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Pygmalion's 50th anniversary: the state of the art in teacher expectation research

"If men define situations as real, they are real in their consequences" (Thomas & Thomas, 1928, p. 572)

Introduction

In 2018, we celebrate 50 years of research on teacher expectations. This tradition began with the publication of the influential book *Pygmalion in the Classroom* by Rosenthal and Jacobson (1968). Rosenthal and Jacobson concluded that if teachers' expectations about student ability were manipulated early in the school year, those expectations would carry over to affect how the students performed on an IQ test. From the very first moment, this work received many critiques (e.g., Thorndike, 1968), although it must also be noted that it was both brave and ground-breaking to bring research on experimenter effects into classrooms. It marked the beginning of a rich tradition of investigating teachers' expectations. Now, 50 years after the start of teacher expectation research, it is time to reflect on what we have achieved thus far and what promising directions there are for moving forward.

There seem a number of (more or less) uncontested findings with regard to teacher expectations. First, some studies have shown that teachers are relatively accurate in their expectations (Jussim & Harber, 2005), but nevertheless teachers seem to favour some students over others in their expectations (e.g., De Boer, Bosker, & Van der Werf, 2010; Glock & Krolak-Schwerdt, 2013; Rubie-Davies, 2010; Riley & Ungerleider, 2012; Sorhagen, 2013; Tenenbaum & Ruck, 2007; Timmermans, De Boer, & Van der Werf, 2016). Specifically, teachers seem to favour students from more affluent families over those from less affluent families. In addition, teachers appear to hold lower expectations than warranted for special needs students (Arabsolghar & Elkins, 2000; Cameron & Cook, 2013; Moscardini, 2015). However, evidence regarding the relations between teacher expectations and student ethnicity and gender have been found to be more inconsistent. Some studies found lower expectations for ethnic minority students than for majority students, for boys in reading, and for girls in mathematics, whereas other studies did not show differences by gender or ethnicity. Second, teachers' expectations affect subsequent teaching behaviour; for example, through teachers providing more opportunities to learn, asking richer questions, and providing learning-focussed feedback to students for whom the teachers have high expectations (e.g., Brophy & Good, 1970; Good & Lavigne, 2018; Rubie-Davies, 2007; Tenenbaum & Ruck, 2007; Weinstein, 2002). Third, teacher expectations work as a self-fulfilling prophecy (Merton, 1948) on subsequent student outcomes such as performance, intelligence, and motivation, by means of differential behaviour of teachers towards high- and low-expectation students as well as via the opportunity to learn that is provided to different students (Brophy & Good, 1970). The estimated effect sizes of the self-fulfilling prophecy in the academic domain, however, differ considerably between reviews and meta-analyses (Hattie, 2009, $d = .43$; Jussim & Harber, 2005, $r = .1-.2$; Raudenbush, 1984, $d = .11$; Rosenthal & Rubin, 1978, $d = .70$).

Recently, further evidence has indicated that the previous findings are not universal. Some students, such as low achievers (Madon, Jussim, & Eccles, 1997), students from low-income families, and those from ethnic minority groups (Hinnant, O'Brien, & Ghazarian, 2009; Jussim, Eccles, & Madon, 1996; McKown & Weinstein, 2002, 2008), seem more susceptible to self-fulfilling prophecy effects than other students. Furthermore, some teachers place more credence in student differences than others (e.g., Rubie-Davies, 2007; Timmermans et al., 2016; Timmermans, Kuyper, & Van der Werf, 2015), and a small group of teachers seems to be able to generate stronger self-fulfilling prophecy effects on subsequent student performance than the majority of teachers (e.g., Brophy, 1983; Li & Rubie-Davies, 2017; Rubie-Davies, 2015; Weinstein, 2002). However, we do not yet fully understand these processes. This implies that the field needs to move beyond looking almost exclusively at expectations for individual students and investigate how expectations play a role at the student, teacher, and school level, and how they interact, for example, among student groups, teachers, and schools.

Overview of the special issue

In this special issue, we put together a series of 11 articles focussed on teacher expectation research. With this special issue, we wanted to examine the following core questions:

- (1) What have we learnt over 50 years of research into teacher expectations?
- (2) What are latest research developments in this field, and what do they add to our learning?
- (3) What is there still to be learnt?

In [Table 1](#), an overview is provided of all articles in this special issue and their core characteristics. We begin this special issue by setting the scene with three review studies summarising the main lines of research and core findings of teacher expectation studies over the past 50 years. This special issue thereafter encompasses seven empirical studies. All empirical studies build on the recent findings indicating that there is no universal teacher expectation effect. These studies offer insights into teacher expectations at different levels (student, teacher, and school level) and from multiple perspectives, that is, educational, psychological, and sociological perspectives are included. We finalise this special issue by looking forward and specifying directions for future research.

Table 1. Study overview of the special issues including the main focus on developmental level, outcome and applied research method.

Nr.	Authors	Developmental level	Method	Domain/outcome
1	Good, Sterzinger, & Lavingne	–	Narrative review	–
2	Wang, Rubie-Davies, & Meissel	–	Systematic review	–
3	De Boer, Timmermans, & Van der Werf	–	Systematic review and meta-analysis	Expectations and academic performance
4	Li & Rubie-Davies	University	Qualitative analyses	English as a foreign language
5	Rubie-Davies, Watson, Flint, Garrett, & McDonald	Primary and intermediate schools	Quantitative analyses	Mathematics
6	Timmermans & Rubie-Davies	Intermediate schools	Quantitative analyses	Mathematics
7	Agirdag	Primary schools	Quantitative analyses	Science achievement and achievement growth
8	Pit-ten Cate & Glock	Primary schools	Vignettes	Mathematical and German language proficiency
9	Gentrup & Rjosk	Primary schools	Quantitative analyses	Mathematics and reading
10	Hornstra, Stroet, Van Eijden, Goudsblom, & Roskamp	Secondary schools	Quantitative analyses	Motivation and engagement
11	Weinstein	–	Future outlook	–

What have we learnt over 50 years of research?

In the first article, “Expectation Effects: Pygmalion and the Initial 20 Years of Research”, Good, Sterzinger, and Lavigne review the main developments during the first 20 years of studying expectation effects in the classroom (1968–1988). However, they begin with describing the literature on experimenter effects that formed the basis of *Pygmalion in the Classroom* (Rosenthal & Jacobson, 1968), the actual study, immediate critical reactions to the study, and Rosenthal’s responses. The authors argue that the *Pygmalion in the Classroom* study had tremendous scientific impact because it stimulated researchers to study expectation effects in the classroom which established that some teachers do form and communicate differential expectations to their students and that some students internalise these expectations in ways that manifest in their actual performance. The authors further show that teachers work in complex settings where they necessarily deal with rapid and often ambiguous events that demand quick interpretation and resolution. Research on teacher expectations has helped to identify how some teachers deal with classroom complexities in ways that meet the needs of all students.

The second article, “A Systematic Review of the Teacher Expectation Literature Over the Past 30 Years”, by Wang, Rubie-Davies, and Meissel, covers the remaining 30 years of teacher expectation research. In this systematic review, the authors searched for the main themes of research related to teacher expectations and summarised the main findings. They showed that teacher expectation research is now an important and flourishing research area in the educational psychology field. They identified four major themes in the teacher expectation research, that is: (1) factors that influence the formation of teacher expectations, (2) factors mediating teacher expectations effects, (3) moderator variables of teacher expectation effects, and (4) student socio-psychological, behavioural, and achievement outcomes that result from teacher expectations. For each theme, the authors sketch the main findings, reveal inconsistencies, and discuss limitations and future relevant foci of research.

In the third article, “The Effects of Teacher Expectation Interventions on Teachers’ Expectations and Student Achievement: Narrative Review and Meta-Analysis”, by De Boer, Timmermans, and Van der Werf, the evidence from teacher expectation interventions is reviewed. In a systematic literature search, 19 empirical studies were found reporting on teacher expectation interventions. The studies varied greatly in the methodological rigour of the evaluation of the interventions, but also in the type of interventions: (a) changing teacher behaviour, (b) creating awareness of expectancy effects, and (c) addressing the beliefs underlying the expectations. The results indicated that it is possible to raise teacher expectations and subsequent student achievement by means of teacher expectation interventions. Summary effects of Hedges’ $g = 0.38$ and 0.30 were found, respectively. The narrative review suggested that the intervention type did not affect the effectiveness, but teacher support for the intervention did.

What are latest research developments?

The next three studies all focus on expectations at the teacher level related to academic outcomes; they all contribute to a better understanding of why every teacher is not equally likely to create Pygmalion effects. The fourth study, “Teacher Expectations in a University Setting: The Perspectives of Teachers”, by Li and Rubie-Davies, is an important addition to the special issue as it is aimed at teacher expectations in higher education, a sector that has been largely neglected in this area of research. Twenty university teachers from an English-as-a-foreign-language course were interviewed, exploring their expectations for their first-year undergraduates. The results showed that both student characteristics and teacher characteristics need to be considered as factors that influence the formation of teacher expectations. Student characteristics associated with teacher expectations included students’ (a) prior academic achievement, (b) motivation, (c) study skills, and (d) faculty information. Also, teacher characteristics

were found to be another major source of university teachers' expectations, including teachers' (a) past teaching and learning experience and (b) teaching self-efficacy. The findings suggested that the bases of teacher expectations in higher education may differ from those at the elementary or secondary school level.

The fifth study, "Viewing Students Consistently: How Stable Are Teachers' Expectations?", by Rubie-Davies, Watson, Flint, Garrett, and McDonald, makes an important contribution to our understanding of Pygmalion effects, as the researchers studied the stability of teacher expectations over the course of multiple years. Three groups of teachers were compared in this study, that is: those who over- and underestimated their students, and those whose initial expectations were accurate. The study found that expectations for the three groups differed significantly in each of the 3 years of the study. More importantly, teachers maintained their rank order in expectations throughout the duration of the study, even though the cohorts of students differed each year, which indicated great stability in expectations at the teacher level, and thus the opportunity for Pygmalion effects to arise.

In the sixth study, "Do Teachers Differ in the Level of Expectations or in the Extent to Which They Differentiate in Expectations? Relations Between Teacher-Level Expectations, Teacher Background and Beliefs, and Subsequent Student Performance", Timmermans and Rubie-Davies explored teacher-level differences in the level and differentiation of expectations, associations between teacher differences in expectations and teacher background and beliefs, as well as relationships with subsequent student performance. Data analyses were based on a sample of 42 teachers and their students. The results were supportive of the notion that some teachers were differentiating more between students in their expectations than others. Teachers who differentiated more perceived students generally as more competent, but also felt less related to the school team, and perceived more classroom stress. Differentiation in expectations was negatively related to end-of year mathematics scores, indicating that in classes of teachers who differentiated less in their expectations between high- and low-performing students, the students achieved greater mathematics performance.

Unlike the above papers, the seventh paper in this special issue, "The Impact of School SES Composition on Science Achievement and Achievement Growth: Mediating Role of Teachers' Teachability Culture", by Agirdag, investigated school-level variables that were related to teacher expectations. In this paper, the author explored if beliefs of the school staff about how teachable their students were could explain why students in socioeconomically disadvantaged schools attained lower achievement levels than comparable students in more affluent schools. By means of multilevel analyses, Agirdag found that the teachability culture was positively related to socioeconomic school composition, even after controlling for cognitive ability and performance of students. However, there appeared no associations or mediation effects of the teachability culture related to socioeconomic school composition effects on growth in science achievement in the course of one year. This paper adds a rather novel perspective on teacher expectations being related to the school-level by combining knowledge from research on school composition effects with that of the teacher expectation literature.

The next two papers in this special issue add to the already vast literature in the teacher expectation field that has explored the influence of student characteristics on teacher expectations. In the eighth paper, "Teacher Expectations Concerning Students With Immigrant Background or Special Educational Needs", Pit-ten-Cate and Glock used vignettes to explore teacher bias towards immigrant students and those diagnosed with special educational needs (SEN). Teachers rated SEN students at lower levels than those described as having challenging behaviour. The study also showed that teachers rated those with an immigrant background and diagnosed SEN at lower levels than those who did not have an immigrant background but were categorised as SEN. Perhaps not surprisingly, immigrant students with either SEN or described

as having challenging behaviours were rated at lower levels than non-immigrant students for language proficiency but not mathematics. This study, as with others in the field that have examined teacher stereotyping, calls for intervention studies to help teachers who are vulnerable to bias to overcome their negative judgements of some student groups.

Student gender as potentially influencing teacher expectations is still contested with some studies showing effects (Robinson, Lubienski, & Copur, 2011), whereas others have not (Dusek & Joseph, 1985). The ninth paper, “Pygmalion and the Gender Gap: Do Teacher Expectations Contribute to Differences in Achievement Between Boys and Girls at the Beginning of Schooling?”, by Gentrup and Rjosk, explored the very beginnings of teacher expectation effects – in first grade. The study found that, overall, there were no expectation effects by gender in reading and mathematics. Importantly, however, the study found that there was a subgroup of students who were the subject of strong teacher bias, and these students showed either strong positive or negative learning gains in accordance with their teachers’ expectations. In this subgroup, girls were more affected by negatively biased expectation effects in mathematics than were boys and less influenced by positive bias. This study reflects the complexity of expectation effects involving schools, teachers, and students in trying to disentangle teacher expectations and teacher expectation effects.

The 10th paper in this special issue, “Teacher Expectation Effects on Need-Supportive Teaching, Student Motivation, and Engagement: A Self-Determination Perspective”, by Hornstra, Stroet, Van Eijden, Goudsblom, and Roskamp, examined outcomes of motivation and engagement in relation to teacher expectations. Many studies (e.g., De Boer et al., 2010; Hinnant et al., 2009; McKown & Weinstein, 2008; Rubie-Davies, 2007) in the field have examined student achievement in relation to teacher expectations, but few have investigated socio-psychological factors as potentially resulting from teachers’ expectations (see Urhahne, 2015, as one exception). Hornstra et al. showed that teacher expectations were associated with secondary school students’ self-reports of their motivation and engagement in school. Conversely, amotivation was negatively related to teacher expectations. These effects were mediated by student perceptions of teacher support. The study showed that, as a result of this newer area of research within the field, researchers need to consider not just academic outcomes for students but also relationships with student socio-psychological outcomes. This provides a new and fruitful area for future research.

What is there still to be learnt?

This special issue ends with an outlook by Weinstein related to promising directions for moving forward: “Pygmalion at 50: Harnessing its Power and Application in Schooling”. It stresses the need for a contextual theoretical framework that is ecologically sound in its knowledge of schools and diverse child populations within them in order to advance our study of teacher expectancy effects. The author emphasises that future research must be informed by more diverse literatures of relevance to teacher expectation effects bringing together research from different disciplines. Relevant topics for the future encompass a stronger focus on intervention research as well as comparative and longitudinal studies. This research should explore mediating processes explaining expectation effects in more detail and investigate why some teacher expectations do not translate into student outcomes and under which conditions high expectations are inappropriate for students. Also, an examination and clarification of the measurement of expectations is strongly needed.

Conclusions and practical implications

The 11 articles of this special issue have presented meaningful insights of the past, the present, and the future of teacher expectation research. Overall, the studies show that teacher

expectations need to be viewed from a more ecological standpoint; that is, teacher expectation effects cannot be regarded simplistically as a dyadic relationship between teachers and students that will apply to all teachers and to all students. Instead, researchers need to consider both teacher and student individuality as well as the context in which they are interacting; that is, some teachers will have greater expectation effects on their students than others because of the ways in which they cater for students, their assimilation of stereotypical information, and their pedagogical beliefs. Moreover, some students are likely to be more vulnerable to teacher expectation effects than others and therefore effects on student outcomes will be greater for some students than for others. Also, characteristics of classrooms and schools, such as the composition of the student body related to achievement and socioeconomic status, may affect teacher expectations. Hence, the study of teacher expectations and teacher expectation effects is complex and needs to be considered in relation to different students, teachers, schools, families, and communities. Indeed, the complexity of studying teacher expectations and teacher expectation effects may be one explanation for why, even though there has already been 50 years of research in this field, there is still much to learn.

Furthermore, there are surprisingly few intervention studies in the field that have endeavoured to raise teachers' expectations and have positive effects on student outcomes. Overall, as shown by the De Boer and colleagues' paper (this special issue), intervening to raise teachers' expectations appears to have positive benefits for student outcomes. The intervention studies all provide ways of providing students (particularly low achievers) with more opportunities to learn at higher levels, and this seems to result in a decrease in the achievement gaps between high and low achievers. Intervention studies also provide the opportunity for teachers to learn more about stereotyping and to learn how to overcome stereotypes and to treat students more equitably. Again, this provides a fruitful means of decreasing the achievement gaps between different groups of students (e.g., between different ethnic groups, those from low-versus high-socioeconomic backgrounds, and so on).

High priority needs to be given within teacher education courses to teacher expectation findings. Currently, pre-service teachers learn little about teacher expectations and the associated effects. Given the findings that some teachers maintain similar expectations for different classes of students (Li & Rubie-Davies, 2017) and for different students across a number of years, it is important that pre-service teachers learn how to avoid the negative effects of low expectations. They should also be taught how to provide challenging learning opportunities, at appropriate levels, for all students such that students are given a real chance to achieve at high levels. Education should be a vehicle for creating opportunities for equitable outcomes for any students prepared to put in effort. Instead, education often results in a perpetuation of the current social structures. More vulnerable students do not currently have equitable opportunities to achieve at the highest levels, and teacher expectations partly contribute to this situation.

In conclusion, it will also be important in moving forward that methodological issues are considered. For example, there has never been agreement in the field about how to measure expectations – notably if they refer to current or future student characteristics and if student characteristics should be controlled – and, hence, how expectations are defined and measured has varied among studies (see Wang et al.'s paper, this special issue). This could be one explanation for the variation in effects found in different studies. Similarly, expectations have always been measured relative to other students in the same study; students and teachers are compared within samples. This means that we do not yet understand whether teachers' expectations are high or low in an absolute sense.

Teacher expectations and teacher expectation effects is a flourishing area of research in education, psychology, and sociology. Although much is already understood after Pygmalion's

50th anniversary, this special issue provides several areas where research is still needed in the quest for all students being enabled to achieve at the very highest levels.

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