Friedrich et al.'s (2015) study, which found that teachers' average expectations had no association with students' later mathematics achievement after controlling for students' gender, age, prior mathematics achievement, and teacher expectations at the individual-student level.

To date, only one study has compared teacher- and student-level teacher expectation effects on student academic achievement (with student baseline achievement controlled) in the Chinese context (Z. Li & Rubie-Davies, 2017). Z. Li and Rubie-

Davies's (2017) findings suggested that teacher-level teacher expectations were a more powerful predictor of student achievement than student-level teacher expectations. Their study was conducted within a tertiary institution context whereas the context of the current study was the junior high school setting. There are a few important differences between these two contexts which may account for the disparate findings.

First, in the tertiary education context, lecturers usually meet with their students once or twice a week—time and opportunity for teacher–student dyadic interaction is relatively limited. As a result, university lecturers, compared with primary and secondary school teachers, are less familiar with their individual students. In addition, the teaching content of the lectures tends to be "academically oriented and highly structured" (Z. Li & Rubie-Davies, 2017, p. 13). Hence, teachers tend to think about their students as a whole class, rather than treating them as individual students. In contrast, the participant teachers in the current study were main-subject junior high school teachers who met with their students on a daily basis. There were frequent teacher–student interactions both during and after class. Therefore, teachers were probably quite familiar with their individual students, and the students may have been treated as individuals rather than as a whole group.

Second, the homogeneity and heterogeneity of student ability could be another plausible explanation. In the tertiary setting, student abilities in one class tend to be similar. This is because students must have achieved similar levels in GaoKao (Chinese University Entrance Examination) to be able to study in the same university. In this case, lecturers would expect a similar level of ability from their class of students which means the within-class variations in teacher expectations (i.e., differences in individual student-level expectations) can be minimised. In contrast, in the current research context, the method used to assign students into different classrooms (refer to above) meant that

student abilities varied considerably in the same classroom whereas between-class ability differences were negligible. As a result, the within-class variations of teacher expectations (i.e., differences in individual student-level expectations) can be much larger than the between-class variations (i.e., differences in class-level expectations). This unique characteristic of the context could have reduced the class- and teacher-level teacher expectation effects.

Third, the required teaching tasks for junior high school teachers and the regular summative examinations for their students may be a consideration. Junior high school teachers, no matter whether they have high or low expectations, face pressure to follow the teaching agenda and accomplish teaching tasks within a required time period. Added to this is the pressure of regular summative examinations each year. Teachers are under pressure to get their students to achieve highly in the examinations, which is considered both important for students' future and for teachers' reputation and career. Given these pressures, even teachers who have generally low expectations for their students have to fulfil the same required teaching tasks. This might have balanced out the Golem effects (i.e., poor performance resulting from low or negative expectations) of teachers' class-level and normative expectations to some extent.

Last, it might be that the idea of educational equity has not deeply permeated the Chinese education system and equal treatment may not be well practised in the current research context (Tian, 2016). Several studies have found that teachers tend to have preferences towards high-achieving students and class representatives (J. Gao, 2013; Ouyang, 2005; M. Zhang, 2006). Under this circumstance, teachers' lack of awareness of the need for equal treatment could result in considerable discrepancies in teachers' behaviours towards students. If individual students in the same class had been treated with obvious differences by their teacher, the effects of overall teacher expectations would have

been weakened in the face of individual student-level teacher expectation effects. Empirical evidence is needed though to warrant these assumptions.

4.4.4. Student Gender, Student Social Background and Teacher Expectations

The results showed that teachers were more likely to overestimate their female students. Zheng (2010) and Zheng, Liu, and Mo (2004) found that male students perceived more negative teacher expectations compared with female students. Jia (2012) and Y. Li (2011) found that English teachers held higher expectations for girls than boys, and student perceptions of English teachers' expectations were also found to be higher for girls (J. Gao, 2013). Yet, there were also other studies which suggested no gender effects in student perceptions of general teacher expectations (C. Wei, 2008) and physics teachers' expectations (Du, 2016). Subject might be one explanation for the differences in these findings. Further research is needed to better understand possible gender effects on the formation of teacher expectations in the Chinese context.

Previous research has suggested that students who go to schools in rural areas perceived an overall lower level of teacher expectations compared with students who went to schools in the cities (J. Li, 2016). The current study, however, investigated and compared expectations for urban and rural background students in the same classroom with the same teacher. The results indicated that, compared with students coming from an urban family background, teachers tended to underestimate students who were children of migrant workers.

Moreover, the coefficients for the gender and family background variables suggested that students with a rural family background were more susceptible to low teacher expectations than boys, which is supported by previous studies (S. Wang et al., 2018). The lower expectations that teachers held for these children might be due to the current life status of many migrant workers and their children. Transferring from a rural

school to an urban school, children of migrant workers have to face multiple difficulties (e.g., self-identity issues, lower economic status, low self-esteem, language barriers, different teaching materials, different lifestyle, discrimination from society, etc.), which could all affect their capacity to achieve at the same level as their urban classmates (Huang et al., 2010; X. Zhang, 2009). These difficulties, along with the belief that children of migrant workers are lacking quality home education (Ge, 2017), might account for the low expectations that teachers held for these children. The low teacher expectations for children of migrant workers might partially explain the lower academic achievement for this group of children found in the current study.

4.4.5. Contributions and Implications

This study has provided empirical evidence for the cross-cultural applicability of student- and teacher-level teacher expectation effects on student academic outcomes in the Chinese junior high school context. Although a lot of work remains to be done before understanding the role that teacher expectations play in student academic experience and outcomes in the Chinese context, this study provides some important contributions to the teacher expectation research field.

First, the current study has contributed to the teacher expectation literature by examining both individual student-level and teacher-level teacher expectations at the same time which enabled a comparison between the expectation effects on student-achievement outcomes at both levels. To date, only a very limited number of studies have explored this issue and the findings have been inconsistent (L. Fan & Jin, 2008; Friedrich et al., 2015; Z. Li & Rubie-Davies, 2017). Therefore, additional studies will be needed to examine this issue in various educational contexts. Second, the study has provided further evidence for teacher expectation effects with the nested data structure in the context considered. School and class factors, such as school SES, type of school (ordinary or key, public or private,

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boarding or day school), class size, and classroom climate could all make a difference to the student learning experience and attainment, and hence should not be neglected. By employing HLM, it is possible to determine the degree of within-group dependence, and to separate within-group effects from effects that are caused by groups.

A further contribution of the study for teacher expectation effects research concerns the importance of controlling for student prior achievement when investigating possible self-fulfilling prophecy effects of teacher expectations on student later achievement. Whereas Western studies started considering student prior achievement in the 1980s, this methodology remains inconsistently adopted in Western studies (S. Wang et al., 2018) and is virtually non-existent within the existing studies in the Chinese junior high school context. With students' prior achievement overlooked, relationships found between achievement and expectations cannot lead to any firm conclusion that teacher expectations have predictive relations with student performance. Last, in comparison with the majority of teacher expectation studies which had samples that were highly tracked, in the current research context, student average baseline achievement was very similar across classrooms. This presents a rare opportunity to gain insight into the extent to which teacher expectations influence student achievement in classroom contexts that are more directly comparable with each other.

The study also has some implications for in-service teachers' teaching practice and professional development, as well as for preservice teacher training and teacher education. With regard to teaching practice, the findings suggest that it is important for teachers to eliminate potential bias and prejudice towards students—in this context, prejudice against boys and those who come from lower SES family backgrounds (e.g., children of migrant workers). Given the important role that teacher expectations can play in student learning, teachers should be supported to ensure that they are able to form suitable and high

expectations for all their students, to provide equal learning support, and create a positive learning environment for all students. Useful support may include teacher training programmes or teacher interventions that focus on raising teacher expectations as well as promoting equal treatment in classrooms. The training programmes and interventions could be inspired by existing research projects which have shown positive effects on student learning and achievement (e.g., Rubie-Davies, 2015; Weinstein & Worrell, 2016).

In addition, the findings from the current study also indicated the necessity for teacher education programmes in China to introduce relevant courses or content on teachers' beliefs and expectation effects. Though teacher expectation is by no means a new area, the idea of teacher expectation effects is still novel for most school teachers in China (Jia, 2012). Among the 50 participant teachers in this study, only one of them mentioned that he had heard about the concept of teacher expectations before. Including these courses or content in teacher education programmes would give preservice teachers a better understanding about how their own beliefs and expectations could influence their teaching practices and their students' learning experiences. The ultimate goal would be to prepare teachers with both high and suitable expectations and positive attitudes towards all their students.

4.4.6. Limitations and Future Directions

One limitation of this study concerns its generalisability. Since the sample was composed of teachers and students from 10 junior high schools in one city in northern China, generalisation of the findings is limited to similar contexts only. Variations in geographic context (different cities and provinces), levels of education (primary, secondary, or tertiary), and the types of schools (public or private) could all make a difference in what would be found in similar studies. Furthermore, as the current study is

correlational rather than experimental, causality between teachers' level of expectations and student academic achievement cannot be assumed.

Another limitation is that the study used Term 1 mid-term examination scores, instead of the school-entering examination scores, as a measure of students' baseline achievement. This decision was made because the participant junior high schools used different examination papers to test their students' achievement at entry. To ensure that student baseline achievement was comparable for students across different schools, the Term 1 mid-term examination, which used uniform examination papers and uniform marking across all the participant schools, was used instead as a measure of student prior achievement. The Term 1 mid-term examination happened around 8 weeks after the school year started which meant that by the time of sitting the examinations, students had been studying with their teachers for 8 weeks already. However, this would not have any impact on teachers' expectations, as these were set within 3 weeks of the start of the school year, and it is unlikely that there were significant effects on student achievement by Week 8. Indeed, if there were, the significant results found in this study are of even greater importance since the effects would have been partly attenuated.

A third limitation is that it was unknown whether students had internalised their teachers' expectations, or whether teachers did actually interact differently with students. Future studies could collect expectation data from both teachers' and students' perspectives to explore the relationships between these two perspectives. Observation studies could be conducted to explore potential differential teacher behaviours and treatment in the classrooms.

4.5. Conclusions

The current study investigated both student-level and teacher-level teacher expectations and teacher expectation effects within the Chinese junior high school context.

Participant teachers were found to have held different levels of overall expectations for their students. With student prior achievement controlled, HLM was employed to explore the relationships between teachers' early-year expectations and student year-end academic achievement. The findings suggested that both student- and teacher-level teacher expectations positively predicted student attainment. However, when including student- and teacher-level teacher expectations in the same model to predict student achievement, the results indicated that teacher expectations at the individual level had a larger influence on student outcomes.

Apart from the main findings, there were also some other supplementary but interesting findings from this study. First, teachers were more likely to overestimate or have higher expectations for girls than boys. Second, teachers tended to underestimate or have lower expectations for students who were children of migrant workers. Third, children of migrant workers can be more vulnerable in the face of low teacher expectations compared with boys.

Future studies could explore teacher expectations from both teachers' and students' perspectives. To better understand the working mechanism underlying teacher expectation effects in the Chinese secondary context, observational studies could be conducted to investigate classroom interactions of teachers with various expectations for their students. Teachers' expectations for students who come from rural family backgrounds could be another important topic to explore in future research.

4.6. Acknowledgements

4.7. Funding

CHAPTER FIVE: INSTRUCTIONAL PRACTICES AND CLASSROOM INTERACTIONS OF HIGH AND LOW EXPECTATION TEACHERS IN CHINA

In the previous chapter, teachers' average expectations for their class/classes of students were examined. Teachers were found to hold different levels of overall expectations for their students. The clear differences between the levels of overall expectations that high and low expectation teachers held, engendered questions about the meaning and the consequences of such differences. The question of whether and how these differences would manifest in teaching and learning activities was of particular interest. In order to answer this question, classroom observations were conducted with the aim of comparing the teaching and interaction behaviours of high versus low expectation teachers. This chapter (Chapter 5) presents a study of the classroom instruction and interaction behaviours of the identified high and low expectation teachers in Chapter 4. This chapter has been published in the *Journal of Social Psychology of Education.* The citation is as follows: Wang, S., Rubie-Davies, C., & Meissel, K. (2019). Instructional practices and classroom interactions of high and low expectation teachers in China. *Social Psychology of Education, 22*, 841-866. doi:10.1007/s11218-019-09507-4

Abstract

This study aimed to explore and compare the instructional practices and classroom interactions of teachers within the Chinese junior high school context who had correspondingly high or low expectations for all their students. Eight junior high school teachers and 32 of their lessons were observed. Results of classroom observations revealed that high expectation teachers (teachers who had overall high expectations for their students relative to student achievement) made more orientation/focus statements and more statements referring to students' prior knowledge and learning experiences in their teaching compared with low expectation teachers (those with overall low expectations for their students relative to student achievement). High expectation teachers gave more class-level feedback and were more likely to question further and provide explanations when a student gave a correct answer. In situations when a student gave an incorrect answer or could not come up with an answer, high expectation teachers were more likely to give the student another chance by rephrasing/repeating the question, providing hints, or just asking the student to try again. These differences in high and low expectation teachers' instructional behaviours and the socioemotional environment they created in their classrooms are discussed, and implications for classroom teaching and teacher training are proposed.

Keywords: teacher expectations, high expectation teachers, low expectation teachers, instructional practices, classroom interactions, Chinese junior high schools

5.1. Introduction

The concept of the expectation effect, or self-fulfilling prophecy as crystallised by Merton (1948), was initially used to describe a situation where a false perception triggers novel behaviours that, in turn, make the original false perception come true. In 1968, Rosenthal and Jacobson conducted their ground-breaking experiment *Pygmalion in the Classroom* and suggested that teachers' erroneous expectations of their students could affect their treatment of their students, and that ultimately student achievement altered in line with their teachers' initial expectations (Rosenthal & Jacobson, 1968). This seminal study brought expectation effects into the education context and initiated the field of teacher expectation research.

Teacher expectations, according to Good and Brophy (1997), are defined as "inferences that teachers make about the future behaviour or academic achievement of their students, based on what they know about these students now" (p. 79). Teachers generally form expectations for their students based on students' previous academic achievement and skills (e.g., Sneyers, Vanhoof, & Mahieu, 2018; Timmermans et al., 2016). Expectations that are based on students' actual achievement tend to be accurate (Brophy, 1983), and are more likely to lead to *self-maintaining expectation effects* (i.e., teachers maintain their original expectations which serves to maintain students' previous performance levels) rather than *self-fulfilling prophecy effects* (i.e., teacher expectations cause students to achieve at higher or lower levels than previous achievement would indicate). However, research evidence has shown that teacher expectations can be biased by stereotypes and biases related to student demographic characteristics such as gender, ethnicity, SES, and special education labels (Dusek & Joseph, 1983; S. Wang et al., 2018).

Fifty years of research in the teacher expectation field has provided strong evidence for the existence of teacher expectation effects in naturalistic classrooms. Once teachers

have formed expectations for their individual students, the expectations are communicated to students through differential teacher behaviours, treatment, and classroom interaction patterns (Brophy & Good, 1970, 1974; Harris & Rosenthal, 1985; Rosenthal, 1974), which in turn can influence student academic motivation (e.g., Woolley et al., 2010), learning behaviours (e.g., Tyler & Boelter, 2008), and achievement outcomes (e.g., Anderson, 2018; Archambault et al., 2012; Ready & Chu, 2015).

It has been suggested that teachers not only form expectations for their individual students, they may also hold expectations for their class/classes of students as a whole (Brophy, 1983; Rubie-Davies, 2007). However, most existing studies in the teacher expectation field have focussed on teachers' expectations for their individual students, with very few studies exploring teacher expectations from a class-level perspective. Recent studies on class-level teacher expectation effects have indicated that the levels of expectations that teachers hold for all their students can exert a significant influence on student learning and achievement (Archambault et al., 2012). Students who studied with high expectation teachers (i.e., teachers who had high expectations for their students overall relative to student achievement) have been found to achieve at significantly higher levels compared to students who were taught by low expectation teachers (i.e., teachers whose overall expectations were significantly below students' baseline achievement; Z. Li & Rubie-Davies, 2017). These studies have suggested that teacher expectations are not only a student-centred construct and a function of student achievement and demographic characteristics, but they can also be teacher-centred as a function of different teacher beliefs and traits.

Although the teacher expectation field has gradually developed and has now become a flourishing and relatively mature research domain in Western academia, research on this topic started fairly late in China, mainly since the 2000s. Most existing empirical

Chinese studies have focussed on possible teacher expectation effects on student sociopsychological and academic outcomes. The findings of these studies have suggested that teacher expectations play an important role in influencing student self-concept (e.g., Ding & Tu, 2014; Liang, 2014), self-efficacy (e.g., Y. Zhang & Zhang, 2008; Zheng et al., 2004), academic motivation (e.g., Y. Liu, 2017), and academic achievement (e.g., L. Fan & Jin, 2008; B. Zhao, 2013).

Yet, almost all the existing Chinese studies have investigated teacher expectations from an individual-student perspective—teacher expectations for their individual students. Very few Chinese studies have explored teacher expectations at the class-level and from a teacher-centred perspective (see L. Fan & Jin, 2008; Z. Li & Rubie-Davies, 2017 as the only two studies that could be located). These two existing studies have provided some preliminary evidence for class-level and normative teacher expectation effects on student sociopsychological and academic outcomes in the Chinese context. However, apart from the study by Z. Li and Rubie-Davies (2017), which was undertaken in a university, there has been little research which has explored possible mechanisms of class-level and teacher-centred expectation effects in the Chinese context. That is, the ways in which teacher expectations for a whole class of students are transmitted or communicated to students and thus influence students' psychological and learning outcomes are still relatively unknown.

This knowledge gap was considered important for several reasons. First, compared to studies which have investigated individual student-level teacher expectations, studies focussed on class- and teacher-level expectations are scarce. Among the existing ones, some inconsistent results have been reported in both Western (e.g., Archambault et al., 2012; Friedrich et al., 2015) and Chinese contexts (e.g., L. Fan & Jin, 2008; Z. Li & Rubie-Davies, 2017). Hence, there is a need for further studies to be conducted to better

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understand class-level and teacher-centred expectation effects. Second, understanding *how* expectations are communicated to students is an issue of great importance. However, literature looking at the mediation of teacher expectation effects was conducted mostly before the 1990s (S. Wang et al., 2018), and there is a dearth of studies that have explored the transmission process of class-level teacher expectation effects. Therefore, a deeper and more holistic understanding of how class-level expectations function would enable the identification of particular teacher behaviours that are associated with general high or low expectations. This would allow interventions to be created to train teachers in the behaviours of high expectation teachers, avoid behaviours expressing low teacher expectations, and eliminate the negative effects of low teacher expectations on students (Rubie-Davies, 2015).

Third, the only study that could be located exploring the mediation process of class-level teacher expectation effects was conducted in the New Zealand primary school context (Rubie-Davies, 2007). Thus far, this issue does not appear to have been examined in any other cultural backgrounds or educational contexts in the world. Hence, it would be helpful to examine the previous findings in different contexts in order to check the cross-cultural applicability of current knowledge. Although positive associations have been found between higher teacher expectations and better student academic achievement in the Chinese context (L. Fan & Jin, 2008; B. Zhao, 2013), some recent studies have shown that high teacher expectations are a source of student academic stress for Singapore Chinese students (Ang & Huan, 2006; Tan & Yates, 2011). In China (as in other Confucian Heritage Culture countries, e.g., Japan, Korea, Singapore), where academic success and filial piety is highly valued, excelling academically and fulfilling the expectations of parents and teachers may be more important for students than in Western countries. At the same time, it is possible that the overly high parental and teacher expectations place

excessive academic stress upon Chinese students (Tan & Yates, 2011), which may hinder students' academic success and future development. Therefore, determining how teacher expectations function within such a context of different cultural and educational values, compared to the Western context, is of interest.

The present study aimed to explore the possible mediation process of class-level teacher expectation effects, that is, how class-level teacher expectations were conveyed to students through classroom teaching and teacher–student interactions in the Chinese junior high school context. Junior high school education was the focus in this study because it was considered an important transition period in Chinese fundamental education (Gan, 1993). During this period, students move from childhood into their early adolescence, experiencing social and biological changes and rapid cognitive and psychological development (S. Xu, 2002). In addition, there are various changes with regard to the educational requirements and academic expectations for students after entering junior high schools (e.g., changes in learning content, study method, work load etc.; S. Xu, 2002). These circumstances may present particular challenges for some students in adjusting to junior high school (Wigfield, Eccles, Mac Iver, Reuman, & Midgley, 1991) and could result in difficulties and instabilities in student learning and achievement (Gan, 1993). Moreover, junior high school is the period when students can be strongly influenced by their surrounding environment, their peers, parents, and teachers (Gan, 1993). Given the important role that teachers and their expectations could play in student learning, it would be worthwhile to find out how teacher expectations function at this important transition stage.

Following the methodology of Rubie-Davies (2007), the current study compared classroom interactions and instructional practices of identified high and low expectation teachers to see whether the results of Rubie-Davies's study held in the Chinese context.

The following section of the study begins with a brief review of the literature on teachers' differential behaviours and classroom interactions as mediators of teacher expectation effects at both individual and class levels in both Western and Chinese contexts. This is followed by an introduction to the research context and the two hypotheses of the current study.

5.1.1. Differential Teacher Behaviours and Classroom Interactions as Mediators of Individual-Level Teacher Expectation Effects

For teacher expectations to exert an influence on students' achievement, these expectations need to be conveyed to students in some way (Brophy, 1983). One major way for teacher expectations to function as a self-fulfilling prophecy is through differential teacher behaviours towards high- (i.e., students for whom teachers have high expectations) and low- expectation students (i.e., students for whom teachers have low expectations). Teachers' differential behaviours in dyadic teacher–student interactions have been investigated thoroughly within the Western teacher expectation literature (e.g., Brophy, 1983; Brophy & Good, 1974; Harris & Rosenthal, 1985; Rosenthal, 1974). Brophy and Good's (1970) early study, for example, found that low-expectation students received more criticism from their teachers than high-expectation students, when they gave incorrect answers to teachers' questions. Moreover, low-expectation students received less praise when they gave correct responses compared to their counterparts, even though this happened less often. Teachers were found to be discriminatory in demanding and reinforcing higher quality performance from high- over low-expectation students. Further, teachers tended to give high-expectation students second chances when they failed to give correct answers to questions.

Brophy (1983) summarised 17 mediation behaviours that teachers enacted differently towards high- and low-expectation students. Rosenthal (1974) proposed the

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four-factor theory which identified four general ways that teacher expectations could be communicated and transmitted to students: (1) climate—the socioemotional classroom climate teachers created for students; (2) feedback—the praise, criticism, reward, and punishment that teachers gave to students; (3) input—teachers' teaching behaviours and materials used (4) output—the opportunities given to students to respond, ask, and answer questions. Following their meta-analysis, Harris and Rosenthal (1985) amended the original four factors to two broad factors: affect—the socioemotional behaviours of teachers, and effort—the instructional behaviours of teachers.

Years of research on teachers' differential treatment has increased teachers' awareness about their differential behaviours towards high- and low-expectation students and resulted in compensation by providing more instructional support and spending more time with low-expectation students (Babad, 1990). Yet, the compensation has been found to be more related to the quantity of interactions, whereas the quality of the socioemotional interactions between teachers and low-expectation students has been reported as remaining unchanged (Babad, 1998). Studies have provided evidence of teachers' discriminating behaviours in the different socioemotional environments teachers create for high- and low-expectation students. Early work by Babad et al. (1989), for instance, documented that the facial expressions and body language of teachers showed more positive expression towards high-expectation students compared to low-expectation students.

In the Chinese research context, Jia (2012) looked at teachers' differential behaviours and treatment as a mediating mechanism of teacher expectation effects. This case study explored the relationships between teachers' individual-level expectations and teacher–student interactions by observing four English teachers in their classrooms using a modified version of the Flanders' interaction analysis categories for classroom observation. During the observation, the researcher calculated the amount of time each

teacher spent with individual students by classifying 12 classroom verbal behaviours. The results of the study indicated that teachers tended to give girls more interaction opportunities than boys. Further, teachers were found to give more emotional support to class leaders (i.e., student positions as class representatives which include responsibilities as class monitor, assistant class monitor, class representative in charge of studies, class representative in charge of organisation, etc.) than to other class members who did not undertake any class leader positions. In addition, it was found that high-achieving students received the most opportunities to interact with the teacher, followed by the low-achieving students, with the least opportunities given to average-achieving students. Moreover, whereas high-achieving students received the most praise or encouragement, low-achieving students got the most criticism. Further, the questions for high-achieving students were often referential questions which required higher order thinking, whereas questions for low-achieving students usually demanded yes/no answers.

Jia's (2012) study provided some useful insights into differential teacher behaviours and classroom interactions at the individual-student level in the Chinese context. It suggested that student gender, achievement level, and class leader status could affect dyadic teacher–student interactions in classrooms. It was a case study, however, with a small sample size ($n = 4$), and the study concentrated on teacher–individual student interactions only. The ways in which teachers interact with their whole class therefore remains unclear.

5.1.2. Differential Teacher Behaviours and Classroom Interactions as Mediators of Class- and Teacher-Level Teacher Expectation Effects

Teachers not only form expectations for their individual students and groups of students, but also for their class/classes as a whole (Brophy, 1983). However, as mentioned, most existing studies have focussed on individual-level teacher expectations

whereas studies on class-level teacher expectations are relatively scarce. In recent years, Rubie-Davies has initiated a series of studies exploring class-level teacher expectations and their working mechanisms when functioning as self-fulfilling or sustaining effects on student learning outcomes (Rubie-Davies, 2006, 2007; Rubie-Davies et al., 2014). Her studies have revealed that teachers with varying class-level expectations typically behave differently when teaching and interacting with their students. The disparities applied to both the instructional and psychosocial environment teachers created in their classrooms (Rubie-Davies, 2007). For instance, teachers who held high expectations for their students were found to ask more open questions and more follow-up questions. In addition, high expectation teachers tended to spend more time teaching and relating new concepts to prior activities or knowledge. It appeared that high expectation teachers provided a framework for student learning more carefully than did low expectation teachers. With regard to the socioemotional classroom climate, teachers with high expectations were found to provide a warm and supportive socioemotional environment for their students. They tended to provide students with mastery goals and frequent feedback. In addition, they set clear goals for their students and encouraged students to work with peers and to help each other. Moreover, they managed students' behaviours positively and praised students more frequently than did low expectation teachers (Rubie-Davies, 2007).

In the Chinese context, Z. Li (2014) investigated class-level and normative teacher expectations in two Chinese universities. Teacher interviews and student focus groups were employed to explore teachers' and students' perceptions of the classroom climate of high, medium, and low expectation teachers. Results suggested that teachers with different class-level expectations may have created varying classroom climates for their students. To be specific, low expectation teachers were perceived to have had a less caring personal relationship with their students compared to medium and high expectation teachers. In

addition, compared to low expectation teachers, medium and high expectation teachers tended to promote and encourage cooperation between students. Moreover, high and medium expectation teachers were found to give students more autonomy in learning and decision making.

To summarise, the two existing Chinese mediation studies reviewed above have provided some fundamental knowledge in understanding the mediation mechanisms of teacher expectation effects in the Chinese context. However, Jia (2012) only looked at individual-level teacher–student interactions and Z. Li (2014) only focussed on teachers' and students' perceptions of the classroom climate at the tertiary level. To date, no study has been identified that has investigated the classroom interactions of teachers with different levels of class-level expectations within the Chinese context. The present study aimed to address this gap by exploring teacher–student classroom interactions as a possible mediating mechanism of class-level teacher expectation effects in the Chinese junior high school context.

5.1.3. The Chinese Junior High School Context

The research context of this study was Chinese junior high schools. The Chinese education system consists of 9 years of compulsory education (6 years of primary education and 3 years of junior high school education), 3 years of senior high school education, followed by tertiary education. There are summative examinations at the end of primary, junior high, and senior high schools. Students need to sit these examinations in order to gain admission to the next level of education.

A typical Chinese junior high school class usually has 40 to 50 students who are taught by the same teachers and share the same classrooms for 3 years during their junior high school journey. In many Western countries, teachers teach all subjects to their students at the primary and some secondary school levels, whereas in China, teachers

generally teach only their specialist subject. Compared with many Western countries, tracking or ability grouping is much less commonly used in China, especially at primary and junior high school levels. Within-class ability grouping is even rarer, as all students in a class are expected to keep up at the same rate determined by the teacher.

5.1.4. The Present Study

The present study aimed to investigate possible mediation processes of class-level teacher expectation effects in Chinese junior high school classrooms, by exploring and comparing classroom interactions of high and low expectation teachers. It aimed to investigate (1) whether high and low expectation teachers instructed and interacted differently with their students; and, if that was the case, (2) what the disparities were between the instructional practices and classroom interactions of high and low expectation teachers. In line with previous studies (e.g., Rubie-Davies, 2007), it was hypothesised that (1) teachers with different class-level expectations may behave differently when delivering instruction; and (2) teachers with different class-level expectations may interact differently with their students and create different socioemotional environments in their classrooms.

5.2. Method

5.2.1. Participants

Fifty Year 7 Chinese, mathematics, and English teachers from 10 junior high schools in China participated in a teacher expectation survey. In the survey, they rated their expectations for their 1,199 Year 7 students' academic achievement by the end of the school year. Based on their average expectations for their students (relative to student baseline achievement), a cluster analysis was conducted and teachers were identified as high, medium or low expectation teachers. High expectation teachers were those who had expectations that were significantly above student actual baseline achievement, whereas

low expectation teachers were those whose expectations were significantly below student baseline achievement. Among the 50 teachers, 19 were identified as either high or low expectation teachers. Of those 19 teachers, 10 were randomly selected and approached, with eight (three were high-expectation and five were low-expectation) agreeing to participate in the current study. There were no statistically significant differences between the teachers who were involved in the current study compared with those who did not participate in terms of teachers' ages ($p = .63$), gender ($p = .09$), or teaching experience ($p = .53$).

5.2.2. Materials

A classroom observation schedule was adapted from the one employed by Rubie-Davies (2007). The original observation schedule was designed with two parts (one for each of two classroom observers): (1) a running record sheet which was used to record exactly what the teacher said and did in a class, and (2) a structured observation protocol which was used to note down the most important events that occurred in the class related to teacher questioning, feedback, and classroom management (Rubie-Davies, 2007). In the current study, only the observation protocol was used given that there was just one classroom observer. The observation protocol was used to note down at 2-minute intervals all happenings related to teachers' instructional practices and various types of teacher–student interactions and communications. Lessons were audio-recorded in order to obtain a complete verbal record of each lesson and to help the researcher to recall what happened in the classrooms when coding and analysing the data, and to ensure no important information was missed.

Since the main focus of the study was to examine class-level and teacher-centred expectations, the focus of the observation was the teacher, how s/he structured and

presented a lesson, how s/he interacted with and responded to students, and what s/he said and did during the class.

5.2.3. Pilot Study

Before the main research was undertaken, a pilot study (two class observations of two non-participating teachers who were randomly selected from the participant schools) was conducted. Observation notes from these two classes were coded using the coding sheet employed by Rubie-Davies (2007), in order to check the applicability of the original coding sheet in the Chinese context. The coding sheet was then revised based on the pilot study. This included removing items that were inapplicable in the current context, and/or replacing the inapplicable items with contextually appropriate ones. For example, the item *demonstrating or modelling a concept* was mainly designed for physical education classes (Rubie-Davies, 2007), so this item was removed from the revised coding sheet. The item *modification* was also removed because such behaviour did not appear during the pilot observations. *Preventive behaviour management* items were also removed for the same reason. A *neutral behaviour management* item was used to replace the original *positive behaviour management*. In addition, the item *praise student for attempt when student answer is incorrect* was also removed. This behaviour was not observed in the pilot and it was also found by Rubie-Davies (2007) to be very uncommon behaviour. Instead, a *negative comment when student answer is incorrect* item was added because this behaviour was observed during the pilot study.

The adapted coding sheet comprised five main categories of teacher–student interactions: teaching statements, teacher questioning, teacher responding to students' answers, behaviour management statements and procedural statements, and other teacher comments and feedback (praise, criticism, and feedback). Teaching statements were further classified as orienting or focus statements, prior knowledge or experiences

statements, and explanation or instruction statements. Based on situations whereby a student gave the correct answer to a teacher's question or not, the teacher response was further classified as positive comment, negative comment, give feedback, question further, repeat the answer, explain the answer, give another chance, provide support, and move to another student (see Appendix F for details of the adapted coding sheet).

5.2.4. Procedure

Before conducting the study, ethical approval was obtained from the authors' university human participants ethics committee. Explicit written consent was obtained from all participant school principals, teachers, students' parents/caregivers, and students (who gave assent). There were two phases of classroom observations during the first school term. The researcher observed two entire lessons of the targeted teachers during each phase. This meant that each teacher was observed during four entire lessons (3 hours). The total observation time was 24 hours which included 9 hours with high expectation teachers and 15 hours with low expectation teachers. The observation was a non-participant design whereby the observer recorded as many classroom interactions as possible and did not disturb or affect the normal classroom interactions.

5.2.5. Data Coding and Analysis

After having collected the data, the researcher went through all the observation notes while listening to the corresponding audio recordings. Notes that were incomplete due to lack of time during the observations were completed, and any missing information was added to the notes. The completed notes were then coded using the adapted coding sheet, by way of counting the frequency of each type of interaction in the coding sheet for each lesson. Each sentence that a teacher spoke in a class was treated as a unit of analysis in most cases, unless a group of short sentences were spoken to explain the same construct or for the same purpose (e.g., "Okay, now stop talking. Let's talk about it later"). First,

the researcher allocated each particular sentence or group of short sentences to one of the five main categories (i.e., Is this sentence related to teaching and giving instructions? Is it a question for students to answer or a response to student answers? Is it a classroom management or procedure-related statement? Is it a general comment or feedback for student?). She then placed the sentence(s) into the suitable subcategory/code.

To check the reliability of the data coding, a Chinese doctoral candidate was hired as a second coder to code the data for two entire lessons. The second coder was firstly introduced to the five main categories in the coding sheet and these were carefully explained. Then, the researcher explained the more specific coding rules and showed the second coder a list of coding examples (see Table 5.1). For the purpose of double coding, the researcher copied all the notes for the two randomly chosen lessons from the observation protocol into a separate document. She then marked the coding units in the document for the second coder. In addition, the researcher gave the second coder a list of codes which had been previously numbered by the researcher. The second coder wrote down the corresponding number of a code next to each of the coding units marked by the researcher. The results showed high intercoder reliability (absolute agreement percentage: 96.1 %). Differences in the coding results were discussed with the second coder, and consensus was reached following discussion.

Table 5.1.

Examples of Different Types of Teacher Statements by Category

Type of statement	Codes	Examples of teachers' quotes
Teaching statements	Orientation/Focus	1. Today we are going to learn a new lesson— The Green Grasshopper. 2. Okay. Now let's look at Question 4 together. 3. Next, let's talk about the similarities between monomial and polynomial.
	Prior knowledge/experiences	1. This is very similar to the preferable choice problem we learned earlier.

		2. From what we learned yesterday, what have we discovered about clouds?
	Explanation/Instruction	1. Make friends. Remember to add "s" because it needs at least two people to make friends.
		2. The third paragraph tells us about the voice of the green grasshopper.
Teacher questioning		1. How did you know that the writer liked the green grasshopper?
		2. Which paragraph introduces the four types of cloud?
Teacher responding to students' answers	Positive comment (praise)	1. Yes, you are great.
		2. Yes, very good, sit down please.
	Negative comment (criticism/sarcasm/shaming)	1. You don't even know how to spell dress?! That is very easy.
		2. You are so "talented."
	Feedback	1. Okay, you have remembered this.
		2. Your first one is correct but the second one is wrong. So you need to be more careful next time.
	Question further	T: How much should I pay if I make calls for less than 150 mins, say 140 mins?
		S: 58.
		T: So what happens if I make calls for more than 150 mins? Still 58?
	Repeat answer	T: How many rectangles can you see there?
		S: Eight.
		T: Eight. Sit down please.
	Teacher explains	You can use figures of speech in your writing to highlight the characters.
	Another chance (rephrase or repeat question/provide support)	1. Try to spell it again.
		2. I can give you a hint. What does it mean by "or"?
	Other child	XX (another student), help her.
Procedure statements		After correcting all the mistakes in your exam paper, come to the front to pick up your homework for today.
Behaviour management	Neutral	1. Okay, now stop talking. Let's talk about it later.
		2. XX, is that right? Listen carefully please.
	Negative	XX, you have barely looked at me during this class.
Other comments and feedback	Praise	You are great! Very good!
	Criticism	1. Some of you have very weak thinking ability.
		2. You sit at the front and you don't even know which one to draw. Weren't you listening to my class?
	Feedback individual	Okay, it seems that you can reach this level now.
	Feedback class	1. Most of you have understood this part.
		2. I noticed that some of you are taking notes

	using different coloured pens. That's very good. It will be clear to see the important points in the future.

Notes. T: teacher; S: student.

Once all coding was completed, frequencies of different types of classroom interactions were analysed in two different ways—by performing a Mann-Whitney U test and logistic regression, respectively. The Mann-Whitney U test was used to determine if there were any statistically significant differences in teachers' instructional behaviours and classroom interactions between high and low expectation teachers. Logistic regression was performed in order to explore the most influential factor/factors in distinguishing high and low expectation teachers in this study. Both analyses were conducted using SPSS (Version 24.0).

5.3. Results

The results section will report the findings from the two tests used for data analysis. The first section (5.3.1) relates to the possible differences in the behaviours and interactions of high and low expectation teachers. The second section (5.3.2) relates to the teacher practices that most predicted whether or not a teacher could be defined as high or low expectation. The results from the Mann-Whitney U test will be reported first (section 5.3.1), followed by the findings from the logistic regression analysis (section 5.3.2).

5.3.1. Differences Between Interactions of High and Low Expectation Teachers

Due to the increased chance of alpha error because of the relatively large number of comparisons ($n = 20$), the Benjamini-Hochberg procedure was employed to control for the false discovery rate (Benjamini & Hochberg, 1995). After the Mann-Whitney U test was conducted, all 20 variables included in the analysis were ranked based on their p values, from the smallest to the largest (see Table 5.2). A set of Benjamini-Hochberg critical values were then calculated using the formula $(i/m)Q$, where i is the rank, m is the

total number of the tests, and Q is the false discovery rate chosen. Given that this study

was the first study in the current context with exploratory purposes, we chose to use a

relatively high false discovery rate of 0.1 in the study.

Table 5.2.

P Values, Ranks, and the Benjamini-Hochberg Critical Values for the Teacher Interaction

Variables

Interaction variable	*P* value	Rank	$(i/m)Q$
Correct–Question further	**<.001**	**1**	**.005**
Correct–Explain	**<.001**	**2**	**.010**
Correct–Repeat	**.001**	**3**	**.015**
Feedback class	**.001**	**4**	**.020**
Prior knowledge/experiences	**.002**	**5**	**.025**
Orientation/Focus	**.003**	**6**	**.030**
Incorrect–Another chance	**.004**	**7**	**.035**
Questioning	.058	8	.040
Praise	.091	9	.045
Criticism	.170	10	.050
Incorrect–Explain	.209	11	.055
Neutral behaviour management	.239	12	.060
Procedure	.326	13	.065
Correct–Positive comment	.477	14	.070
Incorrect–Negative comment	.501	15	.075
Negative behaviour management	.604	16	.080
Incorrect–Other child	.716	17	.085
Feedback individual	.774	18	.090
Correct–Feedback	.803	19	.095
Explanation/Instruction	.985	20	.100

Note. Variables that were significant are presented in bold.

According to the Benjamini-Hochberg procedure, the largest *p* value that has *p* <

(i/m)Q is significant, and all *p* values that are smaller than it are also significant. As can be

seen from Table 5.2, the variable that had the largest *p* value with *p* < *(i/m)Q* was

Incorrect–Another chance, where the *p* value (.004) was less than the corresponding

Benjamini-Hochberg critical value (.035). Therefore, the first seven variables listed in the table were significant. In the following section, the results from the Mann-Whitney U test will be presented based on four main categories, namely: teaching statements, teacher questioning and responding to students' answers, procedural statements and behaviour management statements, and other teacher comments and feedback.

     5.3.1.1. Teaching statements. The results of the Mann-Whitney U test on the teaching and interaction variables of high and low expectation teachers are shown in Table 5.3. In terms of teaching statements, high and low expectation teachers differed significantly in making use of orientation or focus statements in their teaching ($U = 46$, $p = .003$). The effect size value ($\eta^2 = 0.27$) suggested a large practical significance. In addition, high and low expectation teachers also differed significantly in their use of prior knowledge and experiences to assist teaching and learning new knowledge ($U = 43$, $p = .002$). Again, the effect size value ($\eta^2 = 0.32$) suggested a large practical significance. In contrast, the number of instruction or explanation statements used by high and low expectation teachers to help student understanding was found to be similar ($U = 119.5$, $p = .99$).

Table 5.3.

Medians, Range and Mann-Whitney U Test Mean Ranks for Teaching and Interaction

Variables of High and Low Expectation Teachers

		High expectation teacher			Low expectation teacher		
		Median	Range	Mean rank	Median	Range	Mean rank
Teaching statements	**Orientation/Focus**	**8.5**	**29**	**22.67**	**3.0**	**13**	**12.80**
	Prior knowledge/ experiences	**2.0**	**6**	**22.92**	**0.0**	**3**	**12.65**
	Explanation	17.5	25	16.46	18.0	26	16.53
Teacher questioning and responding to students' answers	Teacher questioning	37.0	38	20.54	27.5	98	14.08
	Correct–Positive comment	1.0	4	18.08	0.0	10	15.55
	Correct–Feedback	1.5	7	17.08	1.5	8	16.15
	Correct–Question further	**9.5**	**14**	**25.75**	**1.5**	**4**	**10.95**
	Correct–Repeat answer	**18.0**	**14**	**23.21**	**12.5**	**21**	**12.48**
	Correct–Explains	**15.5**	**14**	**25.33**	**8.0**	**12**	**11.20**
	Incorrect–Negative comment	0.0	1	15.00	0.0	4	17.40
	Incorrect–Another chance	**4.0**	**8**	**22.58**	**1.0**	**5**	**12.85**
	Incorrect–Other child	0.0	3	15.67	0.0	16	17.00
	Incorrect–Explains	3.5	8	19.25	2.0	15	14.85
Behaviour management statements	Procedural statements	4.0	6	14.33	6.0	15	17.80
	Neutral	0.0	15	19.04	0.0	3	14.98
	Negative	0.0	2	15.33	0.0	3	17.20
Teacher praise, criticism, and feedback	Praise	0.0	2	12.88	0.5	10	18.68
	Criticism	0.0	12	13.50	2.5	15	18.30
	Feedback Individual	1.0	4	17.17	1.0	50	16.10
	Feedback Class	**3.0**	**6**	**23.46**	**0.0**	**4**	**12.33**

Note. Variables that were significant are presented in bold.

5.3.1.2. Teacher questioning and responding to students' answers. Differences between high and low expectation teachers in the number of questions they asked did not reach statistical significance ($U = 71.5, p = .06$). With regard to teachers' responding to student answers, teachers' behaviours under two different situations were analysed. In the

situation when students gave correct answers to teachers' questions, there were no significant between-group differences with regard to the positive comments ($U = 101$, $p = .48$) and feedback ($U = 113$, $p = .80$) that teachers gave to students following correct answers. However, statistically significant differences were found between the high and low expectation teacher groups in the frequencies with which teachers asked a further question ($U = 9$, $p < .001$), repeated the correct answers ($U = 39.5$, $p = .001$), and explained the answers ($U = 14$, $p < .001$). The effect sizes for these differences suggested large practical significance differences ($\eta^2 = 0.62$, 0.32 and 0.56, respectively).

In the situation when students gave incorrect answers or failed to give an answer, statistically significant between-group differences were found in the frequency with which teachers gave students another chance to answer the question ($U = 47$, $p = .004$). A large effect size was also found ($\eta^2 = 0.27$) for this difference. In contrast, no difference was found between the high and low expectation teacher groups with regard to giving negative comments ($U = 102$, $p = .50$), calling on another student ($U = 110$, $p = .72$), or giving explanations following incorrect answers ($U = 87$, $p = .21$). It is worth noting that some of the aforementioned interactions happened infrequently and the numbers in both groups were quite low (e.g., correct–positive comment, incorrect–negative comment, incorrect–other child; see Table 5.3); therefore, these aspects of the results should be interpreted with caution.

The results suggested that teachers with high and low class-level expectations responded to student answers differently. In situations where students gave correct answers, high expectation teachers, compared to lows, were more likely to ask a further question, repeat the correct answers, and explain the answers to the questions. When students gave incorrect answers, high expectation teachers were more likely than low expectation teachers to give students another chance to try again.

5.3.1.3. Behaviour management statements. Results related to procedural statements and behaviour management statements showed no statistically significant between-group differences with regard to procedural statements ($U = 94$, $p = .33$), neutral management statements ($U = 89.5$, $p = .24$) or negative management statements ($U = 106$, $p = .60$). Again, Table 5.3 shows that behaviour management statements were seldom used by either group of teachers in the current context.

5.3.1.4. Teacher praise, criticism, and feedback. No statistically significant differences were found in the number of praise ($U = 76.5$, $p = .09$) and criticism statements ($U = 84$, $p = .17$), as well as the amount of feedback given to individual students between the two groups of teachers ($U = 112$, $p = .77$). A disparity in the number of class-level feedback statements made by teachers between the two groups was statistically significant ($U = 36.5$, $p = .001$). The effect size value ($\eta^2 = 0.37$) suggested a large practical significance.

To summarise the results of the Mann-Whitney U test, 7 of 20 classroom interaction variables were found to be statistically significantly different when comparing high and low expectation teachers. The results showed that high expectation teachers made more orientation or focus statements in their class than low expectation teachers did; when introducing new knowledge, high expectation teachers made more statements referring to prior learning experiences and knowledge. With regard to teachers' questioning and responding to student answers, high expectation teachers were more likely to question further, repeat the answer and give explanations when a student gave a correct answer. In the situation where a student gave an incorrect answer, high expectation teachers were more likely to give students another chance by rephrasing/repeating questions, providing hints, or just asking the student to try again. In addition, high expectation teachers gave their students more class-level feedback.

5.3.2. The Most Influential Factors in Distinguishing High and Low Expectation teachers

Logistic regression was employed in order to detect which interaction factor/factors was/were the most important in determining whether a teacher was a high or a low expectation teacher. Although seven classroom interaction variables were significantly different between the two groups of teachers, the results of the logistic regression suggested that two of the variables were the most important ones in determining if a teacher was a high or a low expectation teacher in the current study. The most valuable variables for identification were: (1) asking further questions when students gave a correct answer; and (2) giving class-level feedback (see Table 5.4). The non-significance and large confidence intervals for the variables were likely due to the low sample size. As these two values increased by 1, the possibility that the teachers would be in the high expectation teacher group increased by a factor of 4.23 and 6.81, respectively.

Table 5.4.

Summary of Logistic Regression Analysis for Variables Predicting High Expectation Group Membership

Variable	*B*	*SE B*	Wald χ^2	*p*	Odds Ratio	95 % CI OR
Correct– Question further	1.44	0.92	2.45	.12	4.23	[0.70, 25.70]
Feedback class	1.92	1.49	1.66	.20	6.81	[0.37, 125.54]
Constant	- 9.64	5.42	3.12	.08	.00	

5.4. Discussion

This study aimed to explore the mediation process of class-level and normative teacher expectation effects in Chinese junior high school classrooms, by investigating and comparing the classroom teaching and interactions of teachers who held correspondingly

high and low expectations for all their students. The results of the current study suggested that there were important differences in the classroom instructions and teacher–student interactions between high and low expectation teachers. Such differences in teacher behaviours may have resulted in different learning and socioemotional environments being created for their students. Therefore, the differential behaviours and interactions may function as mediation mechanisms of class- and teacher-level expectation effects (Rubie-Davies, 2007). Those teacher behaviour variables that were found to be significantly different between the two expectation groups will be further discussed in this section.

With regard to teaching statements, high expectation teachers were found to make more orientation/focus statements than low expectation teachers. As shown in Table 5.1 above, orientation/focus statements contained information about the learning activities that would take place in an entire class or during the next period of time within a class. Sometimes these statements could also inform students about what was expected from them. When given in the middle of a class, these statements usually acted as a hint for moving from one to another topic, learning focus, or activity. Therefore, these statements may have been useful in helping students follow their teachers more easily and to concentrate better during class.

Apart from the orientation/focus statements, the results also showed that high expectation teachers made more statements connecting new knowledge with student prior knowledge or learning experience. Neuroscientists have found evidence supporting the important role of prior knowledge in understanding and learning new knowledge (van Kesteren, Rijpkema, Ruiter, Morris, & Fernández, 2014). Hattie (2009) reported that teachers' use of advanced organisers to link new information or concepts to old knowledge had a positive effect on student learning with a medium effect size ($d = 0.41$). By bridging new information with existing knowledge, high expectation teachers may have made new

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knowledge easier for their students to comprehend and memorise. These findings were in line with Rubie-Davies's (2007) study which suggested that students with high expectation teachers received more support via additional scaffolding of their learning whereas students with low expectation teachers typically received more limited support for their learning.

In terms of teacher questioning, even though there was no statistically significant difference in the quantity of questions asked by high and low expectation teachers, meaningful differences were found in the questioning patterns of these two groups of teachers. High expectation teachers asked questions that could challenge students and make students think. In contrast, low expectation teachers tended to ask simple and artificial questions which did not require much thinking from students, for example, those requiring yes or no answers.

Interestingly, it was found that for some low expectation teachers, asking questions was just a way of initiating instructions or explanations. They asked questions to students and then gave their own answers to the questions immediately. This was followed by asking students questions like, "Understand?" or "Is that right?" Students only needed to say "yes" or "right" even though some of them may not have truly understood what the teacher had just taught. Previous research has shown the positive relations between teachers' wait time (i.e., the duration of teachers' pauses after questioning) and students' cognitive levels and contributions to classroom discussions (Swift & Gooding, 1983). However, in the current circumstance, students were left with little time to think by themselves, and their opportunities to actively participate in problem solving were replaced by passive acceptance of correct answers. This kind of questioning pattern lost the true aim of questioning which is supposed to stimulate student thinking and to arouse students' eagerness to produce meaningful output (Elder & Paul, 1998).

The way that high expectation teachers questioned their students seemed close to an inquiry-based learning strategy (i.e., a pedagogical approach that "engages learners actively in a knowledge-building process through the generation of answerable questions"; Chu, Reynolds, Tavares, Notari, & Lee, 2017, p. 9). They asked suitable but also challenging questions and left students with time to think by themselves. Instead of giving opportunities for their students to explore by themselves, low expectation teachers chose to provide the "right" answers and explanations, and hoped their students could understand or even simply memorise the right answers. The way that low expectation teachers asked questions reflected a spoon-feeding (i.e., learning based on teacher-designed didactic lectures and instructions; Kwan, 2000) and rote-learning style (i.e., learning based on memorisation of information and repetition). As time passed, students may have become more dependent on their teacher to provide the answers rather than thinking for themselves.

Teachers' responses to student answers were also found to be different between the two teacher groups in this study. In most cases, students gave the correct answer to teachers' questions. In such circumstances, high expectation teachers were more likely to ask further question(s) of the student. In addition, high expectation teachers were more likely to repeat the correct answers from the students and to give explanations for the answers. Again, these results paralleled findings in Rubie-Davies's (2007) study which also identified significant differences in terms of questioning students further and repeating student answers between high and low expectation teacher groups.

Among the 20 items examined, asking further questions was found to be the most important factor to differentiate high and low expectation teachers. In this study, further questions have been used by teachers in different teaching contexts and with different purposes. For instance, some teachers asked students further questions when they wanted

to examine students' real understanding of a question (e.g., by asking students to explain their answers), or when teachers wanted to further inquire into something that was related to the previous questions. Sometimes further questions were intentionally used to guide students' thinking in order to understand a problem (see Table 5.1 for an example). Hence, asking further questions is a teacher behaviour that may not only show students the high expectations that teachers hold for them (by demanding more from them), but could assist students in deeper and better comprehension (Elder & Paul, 1998).

When a student gets the correct answer to a teacher's question, it does not necessarily guarantee that all the other students in the class understand that same problem. Hence, by repeating the student's correct answer and giving explanations for the answer, high expectation teachers may have provided an additional learning opportunity for the students who had not yet mastered the knowledge. Again, compared to low expectation teachers, high expectation teachers may have provided better learning support for all the students in their classes.

In the situation when a student gave an incorrect answer to the teacher's question, high expectation teachers were more likely to give their students another chance to answer the question. When doing this, teachers normally either repeated or rephrased the question, or gave a hint before asking the student to try again. Compared with calling on another student immediately following an incorrect answer, these behaviours may have transmitted teachers' high expectations to students by suggesting that the students had the ability to arrive at a correct response. In addition, giving students another chance also showed teachers' positive and tolerant attitudes towards students making mistakes. These tolerant attitudes would be helpful in creating a mistake-friendly learning atmosphere, and a warm, positive, and supportive class climate (Rubie-Davies, 2007), which has been

suggested to be important in promoting student motivation and learning (e.g., Rubie-Davies, 2006; Weinstein, 2002).

A further finding was that high expectation teachers gave more class-level feedback to their students than low expectation teachers did. As an essential part of teachers' instructional practice (Hattie, 2005), teachers' feedback usually contains important information about students' strengths, weaknesses, and possible improvements at their current learning stage. If there is a certain level that all students have achieved, or if there is certain knowledge that most students have not mastered yet, class-level feedback could be useful to inform a class of students about their learning progress and future learning steps. Therefore, students with high expectation teachers could be more aware of the knowledge they, as a class, have mastered already and those areas that they still need to improve. At the same time, it may help weaken the non-necessary comparisons among students and hence encourage students to build mastery rather than comparative performance goals (Rubie-Davies, 2007).

To conclude the discussion section, there were meaningful differences found in the ways that high and low expectation teachers gave instructions and feedback to their students and responded to students' correct and incorrect answers. High expectation teachers used more effective teaching strategies, provided opportunities to develop students' independent and higher order thinking, and assisted students to gain genuine understanding of knowledge (Rubie-Davies, 2007). They also created a warm and trusting classroom climate which may have helped students to build mastery learning goals (Rubie-Davies, 2007). The differential classroom interactions and class climate between the high and low expectation teachers could be important mechanisms of class-level teacher expectation effects and may be used to explain the association between early-year class-

and teacher-level teacher expectations and student later-achievement outcomes found in previous studies (e.g., Z. Li & Rubie-Davies, 2017).

5.5. Implications

This study revealed that there were important differences with regard to the classroom instructions and interactions between high and low expectation teachers in the Chinese junior high school context. The findings have some implications for junior high school teachers and teacher education programmes in China, as well as internationally. Previous studies investigating class-level teacher expectation effects have found that high teacher expectations were positively associated with higher student achievement after student prior achievement was controlled (e.g., Z. Li & Rubie-Davies, 2017). The results of the current study indicated that the instructional behaviours and classroom interactions of high expectation teachers were probably more beneficial and supportive of student learning. Therefore, teachers should hold appropriately high expectations and positive attitudes towards all their students, to develop their potential and to promote academic achievement for all.

A good understanding of teacher expectation effects is a starting point for teachers to make use of the rich research findings in the field to reinforce teaching and learning in classrooms. However, teacher expectations and the associated effects are currently rarely included in teacher education around the world (Rubie-Davies et al., 2018). Therefore, it is necessary for teacher education programmes in colleges and universities to introduce such content into their courses. That knowledge would help preservice teachers to better understand how their expectations could affect their teaching behaviours and class climate, their students' learning behaviours, and academic achievement. For in-service teachers, they could become more aware of their own teaching behaviours and the ways that they interact with their students. They could make more use of the behaviours that could

transmit high teacher expectations and better support student learning, and avoid behaviours expressing low teacher expectations.

Previous research has shown the possibility of training teachers in the beliefs and practices of high expectation teachers, which have brought about positive results in student academic outcomes (e.g., Rubie-Davies et al., 2015). The results of the current study could provide some insights for potential teacher training programmes or interventions not just in China but also internationally. Together with an introduction to the teacher expectation field, the practices of high expectation teachers could be included in future teacher training programmes with the aim to prepare high expectation teachers who could create harmonious and effective classrooms.

5.6. Limitations and Future Research Directions

This study does have some limitations. First, for a quantitative study, this study has a rather small sample size (eight teachers and 32 lessons). Therefore, the results of the study can only be tentative and may not be generalisable. Nevertheless, the study is the first-ever attempt to explore the classroom behaviours and interactions of teachers with different class-level expectations in the Chinese context, and the results provide some directions for future research on this topic.

A second limitation is also related to the limited sample size. Because of the small teacher participant number, the analyses were performed across three different subject domains (Chinese, mathematics, and English). Whether there are any different teaching patterns across these three subjects is unknown. Moreover, the study did not include any teacher demographic characteristics in the analyses (e.g., teachers' gender, work experience, educational background, personality, etc.). Future research could expand understanding about this issue by including or controlling for teacher characteristics in the study.

It has been contended that, compared with measuring teacher expectations based on student report, using classroom observations may affect the normal educational activities and interactions because of the presence of the observer in the classroom (L. Fan, 2006). Since the researcher was from an overseas university, she did not have any power or a hierarchical relationship with the participant teachers or schools. Therefore, it was considered unlikely that the participant teachers changed their behaviours to please the researcher. Moreover, as the nature of the observation was non-participant observation, the researcher usually sat in the back corner of the classroom and tried not to affect the normal lessons in any way. Hence, any potential observer influence would have been minimised. Classroom observation is generally believed to be able to reflect real classroom behaviours and interactions, whereas student perceptions of teacher expectations are students' subjective experiences and reactions towards classroom activities. Therefore, it would be worthwhile for future studies to explore teacher expectations from both angles to attain a more holistic picture of teacher expectation effects in classrooms.

5.7. Conclusion

This study aimed to explore the teaching behaviours and classroom teacher–student interactions of high and low expectation teachers. Findings from the classroom observations revealed meaningful differences in the instructional practices and socioemotional classroom environment created by high and low expectation teachers. The teaching practices and interaction patterns of high expectation teachers seemed to be more effective in promoting students' learning. The findings provide affirmation of Rubie-Davies's (2007) study while adding further evidence for the possible mediation mechanism for class-level and teacher-centred expectation effects. The study could inform teachers about the ways in which their expectations can be communicated to their students.

Teachers, therefore, could be more aware of their classroom instructional practices and the ways they interact with their students. Given the potential link between teacher expectations, teachers' teaching and interaction behaviours, and student learning outcomes, it would be advisable for teachers to form suitable and high expectations for all students, to use effective instructional strategies, and to create a warm learning environment to support all students to achieve to their potential.

5.8. Funding

5.9. Conflict of Interest Declaration

CHAPTER SIX: THE STABILITY AND TRAJECTORIES OF TEACHER EXPECTATIONS: STUDENT ACHIEVEMENT LEVEL AS A MODERATOR

The previous two empirical studies presented in Chapters 4 and 5 respectively provide some evidence for the existence of individual student-level and class-level teacher expectation effects in the Chinese junior high school context. It was also found that the class-level teacher expectations could be transmitted to students and affect student learning by teachers' differential classroom instructional behaviours and their ways of interacting with and responding to students.

These findings of teacher expectation effects, however, were based on teacher expectation data collected at one time point only. A remaining question was whether the expectations teachers formed at the beginning of the school year would remain stable during the entire school year. If teachers' expectations are not stable, how do they change over time? This chapter (Chapter 6) was therefore designed to answer the question about the longitudinal stability or changes in teachers' expectations. The stability of teacher expectations was examined from an individual-student level as well as a student-group level. This chapter has been published online in the *Journal of Learning and Individual Differences*. The citation is as follows: Wang, S., Rubie-Davies, C., & Meissel, K. (2020). The stability and trajectories of teacher expectations: Student achievement level as a moderator. *Learning and Individual Differences*. Advance online publication. doi: 10.1016/j.lindif.2019.101819

Abstract

Using three time points of teacher expectation data, this study aimed to examine the stability and trajectories of teacher expectations within a school year in the Chinese junior high school context. The participants were 48 Chinese, mathematics, and English teachers and their 1,199 students from 10 junior high schools. The issue of the stability of teacher expectations was explored at individual-student level and student-group level, respectively. Spearman's rank order correlation analysis showed that the stability of individual-student-level teacher expectations varied across different classrooms, ranging from very flexible to very stable. Piece-wise hierarchical linear models indicated that the trajectories of teacher expectations across a school year were different for different-achieving student groups. Students in the high-achieving group were systematically overestimated, and the extent of overestimation increased over a school year for the Chinese and mathematics subjects, whereas students in the low-achieving group were systematically underestimated across the school year. The results suggested that teachers might enhance, or even exacerbate the existing achievement differences between students by expecting more from the high achievers and expecting unjustifiably less from the low achievers.

Keywords: Teacher expectations, stability, trajectories, student achievement, piece-wise hierarchical linear modelling

6.1. Introduction

6.1.1. The Original Pygmalion Study

Fifty years ago, Rosenthal and Jacobson (1968) published their ground-breaking but controversial experiment, *Pygmalion in the classroom*. In the study, the researchers provided teachers with false information about some students, claiming that those students, who were in fact randomly chosen, would show an academic spurt in the near future. In a subsequent IQ test, the randomly labelled late bloomers did show greater improvement in their IQ compared with those not identified. Based on this finding, Rosenthal and Jacobson concluded that the false information given to the teachers had created erroneous teacher expectations which functioned as a self-fulfilling prophecy and altered students' achievement to be in line with the initial teacher expectations.

The Pygmalion study kindled enthusiasm in educational and psychological research, attracting enormous research interest and resulting in abundant efforts to replicate the original study (e.g., Fielder, Cohen & Feeney, 1971; Pellegrini & Hicks, 1972; Sutherland & Goldschmid, 1974). It also aroused intense controversy and was critically questioned by sceptics regarding the study design and the interpretation of the study outcomes (e.g., Snow, 1969; Spitz, 1999; Thorndike, 1968). Nonetheless, the Pygmalion study seeded the research area of teacher expectation effects, which has since become a flourishing area in the educational psychology field and has continued to receive serious attention for the past 5 decades (Good, Sterzinger, & Lavigne, 2018).

6.1.2. Teacher Expectations and Teacher Expectation Effects

Teacher expectations, according to Good and Brophy (1997), are defined as the "inferences that teachers make about the future behaviour or academic achievement of their students, based on what they know about these students now" (p. 79). During the past 50 years, researchers have established knowledge and deepened our understanding of

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teacher expectation effects in naturalistic classrooms. Evidence has shown that teachers form their expectations based on factors including student academic achievement, and classroom engagement and behaviours, as well as student demographic features, such as ethnicity, gender, socio-economic status, and special education status (Dusek & Joseph, 1983; Wang, Rubie-Davies, & Meissel, 2018). Observational studies have suggested that some teachers form different expectations for their perceived higher or lower achieving students, which are then communicated to students through differential teacher behaviours and teacher–student interaction patterns (Brophy & Good, 1970, 1974). Moreover, students have been found to be able to identify high and low expectations from their teachers' verbal and nonverbal behaviours (Babad, 1990; Weinstein, 1985).

Most of the studies on the effects of teacher expectations have shown that higher teacher expectations are positively associated with better student sociopsychological (e.g., academic motivation, self-efficacy, self-concept etc.; Bohlmann & Weinstein, 2013; Rubie-Davies, 2006; Upadyaya & Eccles, 2015; Woolley, Strutchens, Gilbert, & Martin, 2010; M. Zhu & Urhahne, 2015) as well as academic outcomes (e.g., Archambault, Janosz, & Chouinard, 2012; Z. Li & Rubie-Davies, 2016; Ready & Chu, 2015). Among the studies exploring teacher expectation effects on student academic achievement, most studies have been cross-sectional, investigating teacher expectation data at a single time point, with only a few longitudinal studies examining multiple time points of teacher expectation data (e.g., Hinnant, O'Brien, & Ghazarian, 2009; M. Zhu, Urhahne, & Rubie-Davies, 2018). The lack of longitudinal studies in the teacher expectation field may be due to the fact that in some educational settings (especially at lower grades) teachers/classrooms change every year (e.g., students have different teachers every year), which could have made it challenging for researchers to follow the same teachers and students for longer time periods. In addition, in some other educational settings (e.g.,

secondary schools), there are multiple teachers teaching various subjects in a classroom. Therefore, researchers may have to study the expectations of multiple teachers across time concerning an individual student. This could have made it more complicated for researchers to conduct longitudinal studies in such a school context.

Some student and teacher characteristics have been found to either reinforce or mitigate the expectation effects. For instance, negative teacher expectation effects have been found to be stronger in the classrooms of teachers who are easily influenced by biasing information (Babad, 2009) and who differentiated between high and low achievers to a larger degree (Weinstein, 2002). Students from traditionally marginalised groups were found to be more likely to suffer from the Golem effects of low teacher expectations (i.e., poor performance resulting from low or negative expectations; Hinnant et al., 2009; McKown & Weinstein, 2002). In recent years, a few intervention studies have been conducted with the aim of eliminating negative teacher expectation effects by changing teachers' beliefs and training teachers in high-expectation practices. These types of studies have led to positive results in teachers' attitudes and student achievement (e.g., Rubie-Davies, Peterson, Sibley, & Rosenthal, 2015; Weinstein & Worrell, 2016).

6.1.3. Longitudinal Teacher Expectation Studies

Despite these valuable advances in the past 50 years in teacher expectation research, there are still things that are not fully understood. One of these is related to the longitudinal change of teacher expectations and the resulting expectation effects. In fact, most of the existing studies in the field have been conducted based on teacher expectation information gathered at a single time point, whereas longitudinal investigations are relatively scarce (Weinstein, 2018). Nevertheless, children's experience in school is consecutive and interrelated rather than disconnected and disparate (Weinstein, 2002). Therefore, teacher expectation data collected at a single time point may not be sufficient to

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capture the whole picture of the interactive relationships between teacher expectations and student learning outcomes.

The lack of longitudinal research in the teacher expectation field has resulted in important gaps in current knowledge because longitudinal findings are closely related to several important, though still controversial, issues regarding teacher expectation effects. For instance, longitudinal studies can increase understanding of the direction of the relationship between teacher expectations and student achievement (i.e., whether the positive correlations found between teacher expectations and student achievement are due to teacher expectation effects on students, or the effects of student behaviours and performance on the formation of teacher expectations). Also, longitudinal studies could help deepen our understanding about the accuracy of teacher expectations, the accumulation or dissipation of teacher expectation effects, and the long-term magnitude of teacher expectation effects on student achievement.

6.1.4. The Stability and Trajectories of Teacher Expectations

Whether and how teacher expectations change over time, or the stability and trajectories of teacher expectations, can be a starting point in understanding these questions. The stability of teacher expectations, according to Rubie-Davies, Watson, Flint, Garrett, and McDonald (2018), refers to "whether or not teachers maintain their existing expectations in the face of contradictory information or whether they adjust their expectations as students progress through the year" (p. 223). These two ideas have been supported by different researchers. Some researchers have argued that, given that teachers have a large body of information from school records on which to draw when forming their expectations about their students, their expectations tend to be accurate and reality based (Good, 1987). Moreover, as was contended by Brophy (1983), teachers regularly adjust their expectations in line with students' changing performance and are open to

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corrective feedback. In this sense, teacher expectations should be subject to changes in student-achievement performance and would not necessarily be stable.

Other researchers have held an alternative view and suggested possible reasons for the stability of teacher expectations (Kuklinski & Weinstein, 2000). Jussim (1986), for instance, has noted that the initial information and impressions that teachers form for their students may develop over time in expectation-confirming ways. That is, expectation-consistent information may be more likely to be remembered by teachers, whereas differences between teacher expectations and student evidence may be discounted. Evidence has shown that at least some teachers tend to adhere to their initial expectations rather than adapting them (Kuklinski & Weinstein, 2000). For example, teachers who were characterised as authoritarian and dogmatic and who were more susceptible to stereotypes (related to student gender, socioeconomic status, ethnic minorities, learning disabilities and second language status) may not easily change their expectations even in the face of disconfirming information (Babad, 2009; Jussim, 1986).

If teacher expectations are unstable and subject to student behaviour and performance, then the bias between teacher expectations and student achievement should become smaller (i.e., teachers are becoming more accurate) after teachers become more acquainted with their students. Further, if the accuracy of teacher expectations increases across time, the potential for teacher expectations to function as self-fulfilling prophecies would be reduced (Jussim & Harber, 2005). However, if teacher expectations are relatively stable across time and do not necessarily respond to changes in student performance, the expectation effects could be assumed to accumulate over a longer time period.

Given that teacher expectations have been shown to be positively associated with student learning and achievement (e.g., Agirdag, Van Avermaet, & Van Houtte, 2013;

Archambault et al., 2012), and that there is the possibility for the expectation effects to be additive over time (Rubie-Davies et al., 2014), it would be meaningful to explore the issue of the stability of teacher expectations, which has been severely overlooked and underresearched in past studies. The current study, therefore, aimed to explore the stability and changing trajectories of teacher expectations at three time points across a school year. It also compared the trajectories of teacher expectations for different-achieving student groups in order to examine any similarities or differences.

6.2. Literature on the Stability of Teacher Expectations

Only three existing studies could be identified that have explored the issue of the stability of teacher expectations. An early study by Martinek (1980) collected expectation data from elementary physical education teachers at two time points with a time lag of 8 weeks. Teacher expectations were operationalised through teachers' ratings of students on overall physical performance, social relations with peers, cooperative behaviour during class, and ability to reason. Analysis showed that the correlation coefficients of teachers' ratings at the two time points ranged from .84 to .96 for overall physical performance, indicating stability in teachers' expectations. The study, however, had some limitations in that it only covered a very short period of time (8 weeks) and involved only a small sample of teachers ($n = 6$) and students ($n = 179$).

Kuklinski and Weinstein's (2000) study used two independent samples to explore the long-term (a 6- to 8-months period) stability of teacher expectations in the elementary school setting. In their study, teacher expectations were measured in two distinct ways: teachers' rank orderings of students within each class and teachers' ratings of expected performance levels of students. The stability of teacher expectations was defined as consistency in teachers' rank orderings of students and the expected performance levels, respectively. Students' age and student-perceived level of differential teacher treatment

were tested as two potential influential variables of the stability of teacher expectations. In the study with the first sample (464 students), findings for the stability of teachers' rank ordering suggested moderate to strong stability (median tau = .69) with no evidence of the influence of student-perceived differential teacher treatment or student age. Results for the stability of performance level expectations, however, showed that the stability of teachers' expectations was greater with age, but only in classrooms where students perceived teachers' differential treatment between high- and low-achieving students was salient. Further, teacher expectations were more stable in classrooms where teachers' differential treatment was salient. In the study with a second sample (138 students), findings for the stability of teachers' rank ordering also suggested moderate to strong stability (median tau = .65). However, in this study, there was no evidence of differences found by the level of teacher differentiation or by student age.

It is notable, however, that neither of the aforementioned studies of stability of expectations considered student achievement. Therefore, when interpreting the study results, it could be argued that the stability found in teacher expectations, either measured by consistency in ratings or rank order of students, may be due to stability in student achievement. A recent study by Rubie-Davies et al. (2018) has addressed this limitation in Kuklinski and Weinstein's and Martinek's research. In the 2018 study, teacher expectation data were collected from 94 primary and intermediate school teachers at seven time points, covering a timeframe of 3 years. The focus of the study was the stability of teacher expectations at the teacher level rather than student level. Teacher expectations were operationalised by the *discrepancies* between teacher expectations and student achievement (residuals created by regressing teacher expectations data onto student achievement). A series of repeated measures of ANOVAs showed that teacher expectations at the class level remained stable within each of the 3 years, with little

variations from year to year. In addition, teachers who had overall high or low expectations (relative to student achievement) for all their students continued to do so across the research period. Moreover, teacher expectations remained similar across the 3 years, despite changes in student cohorts each year.

6.3. The Current Study

In Rubie-Davies et al.'s (2018) study, the stability of teacher-level teacher expectations was examined, and the researchers pointed out the stability of student-level teacher expectations as a potential future research topic. The current study, therefore, assumed this perspective and aimed to explore the stability of teacher expectations for individual students. From her perspective at the recent 50th anniversary of Pygmalion, Weinstein (2018) provided several suggestions for significant future research directions in the teacher expectation field. Among these future directions, Weinstein underlined the importance of investment in longitudinal studies and stressed the need for shifting towards a contextual and ecological framework. This means that when looking at teacher expectations and teacher expectation effects, it is important to consider both teacher and student individuality as well as the classroom and school context (Timmermans, Rubie-Davies, & Rjosk, 2018). For instance, some teachers may produce stronger expectation effects than other teachers, and some students may be more vulnerable to teacher expectation effects than their counterparts.

Based on this ecological framework, the current study not only examined individual student-level teacher expectations for all students as a whole, but also explored whether or not student characteristics may act as a moderator and influence the trajectories of teacher expectations. Previous research has indicated that teachers are likely to notice the students who stand out in their class (Jia, 2012). Glock and Krolak-Schwerdt's (2013) study, for instance, showed that although, overall, teachers underestimated Turkish

students, they tended to rate high-achieving Turkish students even higher than German students, because these students would stand out in the class. In the current research context, given that the student population is homogeneous with regard to ethnicity and socioeconomic status, students who achieve at the top and bottom of the class tend to be those who stand out for the teachers. Therefore, it was theorised that once teachers had formed high or low expectations for particular students, they would be less likely to adjust their expectations for those students than for those who were less salient. Hence, in the current study, it was hypothesised that the stability and the trajectories of teacher expectations could be different for students with different achievement levels.

The main research questions that the study sought to answer are as follows:

(1) Do teachers' expectations for all of their individual students remain stable over 1 school year?

(2) Are teachers' expectations for their high-, medium- and low-achieving student groups stable over 1 year?

(3) Does student-achievement level moderate the stability of teacher expectations, that is, are there any differences in the stability of teacher expectations across the high-, medium-, and low-achieving student groups?

In the present study, teacher expectations were conceptualised as the discrepancies between teachers' expectations for their students and their students' actual achievement in standardised tests. Therefore, "teacher expectations" were represented by the *expectation bias* that teachers held for their students. This ensured that the effects of student achievement on teacher expectations were excluded, so that the (in)stability within student achievement was not a contributing factor to the (in)stability of teacher expectations. Thus, the stability of teacher expectations was defined in this study as the consistency in

the discrepancies between teacher expectations and student achievement, or the consistency of teachers' expectation bias.

6.4. Method

6.4.1. Participants

Participants in this study were 50 Year 7 teachers and their 1199 students (aged about 12 years) from 32 classes of 10 junior high schools in a city in northern China (the permanent resident population in the city was 132,354 in 2010; Office for the Population Census of Hebei Province, 2012). More than 99% of the city population is of Han ethnicity, which is the main ethnicity in China. In this city, children generally sit a junior high school entrance examination after they finish their 6 years' study in primary schools. They then enrol in neighbourhood junior high schools and start their junior high school from Year 7. No tracking or ability grouping was employed in the 10 participant schools.

The teacher participants in this study were those who taught Year 7 Chinese, mathematics, or English in the 10 junior high schools. Fifty teachers were initially recruited for the study. The number of female teachers (43) was statistically significantly greater than the number of male teachers (7) ($\chi^2 = 25.92$, df $= 1$, $p < .001$), reflecting the gender imbalance among junior high school teachers in the city. Two teachers were removed from the study at the data cleaning stage. One teacher was removed because he misunderstood the survey instructions and provided invalid data. The other teacher left school after the first-time-point data was collected. Hence, the study ended up having a total number of 48 teacher participants (15 Chinese teachers, 16 mathematics teachers, and 17 English teachers).

In terms of the 1199 student participants, there were significantly more boys (649) than girls (550) ($\chi^2 = 8.174$, df $= 1$, $p = .004$), which represented the gender balance in the

student population of the city. The participant schools allocated their students to different classrooms using a method to ensure that the average baseline achievement was similar across all the classes in each school. The students remained in the same class and were taught by the same group of teachers during the entire junior high school period.

6.4.2. Measures

Student achievement and teacher expectations for students' year-end performance were measured and collected in this study. The study was conducted in accordance with human subjects ethics guidelines. Ethical approval to conduct the research was obtained from the institution of the authors. All participants were fully informed about the research and ethical consent was obtained.

6.4.2.1. Student achievement. Each academic year consists of two school terms in the participant schools: Term 1 from September to December, and Term 2 from February to July. Students sit two examinations in each school term: one in the middle and one at the end of the school term. Altogether, the participant students undertook four examinations when they were in Year 7 (see Figure 6.1). All four examinations were citywide and used uniform examination papers and uniform marking. The total score for each of the three targeted subjects was 120 for all examinations. In this research, students' achievement scores in Chinese, mathematics, and English for these four examinations were collected.

6.4.2.2. Teacher expectation survey. The participant teachers were asked to rate their expectations for their students' achievement in the school-year final examination using a teacher expectation survey scale. The scale was divided into 13 levels, covering the range of scores from 60 (half of the total score) to 120 (the total score). Level 1 represented student scores that were under 60 (scores under 60 were grouped together because teachers rarely provided such low expectations for their students). Level 2

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represented 60 to 65. Level 3 covered scores between 66 and 70 and so on, with Level 13

the highest level, covering scores from 115 to 120. Teachers were asked to indicate the

level that each student would achieve in the subject they taught by the end of the school

year using this scale.

Participant teachers were invited to complete the same survey scale at three time

points across the school year: once at 3 weeks after Term 1 started, once at the end of

Term 1, and once in the middle of Term 2 (see Figure 6.1). When teacher expectations

were measured at the first time point (3 weeks after Term 1 started), teachers had access to

prior student-achievement scores from their junior high school entrance examinations, but

teachers had not conducted examinations themselves. Data gathered from the survey were

used as a measure of teacher expectations for individual students' year-end achievement at

the three time points. Descriptive statistics on student achievement and teacher

expectations are presented in Table 6.1.

TE1   SA1   SA2 TE2   SA3 TE3   SA4

Figure 6.1. Time nodes for the teacher expectation and student-achievement data

collection.

Note. TE = teacher expectations, SA = student achievement.

Table 6.1.

Descriptive Statistics of Student Achievement and Teacher Expectations

	Time	N	Minimum	Maximum	Mean	SD
Student	1	3,395	7	120	87.31	20.69
achievement	2	3,350	6	120	91.20	21.18
	3	3,306	5	120	90.67	20.57
	4	3,300	3	120	85.93	22.33
Teacher	1	3,349	1	13	8.46	3.01
expectations	2	3,346	1	13	7.95	3.15
	3	3,122	1	13	8.14	3.33

6.4.3. Data Analysis

Data gathered from the survey were analysed quantitatively using SPSS Version 25.0 and MLwiN 3.02 (Charlton, Rasbash, Browne, Healy, & Cameron, 2017). In the following section, the analysis methods employed for analysing the stability of individual-student-level and student-group-level teacher expectations are reported.

6.4.3.1. Individual-student-level teacher expectations. In order to make student-achievement data in different examinations and different subjects comparable, the first step was to standardise student achievement in the four examinations by calculating Z scores. Next, to calculate the expectation bias, teacher expectation data at the three time points were regressed on the standardised student scores in the first three examinations (Term1 mid-term examination, Term 1 final examination, and Term 2 mid-term examination), respectively. The regressions created three sets of residuals for each subject, which could be understood as the extent to which teachers underestimated (if negative), overestimated (if positive), or accurately predicted (if close to zero) each of their students at the three time points. These residuals, as a measure of teacher expectation bias, were used to represent the level of teacher expectations for individual students in the current study. Last, Spearman correlation analyses were conducted with the student-level teacher expectation residuals at the three time points to determine the consistency of the residuals across the three time points within a school year. Each teacher-student-dyad was treated as one case in the correlation analyses.

In order to make student-achievement data in different examinations and different subjects comparable, the first step was to standardise student achievement in the four examinations by calculating Z scores. Next, to calculate the expectation bias, the standardised student scores in the first three examinations were regressed onto the three time points when teacher expectation data were gathered. The regressions created three

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sets of residuals for each subject, which could be understood as the extent to which teachers underestimated (if negative), overestimated (if positive), or accurately predicted (if close to zero) each individual student. These residuals, as a measure of teacher expectation bias, were used to represent the level of teacher expectations for individual students in the current study. Last, Spearman correlation analyses were conducted with the teacher expectation residuals at the three time points to determine the consistency of the residuals across the three time points within a school year. The analyses were conducted using SPSS Version 25.0.

6.4.3.2. Student-group-level teacher expectations. To test the hypothesis that the stability of teacher expectations might be different for students with different achievement levels, the participant students were allocated to one of three groups based on their achievement scores in the Term1 mid-term examination (SA1 in Figure 6.1). First, students were ranked in each class based on the Z scores for their Chinese, mathematics, and English achievement, respectively. Students who were ranked in the top 23 % of their class in a particular subject were identified as high-achieving students in that subject, whereas students who were ranked at the bottom 23 % were allocated to the low-achieving group. The rest of the students in the middle were allocated to the medium-achieving group. The percentage 23 % was chosen based on the stanine (STAndard NINE; Canfield, 1951; Ramos, 2018) method in which stanines 1 to 3 represent the 23 % of the population that is below average, whereas Stanines 7 to 9 represent the 23 % of the population that is above average. In cases where two or more students had the same score and this coincided with the cut-off point, the students with the tied scores were allocated into whichever group had scores that more closely aligned with the tied scores. For instance, if there were 42 students in a classroom, the students who ranked the top 10 (23 % of 42 students) in the class would be allocated in the high-achieving group. However, there could be two

students tied for the 10th place. In that case, the tied score was compared with the scores of the students who ranked 9th and 11th, to see which score was closer with the tied score. The students with the tied score were then allocated to the group with a more similar score.

This process created three new variables for each student, namely, *Chinese achievement group*, *Mathematics achievement group*, and *English achievement group*. Thereafter, the achievement groups by each subject were aggregated across classrooms. Next, piece-wise hierarchical linear models were built for each of the three subjects to examine the stability and trajectories of teacher expectations during a school year. The method of piece-wise hierarchical linear modelling could not be employed to investigate individual-level stability because the residuals at the three time points each had a mean of zero, and therefore any change over time would not be captured. However, it remained of interest to employ piece-wise hierarchical linear modelling at the group level because it could provide an indication of the extent to which teacher expectations for different student groups may change relative to each other.

A restructuring of data into a long format (i.e., restructuring variables to cases) was needed in order to undertake the HLM analysis. Before restructuring, there were nine teacher expectation variables for each student (three subjects × three time points). The three teacher expectation time variables (Time 1, 2, and 3) for each of the three subjects were restructured into three cases in three new variables named *Chinese Teacher Expectation*, *Mathematics Teacher Expectation,* and *English Teacher Expectation*, respectively. An index variable (*Time point*) was created during the restructuring process in order to identify the group of new cases that were created from the original case.

The data in this study were conceptualised as reflecting four levels, with three time points of observations nested within individual students, students nested within different classrooms, and classrooms nested within different schools. Hence, observation (time

point), student, class, and school were specified as the first, second, third, and fourth level respectively in the equation model conducted in MLwiN. An unconditional model was fitted with teacher expectation residuals in the three subjects as the dependent variable to check the variations and ICCs at each of the four levels (see Table 6.2). All levels were statistically significant except the school level. Most of the variance (including error) was at the observation level, suggesting significant variance in student-level teacher expectations over time.

Table 6.2.

Variance and Intraclass Correlation Coefficients (ICCs) for Student-Level Teacher Expectations

| | Teacher expectations | | |
| | Chinese | Mathematics | English |
	b (*SE*)	b (*SE*)	b (*SE*)
School-level variance	0.115 (0.062)	0.095 (0.052)	0.054 (0.046)
Class-level variance	0.021 (0.010)	0.029 (0.013)	0.111 (0.037)
Student-level variance	0.144 (0.021)	0.250 (0.022)	0.248 (0.020)
Observation-/Time-level variance	0.774 (0.025)	0.656 (0.020)	0.596 (0.018)
ICC at school level	10.9 %	9.2 %	5.4 %
ICC at class level	2.0 %	2.8 %	11.0 %
ICC at student level	13.7 %	23.7 %	24.6 %
ICC at observation level	73.4 %	63.7 %	59.1 %

Thus, four-level HLMs were fitted to analyse the data. An unconditional model with four levels has the following structure:

$$Y_{ijkl} = \gamma_{0000} + f_{0l} + v_{0kl} + u_{0jkl} + e_{ijkl} \qquad (1)$$

Where, in the current case, Y_{ijkl} is the teacher expectations for student j in class k of school l at the time point i. γ_{000} is the grand mean of teacher expectations; f_{0l} is the variance at school level; v_{0kl} is the variance at class level; u_{0jkl} is the variance at student level; and e_{ijkl} is the variance at observation (time point) level.

6.5. Results

In the following section, the results of the statistical analysis for the stability of teacher expectations for their individual students will be presented first, followed by the results of the stability and trajectories of teacher expectations for the high-, medium-, and low-achieving student groups.

6.5.1. The Stability of Individual-Student-Level Teacher Expectations (Research Question 1)

The stability of individual-student-level teacher expectations was defined as consistency in the teacher expectation residuals across the three time points in the school year and was measured by the Spearman's rho rank order correlation coefficient, as this indicates the extent to which the orders of teachers' under- or overestimations were the same over time. If teachers' under or overestimations were due to measurement error, the correlation should be near zero. The analyses were performed separately for each class and for each of the three subjects. The class-level rho ranged from -.44 to .84, indicating that teacher expectations were quite flexible in some classrooms and were very stable in other classrooms. The mean rhos of all 32 classrooms for the Chinese, mathematics and English subjects can be found in Table 6.3. The mean rho for Time 1 and Time 2 correlation was $r_s = .31$, $SD = .23$. The mean rho for Time 2 and Time 3 correlation was $r_s = .31$, $SD = .21$. The mean rho for Time 1 and Time 3 correlation was $r_s = .20$, $SD = .23$.

Table 6.3.

Mean Rhos for Time 1 and Time2, Time 2 and Time 3, and Time 1 and Time 3

Correlations for the Chinese, Mathematics and English Subjects

	Time 1 & Time 2	Time 2 & Time 3	Time 1 & Time 3
Chinese	.28	.30	.15
Mathematics	.34	.23	.24
English	.30	.40	.22
Average	.31	.31	.20

Based on the rho data, each classroom was allocated into one of five stability groups, namely, strong stability ($r_s >= .7$), moderate stability ($.7 > r_s >= .5$), some stability ($.5 > r_s >= .3$), near-zero rho ($.3 > r_s >= -.3$), and a negative rho group ($r_s < -.3$). This process was first undertaken for the Chinese, mathematics, and English subject separately, and the percentage of classrooms in each group was calculated. The distribution of the classrooms among the five groups appeared to be similar across the three subjects. Therefore, for the purpose of parsimony, we combined the three subjects and reported the average percentages in Table 6.4.

As can be seen from Table 6.4, from Time 1 to Time 2, there was strong stability in 3 %, moderate stability in 19 %, and some stability in 31 % of the classrooms. From Time 2 to Time 3, there was strong stability in 2 %, moderate stability in 16 %, and some stability in 32 % of the classrooms. Nearly half of the classrooms (47 %) had a rho that was close to 0 (between +/- .3) for both time periods. A rho correlation that is near zero is likely to indicate little or low stability, in that the degree of under or overestimation for each student in these classrooms is not correlated over time—any correlation may be due to measurement errors in both the examinations and teachers' estimates. Hence, nearly half of the classrooms at both time lags showed little stability in their teacher expectations. There was only one classroom which had a significant negative rho (-.44), indicating that

if the teacher had overestimated a student on a prior occasion, s/he was likely to underestimate the student at a later occasion. In terms of stability over a school year, from Time 1 to Time 3, the percentage of the classrooms in the near-zero group increased from 47 % to 64 % of the classrooms, indicating that the stability of teachers' expectations reduced over a longer time period.

Table 6.4.

Percentages of Classrooms with Strong Stability, Moderate Stability, Some Stability, Near-zero Rho, and Negative Rho for the Period from Time 1 to Time 2, from Time 2 to Time 3, and from Time 1 to Time 3

	Strong stability $r_s >= .7$	Moderate stability $.7 > r_s >= .5$	Some stability $.5 > r_s >= .3$	Near-zero rho $.3 > r_s >= -.3$	Negative rho $r_s < -.3$
T1 to T2	3 %	19 %	31 %	47 %	0 %
T2 to T3	2 %	16 %	32 %	47 %	1 %
T1 to T3	1 %	9 %	26 %	64 %	4 %

Note. T1: Time 1; T2: Time 2; T3: Time 3

6.5.2. The Stability and Trajectories of Student-Group-Level Teacher Expectations (Research Questions 2 and 3)

In order to explore the potential moderating effects of student-achievement level on the stability of teacher expectations, piece-wise HLM models were built for each of the three subjects with teacher expectation residuals as the dependent variable, and achievement group, time, and achievement group × time interaction as the predicting variables. The *Achievement group* variables and the *Time point* variable were turned into categorical variables, with low-achieving group and Time 1 as the reference groups, respectively.

The results for the three HLM models (one for each subject) are shown in Table 6.5. As can be seen from Model 1 in Table 6.5, for the Chinese subject, there was no statistically significant difference in teacher expectation bias across the three groups at Time 1. However, at Time 2, the expectation bias started to diverge for different student groups. By the end of the first school term, teachers underestimated their low-achieving students by 0.439 (i.e., -0.121-0.318) standard deviation units (SDU), whereas overestimated their high-achieving students by 0.408 (i.e., -0.121+0.117-0.318+0.730) SDU. The degree of the under- and overestimation for the low- and high-achieving groups both alleviated at Time 3. Nonetheless, there were still statistically significant differences in the teacher expectation bias for the low and high groups at Time 3 compared to Time 1. At Time 3, teachers underestimated their low-achieving students by 0.297 (i.e., -0.121-0.176) SDU and overestimated their high-achieving students by 0.362 (i.e., -0.121+0.117-0.176+0.542) SDU. There was no statistically significant change in the expectation residuals for the medium-achieving groups at either Time 2 or Time 3, indicating that teacher expectations were relatively stable for the medium-achieving student group.

Model 2 presents the results of the HLM model for the mathematics subject. The mathematics model shows a very similar pattern with the Chinese model. At the beginning of the school year, there was no significant difference in the teacher expectation bias for the three achieving-groups. At Time 2, teachers' expectations became positively biased for their high achievers and negatively biased for their low achievers. On average, teachers' expectations were 0.427 (i.e., -0.002+0.094-0.289+0.624) SDU higher than the actual achievement of high-achieving students and were 0.291 (i.e., -0.002-0.289) lower than the actual achievement of low-achieving students at Time 2. At Time 3, teachers became more positively biased for the high achievers but less negatively biased for the low

achievers. Again, teachers' expectations for their medium-achieving students appeared to be more accurate and relatively stable across the school year.

Model 3 shows the results of the HLM model for the English subject, which has a slightly different pattern with the Chinese and mathematic models. At Time 1, statistically significant differences were found in teacher expectation bias for the three student groups. Whereas teachers marginally underestimated their low-achieving students, they overestimated their high-achievers by 0.305 (i.e., -0.185+0.490) SDU. At Time 2, teachers appeared to be more biased compared to Time 1 for both of the high- and low-achieving groups. Teachers underestimated their low achievers by 0.392 (i.e., -0.185-0.207) SDU and overestimated their high achievers by 0.499 (i.e., -0.185+0.490-0.207+0.401) SDU at Time 2. The extent of the over- and underestimation both alleviated at Time 3, showing no statistically significant difference compared to Time 1. For the medium-achieving group, teacher expectations were largely unbiased and stable across the school year.

Table 6.5.

Parameter Estimates for HLMs of Teacher Expectations for the High-, Medium-, and Low-Achieving Student Groups at Three Time Points in Chinese, Mathematics, and English

Parameter	Model 1 Chinese TE bias	Model 2 Mathematics TE bias	Model 3 English TE bias
Variable	*b* (*SE*)	*b* (*SE*)	*b* (*SE*)
Fixed effects			
Intercept	-0.121 (0.133)	-0.002 (0.122)	-0.185 (0.114)
Medium-achieving group	0.128 (0.072)	-0.018 (0.070)	0.178 (0.065)**
High-achieving group	0.117 (0.087)	0.094 (0.083)	0.490 (0.077)**
Time 2	-0.318 (0.081)***	-0.289 (0.072)***	-0.207 (0.068)***
Time 3	-0.176 (0.087)*	-0.178 (0.073)**	-0.050 (0.068)
Medium-achieving group × Time 2	0.277 (0.096)**	0.257 (0.086)**	0.205 (0.080)**
High-achieving group × Time 2	0.730 (0.115)***	0.624 (0.102)***	0.401 (0.095)***
Medium-achieving group × Time 3	0.129 (0.102)	0.069 (0.087)	0.054 (0.081)
High-achieving group × Time 3	0.542 (0.121)***	0.605 (0.103)***	0.060 (0.095)
Random effects			
Between-school (f_{0l})	0.112 (0.060) [11.1%]	0.096 (0.053) [9.8%]	0.054 (0.046) [5.6%]
Between-class variance (v_{0kl})	0.021 (0.010) [2.1%]	0.030 (0.013) [3.1%]	0.111 (0.036) [11.6%]
Between-student variance (u_{0jkl})	0.118 (0.019) [11.7%]	0.219 (0.020) [22.3%]	0.200 (0.018) [20.9%]
Between-observation variance (e_{ijkl})	0.756 (0.025) [75.1%]	0.638 (0.019) [64.9%]	0.591 (0.017) [61.8%]
Deviance	7875.798	8589.820	8972.050
Number of schools	9	10	10
Number of classes	28	30	32
Number of students	1,046	1,106	1,187
Number of observations	2,912	3,250	3,489

Note. *p < .05 **p < .01 ***p < .001.

6.6. Discussion

The current study explored the developmental trajectories and the stability of teacher expectations at both the individual-student-level and at the different student-achievement-group level. Previous research by Martinek (1980) and Kuklinski and Weinstein (2000) both reported moderate to strong stability in teacher expectations in their studies. However, as mentioned earlier, neither of these two studies controlled for student achievement, so it is arguable that the stability of teacher expectations found could be mainly due to stability in student achievement. In the current study, by controlling for student achievement corresponding with the three time points of teacher expectation data, we examined the absolute stability of teacher expectations during a school year.

6.6.1. The Stability of Individual-Student-Level Teacher Expectations

Findings regarding the stability of teacher expectations for individual students showed that the stability of teacher expectations varied across different classrooms and teachers. In both of the two time lags (i.e., from Time 1 to Time 2 and from Time 2 to Time 3), about 1 in 5 of the classrooms showed strong to moderate stability in their teachers' expectations. Some stability was found in one third of the classrooms. In nearly half of the classrooms, teachers' expectations were found to be unstable or flexible.

To understand these findings, it is important to note the meaning of stability in the current study. Instead of suggesting the expectations remained similar for the students, stability here means that teachers' under- or overestimation of their students was similar across time. In other words, high stability suggested that teachers favoured the same students at different time points. In contrast, low stability indicated that teachers were probably responding to new evidence and information about students, and adjusting their expectations accordingly. Hence, the study results suggested that nearly half of the teachers adjusted their expectations for their students, leading to instability in their

expectations, whereas another half of the teachers retained their expectations to varying degrees, with a very small number of the teachers (2 % - 3 %) being highly biased across each of the two time lags. In terms of a longer time frame of one school year, teachers' expectations became less stable – more than half of the teachers adjusted their expectations, whereas only 1 % of them remained highly biased across the school year.

The results provide some evidence to support the perception that teachers tend to actively adjust their expectations based on changes in student achievement (Brophy, 1983; Good, 1987), given that around half of the teachers had flexible expectations for their students. Yet, there was also a number of teachers who appeared to have more or less adhered to their original expectations and who did not appear to change them in the face of disconfirming student information. This finding aligned with previous research, which suggested that at least some teachers tend to hold onto their initial expectations instead of adapting them (Kuklinski & Weinstein, 2000). The variations in the stability of teacher expectations found in the current study provided empirical support for Brophy and Good (1974), who suggested that some but not all teachers would adjust their expectations in line with new information about student learning and performance.

6.6.2. The Stability and Trajectories of Student-Group-Level Teacher Expectations

In terms of teacher expectations for student groups with various achievement levels, teachers' expectations for high-, medium-, and low-achieving student groups showed very different trajectories across a school year. For both high- and low-achieving student groups, teacher expectations were found to be unstable with changes but in different directions. For the high achievers, Chinese and mathematics teachers' expectations were largely unbiased at the first time point—1 month after the teachers met the students. However, the high-achieving students were overestimated by their English teachers from this early point of the school year. Teachers' expectations for their high-

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achieving students then became much more positively biased at Time 2 across all the three subjects. At Time 3, the positive teacher expectation bias for the high achievers in Chinese and mathematics remained at a similar level with Time 2, whereas the positive expectation bias of English teachers dropped back to a similar level with Time 1. Overall, teachers were found to have overestimated their high-achieving students across all the three subjects. Moreover, both Chinese and mathematics teachers were becoming more positively biased for their high-achieving students in the middle of the second school term compared with the beginning of the school year.

In contrast, teachers underestimated their below-average students to a small extent in Chinese and English at Time 1. The expectations became much more significantly and negatively biased for the low achievers at Time 2 across all three subjects, followed by some alleviation by Time 3. Overall, teachers underestimated their low-achieving students across all the three subjects, and the extent of the underestimation at Time 3 was significantly larger compared to Time 1 for the Chinese and mathematics subjects. With respect to the students in the middle group, teacher expectations were found to be stable, with barely any bias at the first time point, and no significant change across the school year.

The findings suggested that teachers' expectations became positively biased for their high-achieving students and negatively biased for their low-achieving students during a school year, but the most bias for both groups tended to be at the middle of the school year (except mathematics teacher expectations for high-achieving group). One plausible explanation for the findings might be that, at the beginning of the school year, teachers tended to notice the very high- and very low-achieving students in their classrooms. As time passed, once teachers' original expectations were confirmed, they set even higher expectations for the top students, believing that they could achieve even better results after

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the next period of learning. In contrast, teachers may have lost confidence in the lower

performing students and lowered their expectations for them. The stability found in

teacher expectations for the medium-achieving students showed that teachers maintained

their expectations for the middle group.

This perspective of looking at the longitudinal change of teacher expectations for

different-achieving student groups has never been addressed in previous literature.

Positive associations have been found between high teacher expectations and better

learning opportunities, higher quality teacher–student interactions, and warmer classroom

climate (e.g., Brophy, 1983; Rosenthal, 1974; Rubie-Davies, 2007). Therefore, in the

current research context, high-achieving students may have benefited more from the

advantages brought about by high teacher expectations, which may support students'

academic growth and result in the high teacher expectations being fulfilled. In contrast,

low-achieving students may be more susceptible to limited learning opportunities and the

teacher behaviours and socioemotional environment associated with a negative-

expectation bias (Rosenthal, 1974), which may hinder student improvement and eventually

have the low expectations fulfilled and exacerbated. As a result, teachers might,

intentionally or unintentionally, create a virtuous circle for the students who were at the

top from the beginning, and might produce a vicious circle for the students who began the

year at below-average levels.

It has been contended that the evidence for teachers routinely enhancing existing

differences between students is relatively scarce (Cooper & Good, 1983). In this study,

however, students in the high-achieving group were systematically overestimated, and the

extent of overestimation increased over a school year; whereas their classmates in the low-

achieving group suffered from being underrated during an entire school year. Such

findings suggest that in ordinary classrooms teachers may play a role in enhancing or even exaggerating the existing differences between students.

6.7. Implications

This study was the first attempt, to our knowledge, to explore student-achievement level as a potential moderator on the trajectories and stability of teacher expectations. The findings from the study have several implications for in-service teachers as well as teacher education programmes.

The study showed that teacher expectations became more biased in the middle of the second school term compared to the beginning of the school year for the high- and low-achieving-student groups. It has been argued that if students are consistently subjected to similar erroneous expectations over a relatively long period of time, even small effects would compound and accumulate, and produce larger differences (Jussim & Harber, 2005; Rubie-Davies et al., 2014; Weinstein, 2002). Yet, teacher expectations and the associated effects are currently rarely included in teacher education worldwide (Rubie-Davies et al., 2018). Hence, it is of great importance for teacher education programmes and courses to include the content related to teacher expectation effects with the aim of increasing preservice teachers' awareness about the effects that their beliefs and expectations could exert on their future students' learning.

In the Chinese context, in particular, students are normally taught by the same groups of teachers (one for each subject) across all 3 or 4 years in high school. Compared to an educational system where teachers are changed on a yearly basis, this kind of arrangement could make it even more likely for teacher expectation effects to accumulate, and, therefore, underlines the significance of teachers being aware of their potential low expectations and their detrimental effects on students.

The study results also suggested that teachers might enhance, or even exacerbate the existing achievement differences between students by expecting more from high achievers and expecting unjustifiably less from low achievers than achievement indicated. Whereas high teacher expectations can help promote student learning and achievement, expectations that are low, unequal, or adjusted downward have the potential to underestimate, segregate, and stigmatise students (Weinstein, 2018). Therefore, classroom teachers should be more aware of their expectations, especially low expectations, and their expectations towards low-achieving students.

In the context where classes tend to be of mixed ability (as compared to tracked classes), it is recommended for teachers to focus on individual students' academic improvement rather than comparing students with others, and to use self-referenced evaluation standards rather than other-referenced ones. It is important for teachers to keep in mind that student learning ability is something that is malleable rather than immutable (Dweck, 2006). Therefore, teachers as educators are capable of, and responsible for, supporting students' learning gains regardless of students' performance level (Tomlinson, 1999). Teachers should not lose confidence or hold negative-expectation bias for their low-achieving students. Instead, teachers should provide the same if not more support and development opportunities for low-achieving students, and assist them to achieve to their best potential (Rubie-Davies, 2015).

Treating all students equally and holding high expectations for all can be much easier said than done. It can be even more challenging for teachers who are working in an environment where academic achievement is extremely, and sometimes the only thing, valued when it comes to education. Nonetheless, education should be, as Timmermans et al. (2018) put it, "a vehicle for creating opportunities for equitable outcomes for any students prepared," rather than "a perpetuation of the current social structures" (p. 96). To

promote education equality using a teacher expectation framework, being aware of teacher expectation effects can be the first step, and providing professional support to train teachers with high expectations and quality-teaching practices can be another step forward.

6.8. Limitations and Future Directions

This study has some limitations. The first limitation was regarding the timeframe of the study design. Although a longitudinal study, the current study only covered the trajectories of teacher expectations and student achievement within one school year. A similar or different pattern could be discovered in the second and third year in junior high school. Hence, a more holistic picture of the trajectories of teacher expectations could be obtained from future studies that cover multiple years and with more data collection points. A second limitation concerned the timing of the Term 1 mid-term examination which was delivered at around 8 weeks after the school year started. This means that, teacher expectations may have already had some influences on student achievement in that particular examination. One further limitation was related to the data analysis process. Although we have considered the nestedness of the data by employing piece-wise hierarchical linear models, the hierarchical structure was not explicitly modelled while calculating the teacher expectation residuals. Though this is unlikely to make much difference to the results of the current study, it is recommended for future studies to consider the hierarchical structure of the data throughout the data analysis process.

An important contribution of the current study is that it examined the expectations of different subject teachers over time. However, the study only explored the stability of teacher expectations from a student-level perspective. Future studies could explore the stability of teacher expectations at the teacher level in more detail (see e.g., Rubie-Davies et al., 2018), and examine potential teacher characteristics that may moderate the stability of teacher expectations. For instance, are there any differences in the stability of teacher-

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level expectations between novice and experienced teachers, high-bias and no-bias teachers (Babad, 1979), and high-differentiation and low-differentiation teachers (Brattesani, Weinstein, & Marshall, 1984)?

As a result of the study, we found that teacher expectations for both their high- and low-achieving students were becoming more biased during the school year. However, it is important to consider potential regression to the mean effects when interpreting the results. That is, if the high achievers became less excellent and the teachers somehow retained their high expectations for this group, the teacher expectation bias would have become even larger (and the same applies for the low achievers). Nonetheless, the increasing teacher expectation bias for the high- and low-achieving students still suggested that teachers did not necessarily adjust their expectations based on updated student achievement information. Also, the potential positive and negative effects of teachers' over- and underestimation on student learning would not have been changed.

The current study showed that there were differences in the stability and trajectories of teacher expectations for high-, medium-, and low-achieving students. However, it did not explore changes in expectation effects for the three groups of students. There are only a few studies that have investigated the student-achievement level as a moderating factor on the magnitude of teacher expectation effects and the results have been inconsistent, with some studies suggesting that student-ability level was positively associated with the magnitude of expectation effects (De Boer, Bosker, & Van der Werf, 2010; Pesu, Viljaranta, & Aunola, 2016), whereas others found a negative association between the two (Liu & Wang, 2008). Therefore, future studies are needed to explore and compare long-term changes in teacher expectation effects across different achieving groups of students.

Last, replication studies could be conducted in different educational and cultural contexts to examine whether the stability features found in the current study are universal, or culturally, or contextually dependent. In the current research context there likely to be less room for teacher bias regarding ethnic minorities, immigrants, socio-economic status gaps, second language learner stereotypes, or learning disability prejudices, due to the homogeneity within each school. Therefore, low-achieving students are likely to be the most notable vulnerable and stigmatised group. Future research could investigate and compare the longitudinal changes in teacher expectations for the majority and minority groups aforementioned, and see whether there are any between-group differences in the trajectories of teacher expectations over a longer timeframe. It may also be worthwhile to explore any potential differences in the trajectories of teachers' expectations for male and female students in different subject domains (e.g., reading, mathematics, science etc.). In addition, being a quantitative study, the rationale for the teachers forming and adjusting their expectations were not examined in the current study. Future qualitative studies would be especially valuable in understanding the reasoning behind the quantitative results. For instance, teacher interviews may provide insights into the contextual and ecological factors that influence teacher expectations, as well as the reasons behind teachers changing or keeping their expectations and the basis of the changes.

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6.11. Conflict of Interest Declaration

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CHAPTER SEVEN: A GENERAL DISCUSSION

This doctoral project has examined the effects of teachers' expectations—for their individual students as well as for all their students as a whole—on student learning and academic achievement in the Chinese junior high school context. In China, there is a strong hierarchical relationship between teachers and students (Xiao & Dyson, 1999), which leads to a teacher-centred learning environment (Heffernan, Morrison, Basu, & Sweeney, 2010). Teachers are well respected and seen as the authority in schooling and a model of morality and knowledge (Biggs, 1996). As a result, it may be expected that the beliefs and expectations of teachers could exert an even stronger effect on student achievement in the Chinese context. On the other hand, there have been studies indicating that the excessively high expectations of teachers may become a source of academic stress for Chinese students (Tan & Yates, 2011), which may hinder students' long-term development. Therefore, it was of interest whether teacher expectations would function in a similar or different way in the Chinese context.

From the beginning of the 21st century—more than 30 years after the Pygmalion study was conducted in the US—researchers in China started to examine teacher expectation effects in the Chinese educational context, and explore the possibility of making use of teacher expectation theory to direct teaching and learning in China (e.g., L. Fan, 2006; L. Fan & Jin, 2008). These studies undertook the first steps in introducing the concept of teacher expectations to Chinese academia, and enabled an important theory to be tested in a completely new context. Yet there are still challenges that need to be resolved before we can better understand the effects of teacher expectations in the Chinese context.

One of these challenges is related to the quality and credibility of the existing Chinese studies. Other than a few exceptions (e.g., Z. Li & Rubie-Davies, 2017), most

Chinese studies examining teacher expectation effects have overlooked student baseline ability or achievement. This may have resulted in erroneous conclusions about teacher expectation effects in the studies given that both teacher expectations and students' later achievement have been found to be positively and highly associated with students' prior achievement (Archambault et al., 2012; Ready & Wright, 2011; Timmermans et al., 2016). In addition, almost all the existing studies looked at teacher expectations only from the student level, whereas the perspective that teacher-centred expectations can also be an important teacher trait has been neglected. Moreover, very little research has examined teachers' individual student-level and class-level expectations together in one study. Therefore, it is still unclear how these two types of expectation effects function and interplay with each other. Further, the issue of the long-term stability of teacher expectations has never been examined in the Chinese context. Given that the frequency of assessment tends to be much higher in Chinese schools compared to schools in many Western countries (e.g., UK, New Zealand), and because teachers can make use of students' test or exam scores to adjust their expectations (Brophy, 1983), the current research investigated if Chinese teachers' expectations would be less stable (more flexible) and more accurate compared to the expectations of their Western counterparts.

This research, therefore, aimed to address these important gaps in the Chinese teacher expectation literature. The initial broad research questions which directed the entire research project were as follows:

1. Are teachers' expectations, both for their individual students and for all the students in their class/classes as a whole, associated with student later achievement, after controlling for student baseline achievement?

2. Are there teachers who hold correspondingly high or low expectations for all their students? If that is the case, how are the differences in the overall teacher

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expectation levels manifested in classrooms, in the teaching methods and in the

interactions with students?

3. Do teachers' levels of expectations remain stable across a school year?

This chapter will bring the findings from all three empirical studies together and

discuss the implications of the research for the broader teacher expectation theory and for

educational practices in China. The limitations of the research project are discussed, and

possible future research directions are recommended, followed by a few final thoughts and

comments to conclude the chapter.

7.1. Overall Summary of the Key Findings

The first empirical study (Chapter 4) demonstrated that individual student-level

teacher expectation effects did exist in the Chinese junior high school context. Teachers'

expectations for individual students were positively associated with student final

achievement even after student baseline achievement was controlled. This is to say that, if

a teacher had high expectations for a student, the student was more likely to achieve at

higher levels than another student with the same initial achievement for whom less was

expected. On the other hand, if a teacher's expectations for a student were negatively

biased, the student's academic achievement could be limited by the teacher and the student

may have eventually achieved less than s/he possibly could have achieved.

Biased expectations can be due to student information that is not directly related to

student achievement and academic potential (Good, 1987). In the current research, it was

found that two student characteristics—student gender and family background—both had

an effect on the level of teacher expectations. Specifically, teachers held lower

expectations for boys and children of migrant workers compared to girls and children from

non-migrant workers' families. The extent to which teacher expectations were negatively

biased was found to be more severe for students who were children of migrant workers than for boys.

Moreover, class- and teacher-level teacher expectation effects were also found in the study. The results of Chapter 4 indicated that if a student was studying with a teacher whose overall expectation for all the students in the class was relatively high, the student was likely to achieve at higher levels than another student who had the same ability but studied in a class with a low expectation teacher.

Yet, when these two types of expectation effects were studied with the assumption that they worked together simultaneously, teacher expectations at the individual-student level were found to be more influential in relation to student achievement. This means that, if a teacher had overall high expectations for all the students in the class, but for some reason, held particularly low expectations for one student, the high overall expectations for all the students were unlikely to mitigate the negative effects of the teacher's low individual expectations for that one student, and vice versa.

On the basis of the identification of the high and low expectation teachers and the teacher-level teacher expectation effects, in the second empirical study (Chapter 5), classroom observations were conducted in the classrooms of the high and low expectation teachers in order to determine if there were any between-group differences in terms of teachers' classroom instruction and interaction behaviours. Findings from the classroom observations revealed meaningful differences in the instructional practices and socioemotional classroom environment created by high and low expectation teachers. The differences found were related to various aspects such as the instructional strategies used, questioning, and responding to student answers, and giving feedback to students. The results indicated that the teaching practices and interaction patterns of high expectation teachers were more effective in providing support and scaffolding to promote students'

learning. These between-group differences in teacher behaviours may have acted as a mediating mechanism for the class- and teacher-level expectation effects on student learning outcomes.

The last study in this project was related to the longitudinal stability and trajectories of teacher expectations. The stability of individual-student-level teacher expectations varied across different classrooms and teachers, ranging from very flexible to very stable. In nearly half the classrooms, teachers appeared to have adjusted their expectations based on student information, whereas, in the other half of the classrooms, teachers adhered to their initial expectation biases to varying degrees. However, only a very small number of teachers were found to be similarly and highly biased across different time points. Nonetheless, teachers became more biased over the year for both the high- and low-achieving student groups. Students in the high-achieving group were systematically overestimated, and the extent of overestimation increased over a school year, whereas students in the low-achieving group were systematically and increasingly underestimated across the school year.

7.2. Overall Discussions of the Key Findings

Three themes arose from interpreting and reflecting on the overall key findings from the entire project, namely, (1) teacher expectation effects at the individual-student level and student-group level, (2) teacher expectation effects at the teacher level, and (3) the importance of considering individual differences between teachers. The overall key findings will be discussed around these three themes in the following sections.

7.2.1. Teacher Expectation Effects at the Individual-Student Level and Student-Group Level

The results of the first study conducted in this thesis (Chapter 4) provided evidence for individual-student-level teacher expectation effects on student academic achievement. Even after having student baseline achievement controlled, teachers' expectations for their individual students at the beginning of the school year were positively associated with students' year-end achievement outcomes. This finding was in line with most previous studies (e.g., de Boer & van der Werf, 2015; Friedrich et al., 2015; Speybroeck et al., 2012) but nonetheless added important further evidence for the existence of individual-level teacher expectation effects in the underresearched Chinese junior high school context.

Both previous literature (Brophy, 1983; Rosenthal, 1974; Rubie-Davies, 2007) and the current research has provided insights into the associations between teacher expectations and student academic performance. When teachers form either high or low expectations for their students, the expectations are likely to be manifested by the ways that teachers behave in the classrooms—how they teach, communicate, and interact with their students. Previous research showed that students were able to perceive the expectations that teachers had for them from interpreting the differential teacher behaviours (Babad, 1990a; Weinstein et al., 1987), which may have either raised students' self-efficacy (Bohlmann & Weinstein, 2013) and motivated them to work harder (Woolley et al., 2010), or discouraged them from putting in more effort. The different learning opportunities students received, together with the positive or negative effects teacher expectations exerted on students' psychological factors, have been shown to be associated with different levels of academic growth among students (Gilbert et al., 2014; Rubie-Davies, 2007).

Teachers held different expectations for their individual students; they also held different levels of expectations for their students from different demographic groups. In the first study, teachers were found to hold higher expectations for girls than boys, and lower expectations for students from a migrant-worker family background compared with their urban counterparts. In addition, teachers were found to hold different levels of expectations for different-achieving student groups. Results of Study 3 (Chapter 6) showed that teachers had already formed higher expectations (even after controlling for achievement) for high-achieving students, and had lower expectations (relative to achievement) for low-achieving students, in the very first months of the school year. More importantly, this between-group difference in teacher expectations based on student-achievement level did not become smaller; instead, they became significantly larger throughout the school year. Specifically, teachers systematically and increasingly overestimated their high-achieving students over a school year, but they systematically and increasingly underestimated their low-achieving students over the year.

These findings provide some evidence to contradict the argument that teachers are not likely to routinely enhance the achievement differences between students (Cooper & Good, 1983). Given that high teacher expectations were found to be positively associated with better learning opportunities and a warmer classroom climate, girls, students from urban families, and high-achieving students were more likely to have benefitted from the Galatea (positive) effects brought about by high teacher expectations. Boys, children of migrant workers, and low-achieving students, on the other hand, were more likely to suffer from the Golem (negative) effects created by low teacher expectations. As high or low teacher expectations are gradually fulfilled over time and confirmed by student achievement, the achievement differences between students may be exacerbated over a longer time period.

7.2.2. Teacher Expectation Effects at the Teacher Level

To gain a better understanding of the class- and teacher-level teacher expectations and to examine the applicability of previous findings in the Chinese context, the current project investigated whether teacher-level teacher expectations existed and how they functioned in 32 Chinese junior high school classrooms. As a result, Study 1 was able to identify teachers with different levels of overall expectations for their students. Based on their overall expectation levels (relative to student achievement), teachers were identified as high, medium, or low expectation teachers. Furthermore, in the cases that teachers taught more than one class, they were found to hold similar expectations for multiple classes that they taught. These findings were in line with previous research findings (Z. Li & Rubie-Davies, 2017; Rubie-Davies, 2006) and suggested that there were teachers who held different levels of expectations for their class or classes of students in the Chinese junior high school context.

Furthermore, the different levels of expectations that teachers held for all their students were found to predict student academic achievement. With students' prior achievement data controlled for, teachers' overall average expectations for all their students positively predicted student achievement by the end of the school year. This finding supported previous literature on class-level teacher expectation effects (Archambault et al., 2012; Z. Li & Rubie-Davies, 2017; Rubie-Davies, 2006, 2007, 2008b), indicating that high overall teacher expectations could boost student achievement, whereas low overall teacher expectations may negatively affect students' learning and achievement.

To interpret the underlying reasons for this positive association identified between teacher-level expectations and student achievement, the classroom behaviours of high and low expectation teachers were observed and compared in Study 2 (Chapter 5). Results of

the classroom observations indicated important differences between the two groups of teachers in terms of how they gave instructions and the ways they communicated and interacted with their students. Specifically, the findings showed that, compared with low expectation teachers, high expectation teachers provided better learning support for their students by using more effective teaching strategies. In addition, high expectation teachers provided more learning opportunities for their students, as shown by them asking more follow-up questions, more frequently repeating students' correct answers, and allowing a second chance when students failed to give the correct answer the first time. Moreover, high expectation teachers may have created a warmer and more supportive classroom climate for their students as they appeared to hold a more tolerant and positive attitude towards students making mistakes.

All of these between-group differences have also been reported in a previous study by Rubie-Davies (2007), which was conducted in a New Zealand primary school context. Though the two studies were conducted within different cultural and educational contexts, the similar findings suggested that class-level and teacher-centred teacher expectations were very likely to exist, and high or low class-level teacher expectations could be communicated to students through differential teacher behaviours. Hence, the project has contributed by adding new evidence for the possible mechanism of class- and teacher-level teacher expectation effects. The findings could be used to understand the associations between early-year teacher-level teacher expectations and later student achievement identified in the current project. In addition, these differential behaviours identified between high and low expectation teachers could provide useful insights for future teacher training programmes or expectation-related interventions for school teachers in China, as well as other countries worldwide.

7.2.3. The Importance of Considering Individual Differences Between Teachers

The findings from this thesis have provided further evidence for the importance of considering individual differences between teachers when studying the issue of teacher expectation effects. First, Study 1 showed that there were individual differences between teacher-level teacher expectations. That is, teachers held different levels of overall expectations for their students—some had expectations that were much higher than student baseline achievement, whereas others' expectations were much lower than student achievement. This identification of teachers with different levels of overall expectations, which were in line with previous studies (Z. Li & Rubie-Davies, 2017; Rubie-Davies, 2006), allowed for the investigation of how the different groups of teachers behaved in the classrooms and how the different levels of overall teacher expectations were related to student academic achievement in the current project.

Apart from the individual differences regarding the average teacher expectation levels, the current research also found that the stability of teachers' expectations varied considerably across different classrooms, which suggested important individual differences in terms of the stability of teachers' expectations. In nearly half of classrooms, teachers' expectations were very flexible, but, in the other half of the classrooms, teachers' expectations were stable to varying degrees. The findings supported the argument that some teachers would adjust their expectations in line with new information about student learning and performance (Brophy & Good, 1974), but other teachers tended to cling to their initial expectations rather than actively adapting them (Kuklinski & Weinstein, 2000).

The individual differences between teachers have been underlined by previous researchers who have identified teachers using different teacher typologies (Babad, 1979; Brattesani et al., 1984; Rubie-Davies, 2006). Babad and colleagues, for instance, identified teachers as high-bias and no-bias teachers based on teachers' susceptibility to

biasing information about students (Babad & Inbar, 1981; Babad et al., 1982b). High-bias teachers were those who were highly susceptible to biasing information about students, whereas no-bias teachers were not susceptible to biasing information and treated their students in an equal manner. The teachers identified in the current research whose expectations were very stable and flexible could be somewhat linked to the teacher typology of high-bias and no-bias teachers. The small number of teachers whose expectations were highly stable across different time points may share some similar traits with high-bias teachers, such as being more dogmatic and authoritarian (Babad & Inbar, 1981). On the contrary, those teachers whose expectations were flexible across time may be similar to the no-bias teachers noted by Babad (Babad et al., 1982b). Hence, it was considered that teachers with certain characteristics might be more likely to cling to their original expectations and be reluctant to make changes compared to other teachers. Therefore, it might be worthwhile for future studies to create a similar kind of teacher typology to distinguish the teachers whose expectations are highly stable from those who frequently adjust their expectations based on updated student information.

Further, it would be interesting to study the different teacher typologies to see if any patterns exist. For instance, it would be possible to compare teachers identified as high or low expectation teachers with the same group of teachers whose expectations were stable or flexible. In particular, researchers could examine whether there are variations in the stability of teacher expectations for high and low expectation teachers, and, if that is the case, whether the expectation effects are stronger among teachers whose expectations are high (or low) and stable compared with those whose expectations are high (or low) but not that stable. Such research could be useful to target those teachers who may be in need of more attention and support, which could be achieved through various types of intervention and teacher training programmes. Similarly, the typology of high and low

expectation teachers could be studied together with high- and low-differentiating teacher typology (Brattesani et al., 1984) to determine whether or not high expectation teachers are more likely to be low differentiating, or whether teachers who share both characteristics (high expectations and low differentiating) could assist student learning and achievement growth to the largest extent.

Collectively, the three empirical studies in the current research project have demonstrated the importance of teacher expectations, at both individual-student level and teacher level, for student learning and academic achievement. The findings also underlined the importance of considering individual differences between teachers when examining issues related to teacher expectation effects in future research. The findings of the current research have several theoretical contributions and practical implications which will be discussed in the following sections.

7.3. Theoretical Contributions

The current doctoral thesis has made several contributions to teacher expectation theory and to the field. Firstly, Chapter 3 presented a comprehensive published review which has covered a wide range of literature on teacher expectations and teacher expectation effects. It enabled an assessment of the current state of knowledge of teacher expectations and helped determine what was already known in this field and how extensively a topic had been researched. Moreover, it helped identify the key questions that needed further research. Thus, the review made it possible to access existing teacher expectation knowledge in a more efficient way for both researchers inside and outside the teacher expectation field.

Second, with a relatively large sample and a solid research design, the thesis, overall, has provided some important evidence for teacher expectation effects in the underresearched Chinese junior high school context. It has provided evidence for the

existence of high and low expectation teachers in this new context and illustrated the differences in the instructional practices and classroom interaction behaviours between high and low expectation teachers.

Third, the current study is among the very first studies to have integrated the tradition of researching individual-level teacher expectations and class-level and teacher-centred teacher expectations. It has enabled a better understanding of these two different types of teacher expectations and student academic achievement. The results indicated a lack of teacher-level expectation effects when individual student-level teacher expectations were included in the same model. Yet, to further develop the theoretical model which explains the complex interplay of the two types of expectation effects, more studies will be needed. Questions need to be answered, including, for example, how these two types of expectations interact with each other? Are they transmitted to students and perceived by students in the same or different ways, separately or combined? What would happen when a low expectation teacher has particularly high expectations for a student and vice versa?

Fourth, the first study (Chapter 4) was the first large-scale teacher expectation study that has taken a special group of people, children of migrant workers, into consideration. The results demonstrated that teachers indeed held lower expectations for this potentially vulnerable group of students. Given that migrant workers' families generally have lower SES compared with their counterparts (Guo, 2001), the results supported previous research findings on the associations between teacher expectations and student SES (Fitzpatrick et al., 2016; Timmermans et al., 2016; Tobisch & Dresel, 2017). This finding should also pique attention in the possible stereotypes and prejudice that may exist in Chinese classrooms, especially in those schools in big cities where millions of children of migrant workers study together with local students.

Lastly, this thesis was among the first attempts, and was the first study within the Chinese context, to examine the stability of teacher expectations using a longitudinal study. Moreover, it has initiated the perspective of looking at the stability and trajectories of teacher expectations for students with different achievement levels. This initiation has enabled some meaningful findings to be discovered. Teachers were found to become more biased towards high- and low-achieving students across a school year. Such findings have important implications for educational equality and should make us reflect on the role that teachers may have played in maintaining or even exaggerating the existing achievement gap between students.

7.4. Practical Implications

The implications of the studies have already been discussed in each study. In this section, I will discuss the implications and reflections in light of the entire research project, including implications regarding collaboration among researchers, teachers, and policy makers.

7.4.1. For Preservice Teachers and Teacher Education Programmes

The findings from all three empirical studies in this doctoral project indicated the necessity for teacher education programmes in colleges and universities to introduce relevant courses or content on teachers' beliefs and expectation effects. Teacher expectations and associated effects are not only lacking from teacher education in China; they are also rarely included in teacher training programmes worldwide (Rubie-Davies et al., 2018). Including such content would create awareness among preservice teachers about how their own beliefs and expectations could influence their teaching practices and, ultimately, their students' learning experiences and outcomes.

7.4.2. For In-Service Teachers

Given the important role that teacher expectations can play in student learning, teachers should be supported to ensure that they will form positive and appropriately high expectations for all their students, and provide equitable learning opportunities and create a positive learning environment for all students. When forming their expectations, it is important for teachers to eliminate the influence of potential stereotypes and prejudice towards students—or example, in the current thesis, prejudice against boys and children from lower SES family backgrounds and students who began with lower achievement.

Furthermore, teachers should re-examine their expectations regularly and adjust their expectations based on reliable and academic-related student information. Instead of highlighting student ability and ability differences between students, teachers should reward the effort students have put in (Cooper & Tom, 1984) and evaluate students based on their own improvement rather than comparing students with each other.

In addition, teachers should keep a growth mindset about student ability and use high-expectation principles in their teaching. A possible way to help teachers become more aware of their teaching behaviours and the ways that they interact with their students could be through encouraging teachers to video themselves teaching their own classes. Specifically, teachers could be provided with support to make more use of the behaviours that transmit high teacher expectations (Rubie-Davies, 2007; S. Wang et al., 2019), which could better support student learning, and avoid behaviours and attitudes expressing low teacher expectations. To achieve this purpose, support could be provided to teachers, which may include teacher professional development programmes or teacher interventions (see de Boer et al., 2018 for details on the intervention studies) that aim at raising teacher expectations as well as promoting equitable treatment in the classrooms.

7.4.3. Collaboration Between Stakeholders

To drive change and improvement in education, collaborations are needed between teachers, researchers, schools, and policy makers. This requires the various stakeholders to work together to explore the best way of putting the research findings of the current study into practice and to maximise the value of the research work. Yet, in China, teacher–researcher collaborations are currently very limited (Q. Wang, Zhang, & Lin, 2010). Teachers (who are based in primary and secondary schools) and educational researchers (who are normally based in universities) work independently from each other, and communication and collaboration between the two are rare. Hence, research results tend to be limited to academia and shared only among researchers. As a result, educational research findings are not routinely finding their ways into the classroom to support changes in practices and benefit education. At the same time, teachers' innovative ideas and practices, as well as their challenges and obstacles, are not identified and recognised by researchers and the education system (Q. Wang et al., 2010).

Therefore, initiatives are needed to bridge the existing gap between educational research and practice and promote collaborations between stakeholders. Teachers, as practitioners, could take on the role of discovering problems that emerge directly from classroom teaching and learning. They could then work with researchers collaboratively around the problems to find effective solutions, which could then be used to inform policy and to make improvements in the education system (Xing, Chen, & Miao, 2011). In such a collaboration paradigm, teachers, especially low expectation teachers, can be empowered to improve their practice through engaging and learning from teacher expectation research, and teacher expectation researchers can get their research findings disseminated and used by practitioners to promote positive changes in education.

7.5. Limitations and Future Research Directions

The limitations of the individual studies have been discussed in the preceding chapters. The following section will address the limitations of the research project as a whole. This will be followed by a few suggestions for possible future research directions.

There are three main limitations of the present research project. First, all three empirical studies in the project were quantitative studies. Future qualitative studies would be needed to triangulate the current quantitative findings to gain a more comprehensive understanding of the ways that teacher expectations function. Qualitative data would be especially valuable in understanding the reasoning behind the quantitative results. For instance, teacher interviews could be conducted to find out why teachers choose to use or not to use certain behaviours in their classrooms. In addition, teacher interviews or focus groups may also provide insights into the reasons behind teachers changing or keeping their expectations and the basis of the changes. Moreover, students' perceptions of their teachers' expectations for them and their interpretations of differential teacher behaviours could be studied through conducting student interviews or focus groups. Second, the studies only focussed on the academic expectations of teachers and only looked at how teacher expectations influenced student academic achievement. Teachers may hold other types of expectations for students such as expectations for student behaviour, interpersonal relationships, social and mental development, and physical development. In China, when it comes to education, academic achievement is still seen as the most important aspect for students. However, teachers nowadays are starting to pay more attention to students' well-being and overall development (Shi & Liu, 2007; Yu, 2001). Therefore, future studies could explore teachers' non-academic expectations for their students and their possible relations with students' personal development. Lastly, due to the time limit of a PhD project, the current research was not able to track teacher and student data for more than a

school year. Studies that cover multiple school years with more data points will be able to show a clearer picture of the trajectories of teacher expectations and the reciprocal relationships between teacher expectations and student achievement. In addition to the potential future research topics that are directly related to the limitations of the current project, reflecting on the entire project has also led to some other important directions for future teacher expectation research.

7.5.1. Conceptualisation and Operationalisation of the Teacher Expectation Construct

In the process of reviewing the teacher expectation literature, it was found that the concept of teacher expectations has been defined differently, and also measured as a variable in quite different ways. For instance, in some studies, teacher expectations have been defined as teacher judgement of student *current* ability or achievement levels (e.g., Kaiser et al., 2013; Tobisch & Dresel, 2017), whereas, in other studies, they have been defined as teacher estimation of student *future* performance (e.g., Doyle, 2014; Peterson et al., 2016). Further, in some studies, teachers' expectations were measured by teacher judgement of student intellectual ability (e.g., Glock & Krolak-Schwerdt, 2014), whereas other studies measured teacher expectations using teachers' estimations of students' general academic achievement (e.g., Doyle, 2014; Mizala et al., 2015). These disparities were critiqued by Hoge (1984) in the 1980s, but the issue has yet to be resolved, and the differences have continued to exist in recent decades. Therefore, future studies will be needed to systematically and critically review how the teacher expectation concept has been conceptualised and measured in the previous studies. The field needs to come to an agreement in relation to the definition and measurement of the teacher expectation construct.

7.5.2. Student and Teacher Characteristics as Moderators of Teacher Expectation Effects

Research (Jussim et al., 1996; McKown & Weinstein, 2002) has shown that not all teachers exert the same level of expectation effects on their students, and not all students are influenced by teachers' expectations to the same extent. Negative teacher expectation effects have been found to be stronger among teachers who are easily biased and who differentiate between high and low achievers to a greater degree (Babad, 2009; Weinstein, 2002). Student demographic characteristics have also been indicated as moderators of the levels of expectation effects. Vulnerable groups have been found to be more likely to suffer from the Golem effects of low teacher expectations (Hinnant et al., 2009; McKown & Weinstein, 2002).

Though we already have some knowledge about factors that may exaggerate the negative-expectation effects (e.g., easily biased teachers, stigmatised groups of students), it would be beneficial to explore possible teacher and student characteristics that could alleviate negative teacher expectation effects. Questions could be asked, for example, about what kind of teachers are able to hold relatively high expectations and do not easily lose confidence in their low-achieving students. In addition, it would be worthwhile to find out if certain student beliefs or attitudes could help them to buffer low teacher expectations, and whether there are any other factors such as family background, parents' expectations, peer relationships, and support that may play a role in this situation. Answers to these questions could provide insights into potential future interventions to better support teachers and students.

7.5.3. Intervention Studies

For the past few decades, a large body of research evidence has shown the importance of teacher expectations for student learning. However, very little work has

been done in terms of using interventions to raise teacher expectations and to prevent the detrimental effects of low or negatively biased teacher expectations. In a review article of teacher expectation intervention studies, de Boer et al. (2018) identified only 19 intervention studies in the field, of which only one was a randomised control trial and most were unpublished dissertations and theses. Nonetheless, the narrative review and meta-analysis of their study indicated that the teacher expectation interventions that had been conducted had had promising effects on both teachers and students. Therefore, more teacher expectation intervention studies are needed in the future to raise teachers' awareness of teacher expectation effects and to eliminate potential stereotypes and bias towards traditionally marginalised student groups. It would be worthwhile to make use of previous teacher expectation intervention studies to design and implement interventions that fit within various social and educational contexts.

7.5.4. Teacher Expectations for Marginalised and Vulnerable Groups in China

In Chapter 4, a special group of people in China—migrant workers—were introduced. When this group of adult farmers leave the countryside and seek employment and better salaries in big cities, they either bring their children with them or leave the children with their grandparents in the countryside. The former group of children are known as *children of migrant workers*, and the latter are called *left-behind children* (X. Fan, 2005). In this thesis, teachers' expectations for children of migrant workers were examined, and it was found that teachers had lower expectations for those students compared to their peers who came from urban families. This finding was in line with previous research showing that teachers' expectations could be biased for stigmatised and vulnerable student groups (S. Wang et al., 2018). Hence, more studies in China in the future should pay attention to vulnerable groups of students, which may include but not be limited to, ethnic minority students, children of migrant workers, left-behind children, and

students with special education needs, to identify their struggles and to understand their learning needs, with the ultimate aim to help promote education equality in China.

7.6. Concluding Thoughts

Being a large but not strong country for education, China has put effort into pursuing educational quality and promoting educational equality (China Education Reform and Development Research Group for 30 Years of Reform and Opening, 2018; D. Li, 2008). From 1986 onwards, China has included 9-year compulsory education as one of its basic state policies. GaoKao, which is the university entrance examination in China, is also believed to be a rigorous and relatively fair assessment for all students. However, China still remains one of the countries that has a large achievement gap, and there are considerable educational inequalities in terms of financial investment, school conditions, and teacher resources (Y. Zhu & Zhou, 2006).

In a big country with a huge student population, changing education policies can be a time-consuming process that requires ongoing effort. Yet, there are also other paths which could lead to equal and quality education, and we could use the teacher expectation knowledge to inform and empower our teachers. This doctoral project has shown important links between what teachers believe and expect, how they teach, and what students eventually achieve. This has suggested the significant role that a teacher can play in a student's future-life development. Thus, teachers have the ability and responsibility to make positive changes in every student's life. Teachers should provide their students with better learning support by using more effective instructional strategies, by improving the ways they interact with students, by eliminating potential stereotypes and prejudices towards marginalised and vulnerable student groups, and by forming appropriately high expectations and positive attitudes towards ALL students.

I would like to end this chapter with a relevant sentence from the *Analects of Confucius* from 2000 years ago and hope it will give some inspiration to our educators today.

Confucius said:

With education there is no distinction between classes or races of men.

子曰："有教无类"。

REFERENCES

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

Alvidrez, J., & Weinstein, R. S. (1999). Early teacher perceptions and later student
academic achievement. *Journal of Educational Psychology*, *91*, 731–746.
doi:10.1037//0022-0663.91.4.731

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

Andersen, I. G. (2018). Pygmalion in instruction? Tracking, teacher reward structures, and
educational inequality. *Social Psychology of Education*, *21*, 1021–1044.
doi:10.1007/s11218-018-9452-z

Ang, R. P., & Huan, V. S. (2006). Academic expectations stress inventory: Development,
factor analysis, reliability, and validity. *Educational and Psychological
Measurement*, *66*, 522–539. doi:10.1177/0013164405282461

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

Auwarter, A., & Aruguete, M. (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. (1979). Personality correlates of susceptibility to biasing information. *Journal of
Personality and Social Psychology*, *37*, 195–202. doi:10.1037/0022-3514.37.2.195

Babad, E. (1990a). Calling on students: How a teacher's behaviour can acquire disparate meanings in students' minds. *The Journal of Classroom Interaction*, *25*, 1–4.

Babad, E. (1990b). Measuring and changing teachers' differential behaviour as perceived by students and teachers. *Journal of Educational Psychology*, *82*, 683–690. doi:10.1037/0022-0663.82.4.683

Babad, E. (1993a). Pygmalion – 25 years after interpersonal expectations in the classroom. In P. D. Blank (Ed.), *Interpersonal expectations: Theory, research and applications* (pp. 125–153). Cambridge, England: Cambridge University Press. doi:10.1017/cbo9780511527708.007

Babad, E. (1993b). Teachers' differential behaviour. *Educational Psychology Review*, *5*, 347–376. doi:10.1007/bf01320223

Babad, E. (1998). Preferential affect: The crux of the teacher expectancy issue. In J. Brophy (Ed.), *Advances in research on teaching: Expectations in the classroom* (pp. 183–214). Greenwich, CT: JAI Press.

Babad, E. (2009). *The social psychology of the classroom*. New York, NY: Routledge. doi:10.4324/9780203872475

Babad, E., Bernieri, F., & Rosenthal, R. (1989a). Nonverbal communication and leakage in the behaviour 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 behaviour. *American Educational Research Journal*, *28*, 211–234. doi:10.3102/00028312028001211

Babad, E., Inbar, J., & Rosenthal, R. (1982). Pygmalion, Galatea, and the Golem: Investigations of biased and unbiased teachers. *Journal of Educational Psychology*, *74*, 459–474. doi:10.1037//0022-0663.74.4.459

Babad, E., & Taylor, P. (1992). Transparency of teacher expectancies across language, cultural boundaries. *Journal of Educational Research*, *86*, 120–125. doi:10.1080/00220671.1992.9941148

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

Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society*, *57*, 289–300. doi:10.1111/j.2517-6161.1995.tb02031.x

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

Biggs, J. B. (1996). Western misconceptions of the Confucian-heritage learning culture. In D. A. Watkins & J. B. Biggs (Eds.), *The Chinese learner: Cultural, psychological and contextual influences* (pp. 45–67). Hong Kong: CERC and ACER.

Bliese, P. D. (2000). Within-group agreement, non-independence, and reliability: Implications for data aggregation and analysis. In K. J. Klein, & S. W. Kozlowski

(Eds.), *Multi-level theory, research and methods in organizations: Foundations, extensions, and new directions* (pp. 349–381). San Francisco, CA: Jossey-Bass.

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

Brattesani, K. A., Weinstein, R. S., & Marshall, H. H. (1984). Student perceptions of differential teacher treatment as moderators of teacher expectation effects. *Journal of Educational Psychology*, *76*, 236–247. doi:10.1037/0022-0663.76.2.236

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. (1985). Teacher-student interaction. In J. B. Dusek, V. C. Hall, & W. J. Meyer (Eds.), *Teacher Expectancies* (pp. 303–328). Hillsdale, NJ: Erlbaum.

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

Brophy, J., & Good, T. L. (1974). *Teacher–student relationships: Causes and consequences*. New York, NY: Holt, Rinehart and Winston.

Browne, W. J. (2017). *MCMC estimation in MLwiN v3.00*. Bristol, England: Centre for Multilevel Modelling, University of Bristol.

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

Canfield, A. A. (1951). The "sten" scale—A modified C-scale. *Educational and Psychological Measurement*, *11*, 295–297. doi:10.1177/001316445101100213

Carter, D. L. (1970). The effect of teacher expectations on the self-esteem and academic performance of seventh grade students. *Dissertation Abstracts International* (University Microfilms No. 71-7612), *31*(09), 4539A.

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

Charlton, C., Rasbash, J., Browne, W.J., Healy, M., & Cameron, B. (2017). MLwiN (Version 3.00). Bristol, England: Centre for Multilevel Modelling, University of Bristol.

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

China Education Reform and Development Research Group for 30 Years of Reform and Opening. (2008). *The rising of a country through education: 1978–2008*. Beijing, China: Education Science Press.

Chu, S. K., Reynolds, R. B., Tavares, N. J., Notari, M., & Lee, C. W. (2017). *21st development through inquiry-based learning: From theory to practice*. Singapore: Springer. doi:10.1007/978-981-10-2481-8

Cooper, H. M. (1979). Pygmalion grows up: A model for teacher expectation communication and performance influence. *Review of Educational Research*, *49*, 389–410. doi:10.2307/1170137

Cooper, H. M. (1985). Models of teacher expectation communication. In J. B. Dusek (Ed.), *Teacher expectancies* (pp. 135–158). Hillsdale, NJ: Erlbaum.

Cooper, H. M., & Good, T. L. (1983). *Pygmalion grows up: Studies in the expectation communication process*. New York, NY: Longman.

Cooper, H. M., & Tom, D. Y. (1984). Teacher expectation research: A review with implications for classroom instruction. *The Elementary School Journal*, *85*, 77–89. doi:10.1086/461393

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 Behavioural 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

Darley, J. M., & Fazio, R. H. (1980). Expectancy confirmation processes arising in the

    social interaction sequence. *American Psychologist*, *35*, 867–881.

    doi:10.1037//0003-066x.35.10.867

de Boer, H., Bosker, R. J., & van der Werf, M. P. (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., Timmermans, A. C., & van der Werf, M. P. (2018). The effects of teacher

    expectation interventions on teachers' expectations and student achievement:

    Narrative review and meta-analysis. *Educational Research and Evaluation*, *24*,

    180–200. doi: 10.1080/13803611.2018.1550834

de Koning, E., & Boekaerts, M. (2005). Determinants of students' school-identification in

    secondary vocational education. *European Journal of Psychology of Education*, *20*,

    289–308. doi:10.1007/bf03173558

Delpit, L. D. (2006). *Other people's children: Cultural conflict in the classroom*. New

    York, NY: The New Press.

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

Ding, H., & Tu, G. (2014). Jiaoshi qiwang dui xuesheng ziwo gainian xingcheng de

    shizheng yanjiu [An empirical study on the effects of teacher expectation on

    student self-concept]. *Hunan shifan daxue jiaoyu kexue xuebao*, *13*, 80–84.

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

Drew, C. J., Hardman, M. L., & Hosp, J. L. (2008). *Designing and conducting research in education*. London, England: Sage.

Du, A. (2016). Xuesheng zhijue dao de wuli jiaoshi qiwang yu qi xuexi chengji de guanxi yanjiu [A study on the relations between physics teachers' expectations and students' academic performance]. *Zhongxue wuli jiaoxue cankao*, *45*, 2–6.

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

Dweck, C. (2006). *Mindset: The new psychology of success*. New York, NY: Random House.

Dweck, C., & Elliott, E. (1983). Achievement motivation. In P. Mussen & E. Hetherington (Eds.), *Handbook of child psychology*, IV: Socialization, personality, and social development (4th ed., pp. 643–691). New York, NY: Wiley.

Eccles, J., & Wigfield, A. (1985). Teacher expectations and student motivation. In J. B. Dusek (Ed.), *Teacher expectancies* (pp. 185-228). Hillsdale, NJ: Erlbaum.

Elashoff, J. D., & Snow, R. E. (1971). *Pygmalion reconsidered.* Worthington, OH: Jones. doi:10.1177/002248717202300337

Elder, L., & Paul, R. (1998). The role of Socratic questioning in thinking, teaching, and learning. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, *71*, 297–301. doi:10.1080/00098659809602729

Ennis, C. D. (1995). Teachers' responses to noncompliant students: The realities and consequences of a negotiated curriculum. *Teaching and Teacher Education*, *11*, 445–460. doi:10.1016/0742-051x(95)00010-h

Fan, L. (2006). Guowai jiaoshi chabie xingwei de yanjiu xianzhuang yu zhanwang [Current status and prospects of research on teachers' differential behaviours in foreign countries]. *Hebei shuili shuidian xueyuan xuebao (Sheke ban)*, *22*, 49–52.

Fan, L., & Jin, S. (2008). Jiaoshi qiwang dui chuzhongsheng xinli tedian de yingxiang [Influences of teacher expectations on the psychological characteristics of junior middle school students]. *Xinli fazhan yu jiaoyu*, *24*, 48–52.

Fan, X. (2005). Nongcun "liushou ertong" jiaoyu mianlin de wenti ji duice [Problems and countermeasures of "left-behind children" education in rural areas]. *Guojia jiaoyu xingzheng xueyuan xuebao*, *7*, 78–84.

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

Fielder, W. R., Cohen, R. D., & Feeney, S. (1971). An attempt to replicate the teacher expectancy effect. *Psychological Reports*, *29*, 1223–1228. doi:10.2466/pr0.1971.29.3f.1223

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. doi:10.1086/687753

Flanagan, J. C. (1960). *Tests of general ability: Preliminary technical report*. Chicago, IL: Science Research Associates.

Fowler, L. T., Banks, T. I., Anhalt, K., Der, H. H., & Kalis, T. (2008). The association between externalizing behaviour 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' math achievement. *Contemporary Educational Psychology*, *41*, 1–12. doi:10.1016/j.cedpsych.2014.10.006

Gan, L. (1993). Chuzhong jiaoyu de jichu diwei he gaige silu [The basic position of junior high school education and its reform thinking]. *Jiaoyu pinglun*, *6*, 66–67.

Gao, J. (2013). *Jiaoshi qiwang yu chuzhongsheng yingyu chengji zhi guanxi tanjiu* [An exploration into the relations between teachers' expectation and students' English achievements in junior middle schools] (Master's thesis, Shandong Normal University, Jinan, China). Retrieved from http://oversea.cnki.net/kcms/detail/detail.aspx?recid=&FileName=1013215861.nh &DbName=CMFD2013&DbCode=CMFD

Gao, L., Zhang, Y., & Zheng, H. (2014). Chuzhongsheng ziwo gainian, shisheng guanxi, jiaoshi qiwang yu xueye chengji de guanxi [Relations between junior high school students' self-concept, teacher-student relationship, teacher expectations and student academic achievement]. *Chuzhou xueyuan xuebao*, *16*, 67–69.

Ge, S. (2017). Jincheng wugong zinü de xuexiao jiaoyu wenti ji duice yanjiu [A study on school education of migrant children and countermeasures]. *Sheke xuelun*, *29*, 159–161. doi:10.16400/j.cnki.kjdkz.2017.10.075

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, J. (2002). *Bayesian methods: A social and behavioural sciences approach*. Boca Raton, FL: Chapman and Hall. doi:10.1201/9781420057478

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. (2013). Does nationality matter? The impact of

    stereotypical expectations on student teachers' judgments. *Social Psychology of*

    Education, *16*, 111–127. doi:10.1007/s11218-012-9197-z

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

Good, T. L. (1987). Two decades of research on teacher expectations: Findings and future

    directions. *Journal of Teacher Education*, *38*(4), 32–47.

    doi:10.1177/002248718703800406

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

    Longman.

Good, T. L., Sterzinger, N., & Lavigne, A. (2018). Expectation effects: Pygmalion and the

    initial 20 years of research. *Educational Research and Evaluation*, *24*, 99–123.

    doi:10.1080/13803611.2018.1548817

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

Guo, C. (2001). Chengshi zhong "nongmingong" zinü shou jiaoyu bu gongping

    xianzhuang toushi [A perspective of the unfair status of children of "migrant

    workers" in cities]. *Xue hai*, *5*, 180–184. doi:10.16091/j.cnki.cn32-

    1308/c.2001.05.040

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

Harris, M. J., & Rosenthal, R. (1985). Mediation of interpersonal expectancy effects: 31 meta-analyses. *Psychological Bulletin*, *97*, 363–386. doi:10.1037//0033-2909.97.3.363

Hattie, J. A. (2005, August). *What is the nature of evidence that makes a difference to learning?* Keynote presentation to "Using Data to Support Learning" ACER Annual Conference, Melbourne, Australia.

Hattie, J. A. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. London, England: Routledge. doi:10.4324/9780203887332

Heffernan, T., Morrison, M., Basu, P., & Sweeney, A. (2010). Cultural differences, learning styles and transnational education. *Journal of Higher Education Policy and Management*, *32*, 27–39. doi:10.1080/13600800903440535

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. (1984). The definition and measurement of teacher expectations: Problems and prospects. *Canadian Journal of Education*, *9*, 213. doi:10.2307/1494604

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. (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

Huang, Z., Li, Y., & Wan, R. (2010). "Qu neijuanhua": ronghe jiaoyu de guanjian—

    Jincheng wugong renyuan zinü ronghe jiaoyu de xianzhuang yu duice ["De-

    involution": Key to the confluent education of migrant workers' children in the

    city]. *Jiaoyu yanjiu*, *11*, 18–24.

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

Jia, Z. (2012). *Jiaoshi qiwang dui zhongxue yingyu ketang shisheng hudong de yingxiang*

    [The influence of teacher's expectation on teacher-student interaction in junior

    English classroom] (Master's thesis, Shanxi Normal University, Linfen, China).

    Retrieved from http://oversea.cnki.net/kcms/detail/detail.aspx

    ?recid=&FileName=1012340677.nh&DbName=CMFD2012&DbCode=CMFD

Jussim, L. (1986). Self-fulfilling prophecies: A theoretical and integrative review.

    Psychological Review, *93*, 429–445. doi:10.1037//0033-295x.93.4.429

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. *Advances in Experimental Social Psychology*, *28*, 281–388.

    doi:10.1016/S0065-2601(08)60240-3

Jussim, L., & Harber, K. D. (2005). Teacher expectations and self-fulfilling prophecies: Knowns and unknowns, resolved and unresolved controversies. *Personality and Social Psychology Review*, *9*, 131–155. doi:10.1207/s15327957pspr0902_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

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

Kim, H.-Y. (2013). Statistical notes for clinical researchers: Assessing normal distribution (2) using skewness and kurtosis. *Restorative Dentistry & Endodontics*, *38*, 52–54. doi:10.5395/rde.2013.38.1.52

Kline, T. (2005). *Psychological testing: A practical approach to design and evaluation*. Thousand Oaks, CA: Sage. doi:10.4135/9781483385693

Kuklinski, M. R., & Weinstein, R. S. (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

Kwan, C. Y. (2000). What is problem-based learning (PBL)?. *CDTL Brief*, *3*(3), 1–2.

Lazarides, R., & Watt, H. M. (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, D. (2008). Gaige kaifang sanshi nian jiaoyu fazhan de hongwei huajuan [The magnificent picture of education development during the thirty years of economic reform and opening up.] *Jiaoyu yanjiu*, *12*, 99–101.

Li, G. (2009). Jincheng wugong renyuan zinü jiaoyu wenti yanjiu—Cong quanna jiaoyu de shijiao [Research on the education for the children of migrant workers: From an inclusive education perspective.] *Zhongguo jiaoyu xuekan*, *4*, 26–28.

Li, J. (2016). *Jiaoshi qiwang yu xiaoxue gaonianji gongjixing xingwei de guanxi yanjiu* [A study on the relations between teachers' expectation and students' aggressive behaviour in primary school] (Master's thesis, Henan University, Kaifeng, China). Retrieved from

http://oversea.cnki.net/kcms/detail/detail.aspx?recid=&FileName=1016201753.nh
&DbName=CMFD2017&DbCode=CMFD

Li, Y. (2011). *Jiaoshi qiwang dui xuesheng yingyu xueye chengbai guiyin de yingxiang—Yixiang jiyu chuzhongsheng de yanjiu* [*The effects of teachers' expectations on students' attributions for English achievement: A study based on junior middle school students*] (Master's thesis, Shenyang Normal University, Shenyang, China). Retrieved from
http://oversea.cnki.net/kcms/detail/detail.aspx?recid=&FileName=1011084157.nh
&DbName=CMFD2011&DbCode=CMFD

Li, Z. (2014). *Teachers matter: Expectation effects in foreign language classrooms at university* (Doctoral dissertation, University of Auckland, Auckland, New Zealand). Retrieved from https://researchspace.auckland.ac.nz/handle/2292/23050

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

Liang, H. (2014). Chuzhongsheng zhijue dao de shuxue jiaoshi qiwang dui shuxue ziwo gainian de yingxiang [The influence of junior high school students' perceived mathematics teacher expectation on students' mathematics self-concept]. *Jiaoyu celiang yu pingjia: Lilun ban*, *9*, 47–51. doi:10.16518/j.cnki.emae.2014.09.008

Liao, W., Deng, F., Qian, Y., Zhou, X., & Wu, G. (2011). Chusan xuesheng zhijue dao de jiaoshi qiwang ji qi huaxue xueye chengji de guanxi [Year 9 students' perception of teacher expectations and its relations with student chemistry achievement]. *Huaxue jiaoyu*, *32*, 39–40.

Ling, H., Lu, A., Feng, Y., & Li, H. (2014). Jiaoshi qiwang, ziwo xiaonenggan yu chengji: jiyu xiaoxue yuwen xuexi de yanjiu [Teacher expectations, student self-efficacy

and achievement: A study based on primary Chinese education]. *Hubei hanshou daxue xuebao*, *27*, 115–116.

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

Liu, Y. (2017). Chuzhongsheng ganzhi dao de jiaoshi qiwang yu yingyu xuexi chengjiu dongji de guanxi yanjiu [Research on the relationship between junior high school students' perceived teacher expectations and English academic motivation]. *Haiwai yingyu*, *10*, 12–15.

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

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. doi:10.1017/s113874160000442x

Martinek, T. J. (1980). Stability of teacher expectations for elementary school aged children. *Perceptual and Motor Skills*, *51*, 1269–1270. doi:10.2466/pms.1980.51.3f.1269

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

Maxwell, M. L. (1971). *A study of the effects of teachers expectations on the IQ and academic performance of children* (Unpublished doctoral dissertation, Case

Western Reserve, 1970). Dissertation Abstracts International, 31, 3345-A. (University Microfilms No. 7101725)

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, England: Author. Retrieved from http://www.mendeley.com.

Merton, R. K. (1948). The self-fulfilling prophecy. *The Antioch Review*, *8*, 193–210. doi:10.2307/4609267

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

Mitman, A. L., & Snow, R. E. (1985). Logical and methodological problems in teacher expectancy research. *Teacher Expectancies*, *1985*, 93–131.

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

    followup. *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.

Murdock, T. B. (1999). The social context of risk: Status and motivational predictors of

    alienation in middle school. *Journal of Educational Psychology*, *91*, 62–75.

    doi:10.1037//0022-0663.91.1.62

National Bureau of Statistics of People' Republic of China. (2019). *2018 nian*

    nongmingong jiance diaocha baogao [2018 migrant workers monitoring survey

    report]. Retrieved from

    http://www.stats.gov.cn/tjsj/zxfb/201904/t20190429_1662268.html

Office for the Population Census of Hebei Province. (2012). *Hebeisheng 2010 nian renkou*

    pucha ziliao [Tabulation on the 2010 population census of Hebei Province].

    Beijing, China: China Statistics Press.

Ouyang, D. (2005). *Jiaoshi qiwang, xueye ziwo gainian, xuesheng ganzhi jiaoshi zhichi*

    xingwei yu xueye chengji zhijian de guanxi yanjiu [A research on the relations

    among teachers' expectation, self- conception of students' academic achievement,

    students' perception of teacher's behavioural supporting and the Study

    Achievement] (Master's thesis, Guangxi Normal University, Guilin, China).

    Retrieved from

    http://oversea.cnki.net/kcms/detail/detail.aspx?recid=&FileName=2005142929.nh

    &DbName=CMFD2005&DbCode=CMFD

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 behaviour 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

Pellegrini, R. J., & Hicks, R. A. (1972). Prophecy effects and tutorial instruction for the disadvantaged child. *American Educational Research Journal*, *9*, 413–419. doi:10.3102/00028312009003413

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. M., 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

Pi, W. (2013). Yingyu jiaoshi qiwang dui xuesheng yingyu xuexi chengji de yingxiang jizhi yanjiu—Jiyu yingyu xuexi ziwo xiaonenggan de zhongjie xiaoying fenxi [The mechanism of the effects of teacher's expectations on university students' English learning performance: A research based on English learning self-efficacy]. *Zhejiang waiguoyu xueyuan xuebao*, *6*, 37–45.

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

Ramos, M. C. (2018). Correlation between entrance exam scores (Stanine) and academic

    performance. In *Proceedings of the 2018 2nd International Conference on

    Algorithms, Computing and Systems* (pp. 110–114). doi:10.1145/3242840.3242866

Raudenbush, S. W. (1984). Magnitude of teacher expectancy effects on pupil IQ as a

    function of the credibility of expectancy induction: A synthesis of findings from 18

    experiments. *Journal of Educational Psychology*, *76*, 85–97. doi:10.1037/0022-

    0663.76.1.85

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. Retrieved from http://ajer.synergiesprairies.ca/ajer/index.php/ajer/article/viewArticle/651

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

Rosenthal, R. (1966). *Experimenter effects in behavioural research* (Enlarged ed.). Oxford, England: Irvington.

Rosenthal, R. (1974). On the social psychology of the self-fulfilling prophecy: Further evidence for Pygmalion effect and their mediating mechanisms. *MSS Modular Publications*, *53*, 1–28.

Rosenthal, R. (1991). Teacher expectancy effects: A brief update 25 years after the Pygmalion experiment. *Journal of Research in Education*, *1*, 3–12.

Rosenthal, R. (1994). Interpersonal expectancy effects: A 30-year perspective. *Current Directions in Psychological Science*, *3*, 176–179. doi:10.1111/1467-8721.ep10770698

Rosenthal, R., & Fode, K. L. (1963). The effect of experimenter bias on the performance of the albino rat. *Behavioural Science*, *8*, 183–189. doi:10.1002/bs.3830080302

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

Rubie-Davies, C. M. (2006). Teacher expectations and student self-perceptions: Exploring relationships. *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-expectation teachers. *British Journal of Educational Psychology*, *77*, 289–306. doi:10.1348/000709906X101601

Rubie, C. M. (2008a). *Expecting success: Teacher beliefs and practices that enhance student outcomes*. Saarbrücken, Germany: VDM Verlag Dr. Müller.

Rubie-Davies, C. M. (2008b). Teacher beliefs and expectations: Relationships with student learning. In C. M. Rubie-Davies & C. Rawlinson (Eds.), *Challenging thinking about teaching and learning* (pp. 25–39). New York, NY: Nova Science.

Rubie-Davies, C. M. (2015). *Becoming a high expectation teacher: Raising the bar*. London, England: Routledge. doi:10.4324/9781315761251

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

Rubie-Davies, C. M., Hattie, J. A., Townsend, M. A., & Hamilton, R. J. (2007). Aiming high: Teachers and their students. In V. N. Galwye (Ed.), *Progress in educational psychology research* (pp. 65–91). New York, NY: Nova Science.

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 intervention: 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., Watson, P. W., Flint, A., Garrett, L., & McDonald, L. (2018).

 Viewing students consistently: How stable are teachers' expectations? *Educational*

 Research and Evaluation, *24*, 221–240. doi:10.1080/13803611.2018.1550836

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 composition on academic achievement in high school. *Teachers College*

 Record, *107*, 1999–2045. doi:10.1111/j.1467-9620.2005.00583.x

Saracho, O. (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

 expectations, 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 Counselling*, *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

Shi, N., & Liu, H. (2007). Suzhi jiaoyu de genben mudi yu shishi lujing [The fundamental

    purpose and implementation path of essential-qualities-oriented education]. *Jiaoyu*

    yanjiu, *8*, 10–15.

Sneyers, E., Vanhoof, J., & Mahieu, P. (2018). Primary teachers' perceptions that impact

    upon track recommendations regarding pupils' enrolment in secondary education:

    A path analysis. *Social Psychology of Education*, *21*, 1153–1173.

    doi:10.1007/s11218-018-9458-6

Snow, R. E. (1969). Unfinished Pygmalion. [Review of the book *Pygmalion in the*

    Classroom: *Teacher Expectation and Pupils' Intellectual Development*. R.

    Rosenthal & L. Jacobson]. *Contemporary Psychology*, *14*, 197–199.

    doi:10.1037/0010293

Soland, J. (2013). Predicting high school graduation and college enrolment: 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

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 performance in kindergarten: A moderated mediation analysis.

    PLoS ONE, *7*(4), 1–8. doi:10.1371/journal.pone.0034502

Spitz, H. H. (1999). Beleaguered Pygmalion: A history of the controversy over claims that

    teacher expectancy raises intelligence. *Intelligence, 27*, 199–234.

    doi:10.1016/s0160-2896(99)00026-4

Sutherland, A., & Goldschmid, M. L. (1974). Negative teacher expectation and IQ change in children with superior intellectual potential. *Child Development*, *45*, 852–856. doi:10.2307/1127861

Swift, J. N., & Gooding, C. T. (1983). Interaction of wait time feedback and questioning instruction on middle school science teaching. *Journal of Research in Science Teaching*, *20*, 721–730. doi:10.1002/tea.3660200803

Tan, J. B., & Yates, S. (2011). Academic expectations as sources of stress in Asian students. *Social Psychology of Education*, *14*, 389–407. doi:10.1007/s11218-010-9146-7

Thomas, J. [James], & Harden, A. (2008). Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Medical Research Methodology*, *8*, 1–10. doi:10.1186/1471-2288-8-45

Thomas, J. [Julie] 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

Thorndike, R. L. (1968). Review of the book *Pygmalion in the Classroom*. *American Educational Research Journal*, *5*, 708–711.

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

Tian, Q. (2016). *Jiaoshi qiwang dui xuesheng ketang xuexi xingwei yingxiang de anli yanjiu* [The case study on influence of teacher expectations towards students' learning behaviour in classroom] (Master's thesis, Northwest Normal University, Chongqing, China). Retrieved from

http://oversea.cnki.net/kcms/detail/detail.aspx?recid=&FileName=1016238627.nh
&DbName=CMFD2017&DbCode=CMFD

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

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

Timmermans, A. C., de Boer, H., & van der Werf, M. P. (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

Timmermans, A. C., Rubie-Davies, C. M., & Rjosk, C. (2018). Pygmalion's 50th
anniversary: The state of the art in teacher expectation research. *Educational
Research and Evaluation*, *24*, 91–98. doi:10.1080/13803611.2018.1548785

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

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

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., & Boelter, C. (2008). Linking Black middle school students' perceptions of

    teachers' expectations to academic engagement and efficacy. *Negro Educational*

    Review, *59*, 27–45.

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 labelling? *Social*

    Psychology of Education, *16*, 329–352. doi:10.1007/s11218-013-9216-8

van Kesteren, M. T., Rijpkema, M., Ruiter, D. J., Morris, R. G., & Fernández, G. (2014). Building on prior knowledge: Schema-dependent encoding processes relate to academic performance. *Journal of Cognitive Neuroscience*, *26*, 2250–2261. doi:10.1162/jocn

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

Wang, S., Rubie-Davies, C. M., & Meissel, K. (2018). A systematic review of the teacher expectation literature over the past 30 years. *Educational Research and Evaluation*, *24*, 124–179. doi:10.1080/13803611.2018.1548798

Wang, S., Rubie-Davies, C., & Meissel, K. (2019). Instructional practices and classroom interactions of high and low expectation teachers in China. *Social Psychology of Education.* doi:10.1007/s11218-019-09507-4

Wang, Q., Zhang, W., & Lin, Z. (2010). Gaoxiao yu jichu jiaoyu jiaoshi hezuo xingdong yanjiu de shijian tansuo [A practical exploration of the collaborative action research between universities and fundamental education teachers]. *Kecheng jiaocai jiaofa*, *30*, 88–93.

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

Wei, C. (2008). *Jiaoshi qiwang dui chuzhongsheng xueye chengjiu, chuangzaoli de yingxiang* [The influence of teachers' expectation on students' school achievement and creativity in junior high school] (Master's thesis, Shandong Normal University,

Jinan, China). Retrieved from

http://oversea.cnki.net/kcms/detail/detail.aspx?recid=&FileName=2008089317.nh

&DbName=CMFD2008&DbCode=CMFD

Wei, J. (2000). Woguo jichu jiaoyu bu gongping xianxiang xiyin ji qi duice [The analysis

of the unfairness of basic education in our country and countermeasures]. *Henan*

shifan daxue xuebao (Zhexue shehui kexue ban), *27*, 109–112.

doi:10.16366/j.cnki.1000-2359.2000.05.032

Weiner, B. (1974). *Achievement motivation and attribution theory*. Morristown, NJ:

General Learning Press.

Weiner, B. (1986). *An attributional theory of motivation and emotion*. New York, NY:

Springer-Verlag.

Weinstein, R. S. (1976). Reading group membership in first grade: Teacher behaviours and

pupil experience over time. *Journal of Educational Psychology*, *68*, 103–116.

doi:10.1037//0022-0663.68.1.103

Weinstein, R. S. (1983). Student perceptions of schooling. *The Elementary School*

Journal, *83*, 287–312. doi:10.1086/461319

Weinstein, R. S. (1985). Student mediation of classroom expectancy effects. In J. B. Dusek

(Ed.), *Teacher expectancies* (pp. 329–350). Hillsdale, NJ: Erlbaum.

Weinstein, R. S. (2002). *Reaching higher: The power of expectations in schooling*.

Cambridge, MA: Harvard University Press.

Weinstein, R. S. (2018). Pygmalion at 50: Harnessing its power and application in

schooling. *Educational Research and Evaluation*, *24*, 346–365.

doi:10.1080/13803611.2018.1550842

Weinstein, R. S., Marshall, H. H., Brattesani, K. A., & Middlestadt, S. E. (1982). Student

    perceptions of differential teacher treatment in open and traditional classrooms.

    Journal of Educational Psychology, *74*, 678–692. doi:10.1037/0022-0663.74.5.678

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:10.1111/j.1467-

    8624.1987.tb01442.x

Weinstein, R. S., & Middlestadt, S. E. (1979). Student perceptions of teacher interactions

    with male high and low achievers. *Journal of Educational Psychology*, *71*, 421–

    431. doi:10.1037/0022-0663.71.4.421

Weinstein, R. S., Soule, 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:10.1007/978-1-4419-8646-7_16

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.

Wigfield, A., Eccles, J. S., Mac Iver, D., Reuman, D. A., & Midgley, C. (1991).

    Transitions during early adolescence: Changes in children's domain-specific self-

    perceptions and general self-esteem across the transition to junior high school.

    Developmental Psychology, *27*, 552–565. doi:10.1037//0012-1649.27.4.552

Wilson, R. J., & Martinussen, R. L. (1999). Factors affecting the assessment of student achievement. *The Alberta Journal of Educational Research*, *XLV*, 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*, 41–124.

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

Xiao, Z., & Dyson, J.R. (1999). Chinese students' perceptions of good accounting teaching. *Accounting Education*, *8*, 341–361. doi:10.1080/096392899330838

Xing, X., Chen, X., & Miao, P. (2011). Gaoxiao jiaoshi jiaoyu yu jichu jiaoyu hezuo wenti tansuo [Exploration on the cooperation between college teacher education and fundamental education]. *Shijiazhuang xueyuan xuebao*, *13*, 103–106.

Xu, S. (Ed.). (2002). *Zhongxue jiaoyu xinlixue* [Middle school educational psychology]. Beijing, China: People's Education Press.

Xu, X., & Zhang, Q. (2015). Xiaoxuesheng de jiaoshi qiwang, shuxue zuoye qingxu yu shuxue chengji de guanxi yanjiu [A study on the relations between primary

students' teacher expectations, mathematics assignment emotion and mathematics achievement]. *Xiandai zhongxiaoxue jiaoyu*, *31*, 52–54. doi:10.16165/j.cnki.22-1096/g4.2015.02.013

Ye, C., & Chen, C. (2012). Daxue yingyu jiaoshi qiwang, tingli xiaoneng ji tingli chengji de xiangguan yanjiu [Research on the relations between university English teachers' expectations, students' listening self-efficacy and listening achievement]. *Daxue yingyu jiaoxue yu yanjiu*, *4*, 64–67.

Yu, G. (2001). Woguo zhongxiaoxue xinli jiankang jiaoyu de xianzhuang yu fazhan [The status and development of mental health education in primary and secondary schools in China]. *Jiaoyu kexue yanjiu*, *7*, 62–69.

Zhang, M. (2006). *Jiaoshi qiwang yu ketang jiaoxue zhong de jihui jundeng* [Teacher's expectation and equal opportunities in classroom education] (Master's thesis, Huazhong University of Science and Technology, Wuhan, China). Retrieved from http://oversea.cnki.net/kcms/detail/detail.aspx?recid=&FileName=2008026053.nh &DbName=CMFD2008&DbCode=CMFD

Zhang, P. (2016). Chuzhongsheng ganzhi jiaoshi qiwang, ganzhi jiazhang qiwang yu xuexi chengji zhijian de guanxi [The relations between junior high school students' perceived teacher expectations, perceived parents' expectations and their academic achievement]. *Shanxi xueqian shifan xueyuan xuebao*, *32*, 16–19.

Zhang, X. (2009). Xinshiqi jincheng wugong renyuan zinü jiaoyu qishi xianxiang toushi—Yi ruian shi weili [A perspective of education discrimination on migrant workers' children in new era: Taking Rui'an as an example]. *Shehui gongzuo*, *16*, 58–61.

Zhang, Y., & Zhang, H. (2008). Chuzhongsheng yingyu ziwo xiaonenggan yu zhijue dao de jiaoshi qiwang, yingyu chengji de guanxi [Relations between junior high school students' English self-efficacy, perceived teacher expectations and English

achievement]. *Xinli kexue*, *31*, 230–233. doi:10.16719/j.cnki.1671-6981.2008.01.044

Zhao, B. (2013). Yingxiang xuesheng xueye chengji de jiating yu xuexiao yinsu fenxi [Research on family and school factors affecting students' academic achievement]. *Jiaoyu yanjiu*, *3*, 88–97.

Zhao, X. (2014). *Chuzhongsheng ganzhi dao de jiaoshi qiwang, shuxue xueye qingxu yu shuxue chengji de guanxi yanjiu* [A study of the relations between junior high school students' teacher-expectant perception, mathematics academic emotions and mathematics academic achievement] (Master's thesis, Shanxi Normal University, Linfen, China). Retrieved from http://oversea.cnki.net/kcms/detail/detail.aspx?recid=&FileName=1014227051.nh&DbName=CMFD2014&DbCode=CMFD

Zheng, H. (2010). Chu'er xuesheng jiaoshi qiwang zhijue, ziwo jiazhigan yu jiazhi de guanxi yanjiu [The relations between student perceptions of teacher expectations, student self-efficacy and value in eighth graders]. *Huanan shifan daxue xuebao*, *3*, 32–36.

Zheng, H., Liu, X., & Mo, L. (2004). Chu'er xuesheng zhijue dao de jiaoshi qiwang, ziwo jiazhigan yu ziwo xiaoneng de guanxi yanjiu [Research on the relations between Year Eight students' perceived teacher expectations, student self-worth and self-efficacy]. *Yingyong xinlixue*, *10*, 23–27.

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

Zhu, M., Urhahne, D., & Rubie-Davies, C. M. (2018). The longitudinal effects of teacher judgement and different teacher treatment on students' academic outcomes. *Educational Psychology*, *38*, 648–668. doi:10.1080/01443410.2017.1412399

Zhu, Y., & Zhou, Z. (2006). Cong jiaoyu gongping yuanze kan zhongguo chengxiang jiaoyu chaju [Looking at the educational differences between the city and the country in China from the principle of equal education]. *Jiaoyu lilun yu shijian*, *26*, 25–27.

APPENDICES

Appendix A

Participant information sheets and consent forms for school principals

Appendix B

A list of studies included in the systematic review in Chapter 3

Appendix C

A list of studies on analytical Theme 2: Mediating mechanism of teacher expectation effects

Appendix D

A list of studies on analytical Theme 3: Moderators of teacher expectation effects

Appendix E

A list of studies on analytical Theme 4: Student outcomes of teacher expectation effects

Appendix F

Interaction tables for Chinese, Mathematics and English education

Appendix A Participant Information Sheet and Consent Form for School Principals

School of Learning Development and Professional Practice
Faculty of Education
The University of Auckland
H Block, Gate 3
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Auckland 1023, New Zealand

PARTICIPANT INFORMATION SHEET
(School Principal)

Project title: A Longitudinal Study of Teacher Expectations: Stability and Influences on Student Achievement

Name of researcher: Shengnan Wang

Researcher introduction
My name is Shengnan Wang. I am a doctoral student in the Faculty of Education at the University of Auckland. I am conducting a research project for my PhD thesis. My project aims to investigate teacher expectations and teacher expectation effects in the curriculum areas of Chinese and Mathematics in secondary schools in China.

Research project description and invitation
The expectations that teachers hold for their students have been suggested to be an important influential factor on student academic achievement. This study attempts to examine the potential influence of teacher expectations, especially class-level teacher expectations on students' academic results in Chinese and Mathematics. It also aims to investigate the classroom interactions of teachers with varying expectations for their students. In this study, all Year 7 teachers of Chinese and Mathematics in your school will be invited to volunteer to participate.

As the principal of a junior high school, I seek your consent to have this research conducted in your school; I seek your assurance that the teachers' and the students' decision related to participation or non-participation will not affect them in anyway in the school; and I also seek your permission to access students' grades in the Junior High School Entrance Examination and the end-of-year final exam. Your support and assistance would be much appreciated.

Research procedure
There will be three studies conducted in my project. The project will last for one academic year, from 1ˢᵗ September 2015 to 31ˢᵗ July 2016.

Study 1
At the beginning of the school year, I will collect the participant students' scores in the Junior High School Entrance Examination with your permission, the consent of students' parents/caregivers, and of the students themselves. Participant teachers will be asked to

complete a teacher expectation survey three weeks after the beginning of the school year. It will take them approximately 15 minutes for each class they teach. At the end of the school year, the participant students' scores in the end-of-year final exam will be collected with your permission, the consent of students' parents/caregivers and of the students themselves.

Study 2
I will observe the classes of some teachers involved in the project. Those teachers who are identified as high or low expectation teachers based on the results of the teacher expectation survey in Study 1 will be selected to be observed. There will be two waves of classroom observations during the first school term. The first phase will be conducted at the end of October 2015 and the second phase will be early December 2015. I will observe two entire lessons (45 minutes for each lesson) of the teachers during each of the two phases. The classes observed will be audio-recorded.

If parents do not want their child to be observed, or if the child her/himself does not want to be observed, then the child will be given suitable class work which they will complete in a nearby class while the observations are taking place.

Study 3
Participant teachers will be asked to complete the same teacher expectation survey a further two times during the school year. The additional two time points for the teachers to respond to the survey are: first week of Term 2 (after the final examination for Term 1, end of February), and the fourth month of Term 2 (before the year-end final examination, mid-June).

In addition, participant teachers who volunteer will be interviewed for 20 minutes. Both of the classes observed and the teacher interviews will be audio-recorded. I will transcribe the recordings. The participant teachers will be offered a copy of the audio transcript for double checking and editing before data analysis. They are entitled to change, and withdraw any data they like without giving a reason before 31/07/2016.

Rights to withdraw
Participation in this research project is entirely voluntary. You are entitled to withdraw your school from the project, or withdraw any traceable information related to your school at any time prior to 31st July 2016, without giving any reason.

Protecting from harm
Given the nature of the research (non-experimental research) and the methods of data collection, it is not very likely for harm such as extreme physical pain to happen, however, I will still be cautious about possible psychological stress and personal embarrassment that might occur to participants during the research process. I will try to plan and conduct the studies in a manner that will minimize harm to the participants.

Ensuring privacy and confidentiality
As the researcher, it is my responsibility to make every effort to protect the privacy of participants and maintain confidentiality. Anonymity cannot be guaranteed in this research given the teacher surveys are not anonymous. The teacher participants will be asked to provide their names with their responses so that the student participants can be matched to the teacher participants for analytical purposes. However, codes or fictional names will be

used when reporting the results of the research studies so that the identification of the school and individual participants will be prevented.

Data storage, retention, destruction and future use
I will ensure confidentiality of the data collected. All hard-copy data will be stored in a locked cabinet in my office at the University of Auckland. The consent forms will be stored in a separate, locked cabinet in the same location. The electronic data will be securely stored in my password-protected computer in my office. Only my supervisors and I will have access to the data. The data will be kept in a safe place until it is destroyed 6 years after submission of my thesis. The results of this research will only be used for academic purposes. The predominant use of the results is for completing my PhD thesis at the University of Auckland. The data may also be used in my academic publications, conference presentations, teaching, and other forms of academic research dissemination.

Thank you very much for your time in reading this information sheet. I will be very appreciative of your kind help in making this project possible.

If you agree to take part in this research project, please complete the consent form attached and return it to me.

Contact details
If you have any further queries about the research, please contact
University of Auckland contacts

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For ethical concerns contact: The Chair, The University of Auckland Human Participants Ethics Committee, The University of Auckland, Private Bag 92019, Auckland, 1142. Telephone 09 373-7599 extension 83711
Email: humanethics@auckland.ac.nz / ro-ethics@auckland.ac.nz

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICPANTS ETHICS COMMITTEE ON 21/08/2015 FOR A PERIOD OF THREE YEARS REFERENCE NUMBER 015377

THE UNIVERSITY
OF AUCKLAND
NEW ZEALAND
Te Whare Wānanga o Tāmaki Makaurau

CONSENT FORM
(Principal)
THIS FORM WILL BE HELD FOR A PERIOD OF 6 YEARS

Project title: A Longitudinal Study of Teacher Expectations: Stability and Influences on Student Achievement

Name of researcher: Shengnan Wang

I have read the Participant Information Sheet, and have understood the nature of the research and why my school has been selected to take part. I have had the opportunity to ask questions and have them answered to my satisfaction.

1. I give my consent to have this research conducted in my school.
2. I give my consent for access to students' achievement data in the Junior High School Entrance Examination and the end-of-year final exam.
3. I give my consent for the participant teachers to be interviewed.
4. I give my consent for the participant teachers' classes to be observed.
5. I give my consent for the teacher interviews to be audio-recorded.
6. I give my consent for the classes being observed to be audio-recorded.
7. I give my assurance that teachers' choice of participation or non-participation will not affect them in any way in my school.
8. I give my assurance that students' choice of participation or non-participation will not affect them in any way in my school.
9. I understand that I am free to withdraw participation or withdraw any information traceable to my school at any time prior to 31st July 2016, without giving any reason.
10. I understand that no third party will have access to any of the information collected in this study.
11. I understand that data will be kept for 6 years, after which they will be destroyed.
12. I wish to receive a summary of findings. YES/ NO

Name:_____ School:

Signature:_____ Date:

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICPANTS ETHICS COMMITTEE ON _____/FOR A PERIOD OF THREE YEARS REFERENCE NUMBER _____

Appendix B 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, Annis, & Tanaka	1997	Canada	Kindergarten, Grade 1 & 2	T: 17 S: 294	Academic ability	Ethnicity (White & indigenous)	N	ANOVA	White (+)

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Influential factors (IV)	Prior achievement / baseline data controlled	Analytic method	Findings
Plewis	1997	UK	Key Stage 1 (Ages 6 to 7)	S: 7400	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	1998	US	Grade 10	S: 3442	Mathematics	SES, gender, ethnicity (Asian, Latino, & African American), & prior achievement	Y	Logistic regression	SES (+), gender male (-), ethnicity (o), 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 (Grade 3 & 4)	T: 52 S: 312	Mathematics	Gender	Y	MANOVA & Tukey's Studentized range honestly significant difference (HSD)	Gender male (+)
Van Matre, Valentine, & Cooper	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	Grade 3 & 4	T: 14 S: 20	Student perceptions of general teacher expectations	At risk (AR) for developing learning, emotional, and behavioural disorders (LD/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	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
								Studentized range honestly significant difference (HSD)	
Hughes, Gleason, & Zhang	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: 1819	Academic capacities	Personal goals of superiority & self-determination	N	Partial correlation & multiple linear regression	Personal goals of superiority (-), self-determination (+)
Rubie-Davies, Hattie, & Hamilton	2006	New Zealand	Primary	T: 21 S: 540	Reading	Ethnicity (New Zealand European, Māori, Pacific Island, & Asian)	Y	ANOVA	New Zealand European (+), Māori (-), 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, Elliott, & Braden	2007	US	Grade 4	T: 19 S: 38	Mathematics achievement	LD status	Y	ANOVA, pairwise comparison & Chi-square	LD (-)

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Influential factors (IV)	Prior achievement / baseline data controlled	Analytic method	Findings
Overby, Carrell, & Bernthal	2007	US	A single Grade 2 student	T: 48	Academic competence	LD (Speech sound disorders)	N	MANOVA	LD (-)
Wood, Kaplan, & McLoyd	2007	US	Ages 6–16	S: 466	Predicted college attendance and graduation	Gender, SES, age, & academic achievement	Y	Ordinary Least Squares regression	Gender male (-), SES (o), age (+), academic achievement (+)
Auwarter & Aruguete	2008	US	Four experimental conditions	T: 106	Future expectation	Gender & SES	Y	ANOVA	Gender (o), SES (+)
Foster	2008	Australia	Undergraduate	S: 18,559	Course performance	Names (Black & Asian)	Y	A self-designed equation model, regression	Names (o)
McKown & Weinstein	2008	US	Elementary	S: 1872	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 (o), prior achievement (+)
Tyler & Boelter	2008	US	Middle school (Grade 6, 7, & 8)	S: 262	General academic expectations	Gender & grade level (Grade 6, 7, & 8)	N	Hierarchical regression analyses	Gender (o), grade (-)
Chalabaev, Sarrazin, Trouilloud, & Jussim	2009	France	a. Laboratory experiment b. Naturalist study	a. T: 163 S: 8 b.	Gymnastics performance	a. Gender b. Gender, performance, perceived	a. Y b. Y	a. ANOVA b. HLM	a. 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
				T: 15 S: 422		competence, motivation, past achievement, & participation in sports			b. Gender (o), other characteristics (+)
Feinberg & Shapiro	2009	US	Grade 2-5	T: 74 S: 148	Reading	Student-achievement level (low-achieving & average-achieving)	Y	Correlation & t-test	Low-achieving students (+)
Hinnant, O'Brien, & Ghazarian	2009	US	Grade 1, 3 & 5	S: 2892	Reading & mathematics	Gender, ethnicity, family income/needs & social skills	Y	Hierarchical regression analyses	Reading: gender female (+), mathematics: gender (o); ethnicity (o), family income/needs (o), social skills (+),
de Boer, Bosker, & van der Werf	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 (o), prior achievement (-), IQ (-), motivation (-), grade repetition (-)
Hornstra, Denessen, Bakker, van den Bergh, & Voeten	2010	Netherlands	Grade 2-6	S: 307	Academic characteristics & ratings of writing achievement	LD (Dyslexia), gender, & SES	N	HLM	LD (-), gender female (+), SES (+)

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 den Bergh, Denessen, Hornstra, Voeten, & Holland	2010	Netherlands	Grade 1-4 (Ages 7-12)	T: 41 S: 434	Text comprehension & mathematics test scores	SES, ethnicity (Dutch, Turkish, & Moroccan), & gender	N	HLM	High SES (+), Turkish/Moroccan (-), gender (o)
Whitley	2010	Canada	Grade 1-6	S: 2367	Long-term success & Rating of achievement	LD	N	Path analyses	LD (-)
Y. -H. Chen, Thompson, Kromrey, & Chang	2011	Taiwan	Grade 3-6	S: 1598	Academic and non-academic performance	Gender & grade level (Grade 3, 4, & 5)	N	Chi-square test	Gender male (-), Grade 5 (-)
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: 9493	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 (o), indigenous American (o), multiracial (o), SES (+), prior achievement (+), kindergarten repeater (-), age (+), single-parent family (-), number of siblings (-)

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Influential factors (IV)	Prior achievement / baseline data controlled	Analytic method	Findings
Shepherd	2011	US	Grade 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: 3948	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 (+)

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Influential factors (IV)	Prior achievement / baseline data controlled	Analytic method	Findings
Kaiser, Retelsdorf, Südkamp, & Möller	2013	Germany	Secondary (Grade 6)	T: 52 S: 1135	Reading	Student engagement	Y	SEM	Students' reading engagement level (+)
Morales & Zafra	2013	Spain	Secondary (Ages 11-16)	S: 193	General adaptation levels & academic performance	Students' prosocial attitudes	N	Correlation	Prosocial attitudes (+)
Paino & Renzulli	2013	US	Grade 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 (o), SES (o), dual parents (o), educational home computer use (+)
Soland	2013	US	Grade 10	S: 9482 (dropout analysis) & 7883 (college analysis)	Dropping out & attending college	Gender, SES, ethnicity, & special education	Y	Regression	Dropping out: gender (o), SES (-), ethnicity (o), special education (o); attending college: gender (o), African American (+), Hispanic (+), special education (-)

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 Houtte, Demanet, & Stevens	2013	Belgium	Secondary	S: 6545	Cognitive capacity	Gender, SES, migrant status, ability, study involvement, sense of belonging, & school misconduct	Y	HLM	Gender (o), SES (+), migrant status (o), ability (+), study involvement (+), sense of belonging (+), school misconduct (o)
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 (o), SES (o)
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 (o), SES (+), gender female (+), prior achievement (+), home language English (o), two parent family (o), number of siblings (o), repeat kindergarten (-), all day kindergarten (+)
Lazarides & Watt	2015	Australia	Grade 10 & 11	S: 438	Mathematics	Gender & achievement level	Y	Multilevel SEM	Gender female (-), achievement level (+)

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Influential factors (IV)	Prior achievement / baseline data controlled	Analytic method	Findings
Mizala, Martínez, & Martínez	2015	Chile	Elementary (hypothetical students)	T: 208 (preservice)	Mathematics & general achievement	Gender & SES	Y	ANOVA	Mathematics: gender female (-), SES (o); general: gender female (-), SES (+)
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 (o), Hispanic (o), Asian (-), indigenous American (o), multiracial (o), gender (o), non-English (-), kindergarten repeater (o), age (+), single-parent family (o), number of siblings (o), students' approaches to learning (+)
Timmermans, Kuyper, & van der Werf	2015	Netherlands	Primary	T: 500 S: 7,550	Education ladder score corresponding to track recommendation	Gender, prior achievement, & socioethnic background	Y	HLM	Gender female (+), prior achievement, (+), Dutch SES (+)
Fitzpatrick, Côté-Lussier, & Blair	2016	Canada	Birth to Grade 4	S: 1311	Global achievement in mathematics, reading and spelling	General appearance, ethnicity, SES, classroom engagement, number knowledge, family	Y	Regression	General appearance (-), Black or indigenous (-), SES (+), classroom engagement (+),

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Influential factors (IV)	Prior achievement / baseline data controlled	Analytic method	Findings
						functioning, maternal hostility, & gender			number knowledge (+), family functioning (+), maternal hostility (o), gender (o)
Hansen	2016	UK	Aged 7 & 11	S: 9233	General knowledge, numbers, books, oral ability, & probability of being over-/underrated by teacher	Attractiveness	Y	Regression	Teachers' perceptions of student attractiveness (+)
Jenkins & Demaray	2016	US	Elementary (Grade 3, 4, & 5)	T: 18 S: 72	Reading, mathematics, & writing	LD (ADHD)	Y	Correlation & percent agreement calculations	Reading: LD (o); mathematics: non-LD (+)
Rubie-Davies & Peterson	2016	New Zealand	Grade 6 & 7 (aged 10-14)	S: 650	Mathematics	Ethnicity & gender	Y	Multilevel logistic regression	Ethnicity (o), gender male (+)
Timmermans, de Boer, & van der Werf	2016	Netherlands	Primary (Grade 6)	S: 5316	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 (o), self-confidence (+), classroom behaviour (-)
Holder & Kessels	2017	Germany	Vignettes	a. T: 155 b. T: 265	Mathematics performance	Gender & ethnicity (German & Turkish)	Y	ANOVA	Gender male (+), Turkish (-)

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Influential factors (IV)	Prior achievement / baseline data controlled	Analytic method	Findings
					(Subjective & objective)				
Kaiser, Südkamp, & Möller	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 (o), ethnicity (o)
Meissel, Meyer, Yao, & Rubie-Davies	2017	New Zealand	Grade 3-7 (aged 8-13)	S: 4771 (reading) & 11,765 (writing)	Reading & writing	Gender, ethnicity, ESOL & LD status	Y	HLM	Gender female (+), Māori (-), Pasifika (-), ESOL (-), LD (-)
Müller, 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	Grade 6-8	S: 6550	General school performance	Family structure (status of being	N	Nonparametric tests (Mann-Whitney U tests)	Status of being raised by grandparents (-)

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Influential factors (IV)	Prior achievement / baseline data controlled	Analytic method	Findings
						raised by grandparents)			
II Teacher factors									
de Koning & Boekaerts	2005	Netherlands	Secondary vocational education	S: 1819	Academic capacities	Teacher learning support	N	Partial correlation & multiple linear regression	Teacher learning support (+)
Hornstra, Denessen, Bakker, van den Bergh, & Voeten	2010	Netherlands	Grade 2-6	S: 307	Teacher ratings of writing and spelling achievement, mathematics achievement	Interaction of LD status (dyslexia) and teaches' implicit attitudes towards dyslexia, gender, SES	N	HLM	Writing & spelling: the interaction (-), gender female (+), SES (+); mathematics: the interaction (o);
van den Bergh, Denessen, Hornstra, Voeten, & Holland	2010	Netherlands	Grade 1-4 (Ages 7-12)	T: 41 S: 434	Text comprehension & mathematics test scores	Teachers' explicit and implicit prejudiced attitudes towards ethnic minorities	N	HLM	Explicit attitude (o), interaction of implicit attitudes and ethnicity (-)
Whitley	2010	Canada	Grade 1-6	S: 2367	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 (o), years of teaching (-), subject math (-), & certification in the subject matter (+)

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Influential factors (IV)	Prior achievement / baseline data controlled	Analytic method	Findings
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, Flint, & McDonald	2012	New Zealand	Primary (Aged 8-10) & intermediate (Aged 11-12)	T: 68	Reading comprehension	Gender & teaching experience	Y	Correlation	Gender (o), teaching experience (o)
Agirdag, Van Avermaet, & Van Houtte	2013	Belgium	Primary	T: 706 S: 2845	Mathematics	Gender, ethnicity, SES, teaching experience, & teacher type	Y	HLM	Gender (o), ethnicity (o), SES (o), teaching experience (o), teacher type (o)
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, Martínez, & Martínez	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: 1819	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	School achievement level (high & low)	Y	T-tests & multiple linear regressions	High school achievement level (+)

Author(s)	Year	Country/region	Age/grade level	Sample size	Curriculum area (DV)	Influential factors (IV)	Prior achievement / baseline data controlled	Analytic method	Findings
					and personal characteristics				
Ready & Wright	2011	US	Kindergarten	S: 9493	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, Flint, & McDonald	2012	New Zealand	Primary (Aged 8-10) & intermediate (Aged 11-12)	T: 68	Reading comprehension	School SES & class level	Y	Correlation	School SES (o), class level (o)
Agirdag, Van Avermaet, & Van Houtte	2013	Belgium	Primary	T: 706 S: 2845	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	Grade 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, Demanet, &	2013	Belgium	Secondary	S: 6545	Cognitive capacity	School type/track (academic	Y	HLM	High school track (+)

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Influential factors (IV)	Prior achievement / baseline data controlled	Analytic method	Findings
Stevens						education & technical and vocational education)			
Brault, Janosz, & Archambault	2014	Canada	High school	T: 2666	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	Grade 4 & 8	S: 4487 (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, Kuyper, & van der Werf	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 (-)
Thys & Van Houtte	2016	Belgium	Primary	T: 471 S: 1049	Students' future school progress	School ethnic composition (% ethnic minorities)	N	Correlation	School ethnic composition (-)
IV Other factors									

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Influential factors (IV)	Prior achievement / baseline data controlled	Analytic method	Findings
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	Grade 2 & 5	T: 40 S: 480	Academic competence rank	Student–teacher cognitive style match/mismatch	Y	ANOVA	Student–teacher cognitive style mismatch (-)
Hughes, Gleason, & Zhang	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: 1819	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 & Grade 1-3	T: 20 S: 230	Mathematical thinking & literacy skill development	Student–teacher relationship	N	Correlation & multiple regression	Correlation (o); regression (+)

Author(s)	Year	Country/region	Age/grade level	Sample size	Curriculum area (DV)	Influential factors (IV)	Prior achievement / baseline data controlled	Analytic method	Findings
de Boer, Bosker, & van der Werf	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 (o)
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 (o), urbanicity match (o)
de Boer & van der Werf	2015	Netherlands	Grade 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, Karing, Dörfler, & Artelt	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 judgment: teacher–student personality similarity (+); specific judgment: teacher–student personality similarity (o)

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Influential factors (IV)	Prior achievement / baseline data controlled	Analytic method	Findings
Timmermans , de Boer, & van der Werf	2016	Netherlands	Primary (Grade 6)	S: 5316	Track recommendations	Student–teacher relationships	Y	HLM	Student–teacher relationships (o)

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; "o" represents non-significant association.

Appendix C A List of Studies on Analytical Theme 2: Mediating Mechanism of Teacher Expectations

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' nonverbal behaviours	NA	ANOVA & matched-pair t-tests	Clips on teachers talking about students: teachers' nonverbal behaviours (o); clips on teachers talking to students: teachers' nonverbal 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.
S. Gill & Reynolds	1999	US	Grade 6	S: 712	Reading & mathematics achievement	Student perceptions of teacher expectations	Y	Path analysis	Student perceptions of teacher expectations (o)
Kuklinski & Weinstein	2001	US	Grade 1, 3, & 5	T: 48 S: 376	Reading achievement	Students' self-expectations	Y	Path analysis	In Grade 5 high perceived differential

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Mediating factors	Prior achievement/ baseline data controlled	Analytic method	Findings
									treatment classrooms (+)
Montague & Rinaldi	2001	US	Grade 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 (o)
Trouilloud, Sarrazin, Martinek, & Guillet	2002	France	Junior high (Grade 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 (o), & attainment values (o)
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, Strutchens, Gilbert, & Martin	2010	US	Middle school (Grade 6, 7 & 8)	S: 933	Mathematics achievement	Student motivation (confidence, interest, & anxiety)	N	SEM	Confidence (+), interest (+), anxiety (-)

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Mediating factors	Prior achievement/ baseline data controlled	Analytic method	Findings
Y. -H. Chen, Thompson, Kromrey, & Chang	2011	Taiwan	Grade 3-6	S: 1598	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: 2104 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, Hairul, & Hazri	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, Van Avermaet, & Van Houtte	2013	Belgium	Primary	T: 706 S: 2845	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 (o), mood (o); students' self-concept: ability (+), chance (o), mood (-); test anxiety: ability (o), chance (o), mood (+)

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	Grade 4 & 8	S: 4487 (Grade 4) & 4414 (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, Roberts, & Al Otaiba	2014	US	Kindergarten	S: 109	Reading achievement	Opportunities for academic responding	Y	SEM	Opportunities for academic responding (o)
Friedrich, Flunger, Nagengast, Jonkmann, & Trautwein	2015	Germany	Grade 5	T: 73 S: 1289	Mathematics grade & test score	Student self-concept	Y	HLM	Mathematics grade: student self-concept (+); test score: student self-concept (o)
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; "o" represents non-significant mediation effects.

Appendix D A List of Studies on Analytical Theme 3: Moderators of Teacher Expectation 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, Eccles, & Madon	1996	US	Grade 5-7	S: 1765 (gender), 1020-1060 (SES), 1609-1663 (ethnicity)	Mathematics grade	Student gender, SES, & ethnicity	Y	Regression	Gender female (+), lower SES (+), African American (+)
Smith, Jussim, Eccles, Vannoy, Madon, & Palumbo	1998	US	Grade 6	T: 97 S: 1701	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 (o), between-class ability grouping (+); level: students in low-ability within-class grouping (+), levels of between-class grouping (o)
Kuklinski & Weinstein	2001	US	Grade 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	Grade 1, 3, & 5	T: 30 S: 561	Reading & mathematics achievement	Gender & ethnicity	Y	HLM & loglinear models	In Grade 3 and 5, ethnicity (African American +) moderated expectation effects in reading. In Grade 5,

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Moderating factors	Prior achievement/ baseline data controlled	Analytic method	Findings
									gender (female +) moderated expectation effects in math.
W. C. 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: 1872	Reading & mathematics (ethnic achievement gap)	Classroom-perceived level of differential teacher treatment (high & low)	Y	HLM	High perceived differential teacher treatment (+)
Hinnant, O'Brien & Ghazarian	2009	US	Grade 1, 3 & 5	S: 2892	Reading & mathematics achievement	Student gender, ethnicity, & SES	Y	Hierarchical regression analyses	Students from low SES (+), minority boys (+)
de Boer, Bosker, & van der Werf	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 (o)
Speybroeck et al.	2012	Netherlands	Kindergarten	S: 3948	Language & mathematics achievement	Ethnicity (majority & minority)	Y	SEM	Language: ethnicity (o); 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, Gralewski, & Szumski	2015	Poland	Middle school	T: 189 S: 1614	Creativity	Gender	Y	CFA & SEM	Gender female (+)

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Moderating factors	Prior achievement/ baseline data controlled	Analytic method	Findings
Boerma, Mol, & Jolles	2016	Netherlands	Grade 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, Viljaranta, & Aunola	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, Marciniak, Birdseye, & Gottfredson	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' conception and teaching of the task	NA	T-tests	Positively significant
Rubie-Davies, Peterson, Sibley, & Rosenthal	2015	New Zealand	Elementary	T: 84 S: 2408	Reading & mathematics	Behaviours and practices of high expectation teachers (grouping and learning activities, class climate, motivation, evaluation,	NA	Bayesian multilevel latent growth models	Reading (non-significant), mathematics (positively significant)

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Moderating factors	Prior achievement/ baseline data controlled	Analytic method	Findings
						feedback, & enhancing student autonomy)			

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 were decreased by the moderator); "o" represents non-significant moderation effects.

Appendix E A List of Studies on Analytical Theme 4: 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. Sociopsychological 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	Grade 6, 7, & 8	T: 321 S: 6602	Students' stereotyping beliefs in mathematics	Y	HLM	+
Kuklinski & Weinstein	2001	US	Grade 1, 3, &5	T: 48 S: 376	Students' self-expectations in reading	Y	Path analysis	In Grade 5 high perceived differential treatment classrooms (+); In Grade 1 & 3 (o)
Trouilloud, Sarrazin, Martinek, & Guillet	2002	France	Junior high (Grade 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 (o), peer relations (o)
Benner & Mistry	2007	US	Aged 9-16	S: 522	Student expectations, expectations for success,	N	Path analyses	Student expectations (+), expectations for success

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Prior achievement/ baseline data controlled	Analytic method	Findings
					self-concept of ability, & attainment values			(+), self-concept of ability (+), attainment values (+)
Kuperminc, Darnell, Alvarez-Jimenez	2008	US	Middle & high school	S: 324	Student academic competence	N	Path analyses & correlations	+
W. C. Liu & Wang	2008	Singapore	Secondary (aged 13)	S: 495	Student academic self-concept (confidence)	N	Correlations	+
Tyler & Boelter	2008	US	Middle school (Grade 6, 7, & 8)	S: 262	Student academic self-efficacy	N	Hierarchical regression analyses	+
Vekiri	2010	Greece	Grade 8 & 9	T: 7 S: 301	Student self-efficacy in computer information science	N	Correlations & regressions	+
Woolley, Strutchens, Gilbert, & Martin	2010	US	Middle school (Grade 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, Thompson, Kromrey, & Chang	2011	Taiwan	Grade 3-6	S: 1598	Student self-concept (general, academic, & non-academic)	N	CFA & SEM	+
Urhahne, Chao, Florineth, Luttenberger, & Paechter	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, Hairul, & Hazri	2012	Indonesia	High school (aged 15-17)	S: 800	Student self-esteem	N	Regression	Partially significant (-)
Agirdag, Van Avermaet, & Van Houtte	2013	Belgium	Primary	T: 706 S: 2845	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	+

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Prior achievement/ baseline data controlled	Analytic method	Findings
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	+
Karwowski, Gralewski, & Szumski	2015	Poland	Middle school	T: 189 S: 1614	Students' creative self-efficacy in mathematics & language	Y	CFA & SEM	+
Lazarides & Watt	2015	Australia	Grade 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: 1595	Students' university aspirations	Y	Logistic regression	+
M. 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, Mol, & Jolles	2016	Netherlands	Grade 5 & 6	S: 160	Students' reading motivation (self-concept, task value, & attitude)	N	Correlation	For boys: (o); for girls: self-concept (+), reading task value (+)
Pesu, Viljaranta, & Aunola	2016	Finland	Grade 1	S: 152	Students' self-concept of ability in reading & mathematics	Y	Hierarchical regression analyses	For high performers (+); for low performers (o)
II. Behavioural outcomes								
Cousineau & Luke	1990	Canada	Grade 6	T: 6 S: 36	Academic learning time in physical education	N	ANOVA	+

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Prior achievement/ baseline data controlled	Analytic method	Findings
Tyler & Boelter	2008	US	Middle school (Grade 6, 7, & 8)	S: 262	Academic engagement (cognitive, behavioural, & emotional engagement)	N	Hierarchical regression analyses	Cognitive engagement (+), behavioural engagement (+), emotional engagement (+)
Archambault, Janosz, & Chouinard	2012	Canada	Secondary school	T: 79 S: 1364	Mathematics cognitive engagement	Y	HLM	o
Demanet & Van Houtte	2012	Belgium	Secondary school	T: 2104 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	o
Haraoka	1991	Japan	Grade 6	S: 216	Arithmetic test scores	N	T-test	+
Saracho	1991	US	Grade 2 & 5	T: 40 S: 480	Achievement scores	Y	Multiple regression analysis	+
Jussim & Eccles	1992	US	Grade 6	T: 98 S: 1731	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, Eccles, & Madon	1996	US	Grade 5-7	S: 1765 (gender), 1020-1060 (SES), 1609-1663 (ethnicity)	Mathematics grade	Y	Regression	+

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Prior achievement/ baseline data controlled	Analytic method	Findings
Muller	1997	US	Grade 10	S: 3442	Mathematics test score gains	Y	Regression	+
Palardy	1998	US	Grade 10	T: 20 S: 384	Reading achievement	Y	ANCOVA	+
S. 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 9000	Receiving high school diploma	Y	HGLM (hierarchical generalised linear modelling)	+
Ma	2001	US	Grade 7 through 12	S: 3116	Participation in advanced mathematics	Y	Logistic regression (survival analysis)	o
Trouilloud, Sarrazin, Martinek, & Guillet	2002	France	Junior high (Grade 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	+
DuPaul et al.	2004	US	Grade 1-4	S: 189	Reading & mathematics achievement	N	Hierarchical regression analyses	Reading (+), mathematics (+)
Rumberger & Palardy	2005	US	High school (Grade 8-12)	S: 14,217	Mathematics, science, reading, history achievement	Y	HLM	Mathematics (o), science (marginally +), reading (o), history (o)
P. P. Chen	2006	US	Grade 7	T: 4 S: 107	Mathematics performance	Y	Path analyses	+
Rubie-Davies, Hattie, & Hamilton	2006	New Zealand	Primary	T: 21 S: 540	Reading achievement	Y	ANOVA	+

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Prior achievement/ baseline data controlled	Analytic method	Findings
Benner & Mistry	2007	US	Aged 9-16	S: 522	Reading & mathematics achievement	N	Path analyses	+
Hinojosa	2008	US	Grade 6 & 8	NA	School suspension	N	Logistic regression	-
Kuperminc, Darnell, & Alvarez-Jimenez	2008	US	Middle & high school	S: 324	Reading, language arts, mathematics, science, & history	N	Path analyses & correlations	Grade point average (+)
Martín, Martínez-Arias, Marchesi, & Pérez	2008	Spain	Secondary	S: 965	Language, mathematics, & social science achievement	Y	HLM	Language (+), mathematics (+), social science (+)
McKown & Weinstein	2008	US	Elementary	S: 1872	Ethnic achievement gap	Y	Hierarchical regression analyses	In high-bias classroom (+), in low-bias classroom (o)
Hinnant, O'Brien, & Ghazarian	2009	US	Grade 1, 3 & 5	S: 2892	Reading & mathematics achievement	Y	Hierarchical regression analyses	Reading (o), mathematics (+)
Atnafu	2010	Ethiopia	Grade 10	T: 8 S: 632	Algebra achievement	N	Regression	o
de Boer, Bosker, & van der Werf	2010	Netherlands	Primary	S: About 11,000	Education ladder score corresponding to track recommendation	Y	HLM	+
Hornstra, Denessen, Bakker, van den Bergh, & Voeten	2010	Netherlands	Grade 2-6	S: 307	Spelling & mathematics achievement	N	HLM	Spelling (+), mathematics (+)
van den Bergh, Denessen, Hornstra,	2010	Netherlands	Grade 1-4 (Ages 7-12)	T: 41 S: 434	Text comprehension & mathematics test scores	N	HLM	Text comprehension (+), mathematics (+)

Author(s)	Year	Country/region	Age/grade level	Sample size	Curriculum area (DV)	Prior achievement/ baseline data controlled	Analytic method	Findings
Voeten, & Holland								
Whitley	2010	Canada	Grade 1-6	S: 2367	Achievement	N	Path analyses	+
Woolley, Strutchens, Gilbert, & Martin	2010	US	Middle school (Grade 6, 7 & 8)	S: 933	Mathematics achievement	N	SEM	Indirect (+)
Sciarra & Ambrosino	2011	US	Secondary school	S: 5353	Post-secondary education status (never enrolled, leaver, enrolled in two-year institution, & enrolled in 4-year institution)	N	Multinomial logistic regression	+
Archambault, Janosz, & Chouinard	2012	Canada	Secondary school	T: 79 S: 1364	Mathematics achievement	Y	HLM	+
Speybroeck et al.	2012	Netherlands	Kindergarten	S: 3948	Language & mathematics achievement	Y	SEM	Language (+), mathematics (+)
Agirdag, Van Avermaet, & Van Houtte	2013	Belgium	Primary	T: 706 S: 2845	Mathematics achievement	Y	Path analyses	Indirect effect (+), direct effect (o)
Becker	2013	Germany	Grade 10	T: 1701 S: 1987	High school graduation and university transitions	Y	Bivariate probit model	High school graduation (+), university transitions (o)
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: 3677 S: 4094	Post-secondary education status (some high school experience, high school diploma, enrolled in two-year or less than two-year college, & enrolled in 4-year college or university)	Y	Cross-classified random effects modelling (CCREM)	+

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Prior achievement/ baseline data controlled	Analytic method	Findings
Morales & Zafra	2013	Spain	Secondary (Ages 11-16)	S: 193	Academic qualifications of compulsory subjects	N	T-tests	+
Paino & Renzulli	2013	US	Grade 3 & 5	NA	Mathematics & reading achievement	N	Ordinary least squares regressions	Reading (+), mathematics (+)
Soland	2013	US	Grade 10	S: 9482 (dropout analysis) & 7883 (college analysis)	Dropping out & attending college	Y	Correlation & regression	Dropping out (-), attending college (+)
Troia, Harbaugh, Shankland, Wolbers, & Lawrence	2013	US	Grade 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	Grade 4 & 8	S: 4487 (Grade 4) & 4414 (Grade 8)	General academic achievement gap between schools	N	Multilevel regression analyses	Grade 4 (o); 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, Roberts, & Al Otaiba	2014	US	Kindergarten	S: 109	Reading achievement	Y	SEM	+
de Boer & van der Werf	2015	Netherlands	Grade 7-11	S: 10,433	Education ladder score corresponding to track recommendation	Y	HLM	+
Friedrich, Flunger,	2015	Germany	Grade 5	T: 73 S: 1289	Mathematics grade & achievement	Y	HLM	Individual level (+); class level (o)

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Prior achievement/ baseline data controlled	Analytic method	Findings
Nagengast, Jonkmann, & Trautwein								
Holwerda, Brouwer, de Boer, Groothoff, & van der Klink	2015	Netherlands	Aged 17-20	S: 341	Future work outcome (entering competitive employment)	N	Logistic regression analyses	+
Hyun Sik Kim	2015	US	Kindergarten- Grade 5	T: 329 S: 1522	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: 1595	University aspirations and attainment	Y	Logistic regression	University aspirations (+), university attainment (+)
Peterson, Rubie-Davies, Osborne, & Sibley	2016	New Zealand	Grade 3-7	T: 38 S: 1060	Reading & mathematics	Y	Multilevel models	Reading (+), mathematics (o)
Byun, Meece, & Agger	2017	US	High school	S: 2112	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,	2017	US	Kindergarten- Grade 3	S: about 30,000	Reading, mathematics, & writing achievement	N	HLM	Reading (+), mathematics (+), writing (+)

Author(s)	Year	Country/ region	Age/grade level	Sample size	Curriculum area (DV)	Prior achievement/ baseline data controlled	Analytic method	Findings
McCoach, & Yu								
Z. Li & Rubie-Davies	2017	China	University	T: 50 S: 4617	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 (o), essay quality (o), percentage of academic words in the essay (o), proportion of main ideas from the source text in the summary (+), summary quality (+), percentage of academic words in the summary (+)
Thomas & Strunk	2017	US	Grade 3-5	S: 153	Science achievement	N	Regression	o
Jamil, Larsen, & Hamre	2018	US	Kindergarten-Grade 8	S: 8503	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; "o" represents non-significant association

Appendix F Interaction Tables for Chinese, Mathematics and English Education

Teacher	
Lesson	

Teaching statements

Orientation/Focus	Prior knowledge/experiences	Explanation

Teacher questioning

Teacher responding to student answers

	Positive comment (Praise)	Feedback	Question further	Repeat answer	T. explains
Correct					
	Negative comment (Criticism/sarcasm/shaming)	Another chance (Rephrase or repeat question/provide support)	Other child		T. supplies/ explains
Incorrect					

Procedural statements

Behaviour management statements

Neutral	Negative

Other teacher feedback and comments

Praise	Criticism	Feedback individual	Feedback class