Revisiting Teacher Expectation Effects: For individuals and for intact groups

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Abstract

This article aimed to present a review of latest research on teacher expectation effects in the educational psychology field. The review first summarised and compared teacher expectation effects on individual students and those on student groups, and provided typical mediating models for the two types of teacher expectation effects. Moreover, this article reviewed some teacher beliefs that seemed probably related to teachers' expectations for all their students, which may initiate more generalised teacher expectation effects. Lastly, limitation and future research of generalised teacher expectation effects were also discussed.

Key word: Teacher expectations, Teacher expectation effects, Teacher beliefs

Introduction

With the publication of *Pygmalion in the Classroom*, Rosenthal and Jacobson's work (1968) introduced the concept of the self-fulfilling prophecy effect into the education realm, and since then self-fulfilling prophecy effects of teacher expectations have been vigorously studied by researchers for several decades. Teacher expectations (TEs) are inferences that teachers make about current and future academic achievement and general classroom behaviour of students (Brophy, 1998). Self-fulfilling prophecy effects of teacher expectations, also known as teacher expectation effects (TEEs), may function when teachers' inaccurate expectations are developed and maintained despite contradictory evidence, and, consequently, cause changes in student performance in accordance with teachers' initial expectations.(Brophy, 1983). Previous studies have mostly focused on TEEs for individual students, and have provided evidence of teachers' differential expectations, behaviours and hence impacts towards different student outcomes (e.g., Babad, 1998; Rosenthal, 1991; Weinstein, 2002). Meanwhile, a small number of researchers have extended scope of their work to more generalised TEES and presented robust theoretical and empirical evidence of teachers' expectations and their effects on intact student groups rather than individuals. Findings have suggested that teachers are likely to develop similarly high or low expectations for all students and consequently the overall student outcomes are likely to correspond with teachers' initial expectations accordingly. Some researchers have argued that generalized TEEs reflect individual differences in teachers. That is to say, it is the teacher rather than the student that may moderate TEs and TEEs. This argument departed from mainstream one that highlighted student characteristics in shaping and generating TEES. The perspective of generalised TEEs merits systematic attention, as it opens up a new research area and related research to date is rather sparse. To begin with, a comparative review of TEES for individuals and TEEs for intact groups seems significant, which hopefully may deepen our understanding of the expectancy effect mechanisms in classrooms.

Two Major Types of Teacher Expectation Effects

TEEs for Individual Students

The classic Pygmalion experiment has laid the foundation for research on TEEs for individual students (Rosenthal & Jacobson, 1968). In the experiment, teachers in an elementary school were induced to believe that certain students in their classes were "late bloomers" whose performance would increase dramatically by the end of the school year. However, the fact was that those students had been selected randomly and there were no differences between the "late bloomers" (about 20% of the total children) and the other 80% of the students. Hence, teachers appeared to hold false expectations for the "late bloomers" and consequently one year later and two years later, when the researchers administered the TOGA (Test of General Ability), a nonverbal intelligence test, the "late bloomers" indeed showed greater gains in IQ than control group students.

The results also showed that the teachers were even hostile towards the control group students who gained unexpected intellectual growth. As the researchers (Rosenthal & Jacobson, 1968) put it, "The difference between the children earmarked for intellectual growth and the undesignated control children was in the mind of the teacher" (p. 70). With manipulated differing teacher expectations, the students exhibited different outcomes accordingly, and the unexpected gain of some control group students triggered teachers' negative responses rather than the behaviours being welcomed and supported. It seemed that teacher expectations could be a major contributor to the student achievement gap. The authors concluded that teacher expectation effects caused teachers' initially inaccurate expectations to be confirmed. The causal inferences made may be that (a) the treatment influenced the teacher' expectancies for the experimental group by setting the expectancies higher than they would have been, which in turn (b) influenced the teacher behaviour, which (c) influenced the students' capacity and thus the higher IQ test scores (Dusek, Hall, & Meyer, 1985).

Later on, a majority of researchers continued to adopt this research perspective and amended the major flaws of the Pygmalion experiment. TEEs were more intensively investigated, including TEEs on various student outcomes (other than IQ) and TEEs in naturalistic classrooms (other than experimental settings).

In a series of naturalistic studies of elementary school-aged children (Weinstein, Marshall, Brattesani, & Middlestadt, 1982; Weinstein, Marshall, Sharp, & Botkin, 1987; Weinstein & Middlestadt, 1979), Weinstein and colleagues examined teachers' differential treatment towards different students. They developed an instrument, the Teacher Treatment Inventory (TTI), in which children independently reported on the frequency of a variety of differential teacher behaviours towards a hypothetical high- and low-achieving student in their classrooms. Consistent student reports of differences in teacher treatment helped to identify teachers and classrooms that were "characterised by the degree to which teachers are perceived to differentiate their behaviour" (Weinstein & McKown, 1998, p. 220). Studies linking teacher expectations to student outcomes (Brattesani, Weinstein, & Marshall, 1984; Kuklinski & Weinstein, 2001; Marshall & Weinstein, 1986; McKown & Weinstein, 2008) showed strong relationships between teacher expectations and subsequent academic, social and emotional outcomes of students in classrooms with high levels of perceived teachers' differential treatment. Statistical analyses reported that in classes of high differentiating teachers, 9–18% of the variance in student achievement could be explained by teacher expectations, while the figure dropped to 1–5% in classes of low differentiating teachers (Kuklinski & Weinstein, 2001).

Weinstein and her colleagues provided evidence that some teachers were perceived by their students as communicating high expectations and allowing more opportunities to participate and more choice of tasks to high achievers, while being more directive, restrictive, and negative in their treatment of low achievers (Marshall & Weinstein, 1986). For example, those teachers were likely to group students primarily by race, ability and relative skills and make reference to ability differences between instructional groups, saw limits in the malleability of achievement and intelligence, particularly for low performers, seemed to underscore the performance aspect of learning in the classroom and create a competitive atmosphere, and tended to deliver instruction and interact in a teacher-directed manner (Weinstein, 2002).

More recent studies have echoed the mechanism of TEEs on individual students. Hinnant and colleagues' study (2009) about young students suggested that children from ethnic minority families were expected less of in mathematics by their teachers. And first-grade teacher expectations were closely linked to students' third-grade reading performance; ethnic minority boys achieved lower than ethnic majority students. A longitudinal study (de Boer, Bosker, & van der Werf, 2010) which monitored 11,000 secondary school students for five years found that teachers held more positive expectations (than they should have) for students with lower prior achievement, students with a lower IQ, students with a higher socioeconomic status, students who were girls, students with lower achievement motivation, students with higher parents' aspirations, and students who did not repeat a grade in primary school. Students for whom teachers held negative expectation bias achieved after 5 years lower educational positions, and students who accepted positive expectation bias ended up with higher educational achievement. A study of a large sample of teachers and students at United States' secondary schools (Gregory & Huang, 2013) showed that teachers "held the most positive expectations for students in the highest economic quartiles" (p. 52). Mathematics and English teachers' college-going expectations in the 10th grade uniquely predicted student postsecondary education status four years later, with a higher attendance rate to postsecondary institutions in high expectation students than that in low expectation students.

As the brief review shows, teachers—experimentally induced or naturally formed—seem to develop different expectations in accordance with student characteristics, such as previous academic records, SES, race, gender and so on. In a word, TEEs for individual students highlight teachers' differential treatment—differentiating expectations, learning opportunities and experiences for particular students—and such differential treatment stems from individual differences in students. Consequently, differential teacher treatment may result in the achievement gap between high expectation students and low expectation students.

Generalised TEEs

Researchers have contended that teachers may hold expectations for all students in the class in addition to any expectations held for individual students, and that such expectations for the whole class may interact with the expectations for individuals or they may function separately (Rubie-Davies, 2008). Some researchers have proposed that self-fulfilling prophecies may be more powerful for whole classes than for individual students (e.g., Brophy, 1983; Jussim & Fleming, 1996). Brophy (1983) has asserted 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. 309). It has been argued that teacher expectation effects for the whole class may be more powerful because teachers spend much more time addressing their classes as a whole than they do interacting with individuals and they determine teaching activities depending on their expectations for their classes (Jussim, Smith, Madon, & Palumbo, 1998; Pellegrini & Blatchford, 2000). Researchers also have suggested how communication of expectations for the whole class would occur. For example, Cooper and Good (1983) wrote that the expectation influence at the class level:

> may involve Rosenthal's (1974) input factor. The teacher's general expectations for the class may influence the amount of material the teacher presents and the quality of response the teacher is willing to accept before moving on to new material. It is likely that teachers who hold lower expectations for their classrooms as a whole will teach easier lessons, spend less time on rigorous academic activity and accept less than perfect performance before moving on to new or different material. (pp. 152-153)

There is a paucity of empirical studies about teacher expectation effects at the class level. In the early 1970s, Doyle and colleagues examined the more general expectation effects across classrooms as a part of their study (Doyle, Hancock, & Kifer, 1972). Teachers were divided into high and low groups according to their tendency to generally overestimate or generally underestimate their students' IQs. It was found that the high teacher group produced higher achievement in their classes than the low teacher group who underestimated the students. The study showed that teacher expectations not only affect the achievement of individual students but also affect the achievement of the class as a whole. However, the methodology of this study was questionable; for example, it adopted a rather small and single sex sample ($n = 11$, all females), and used student IQ scores as the achievement measurement.

Later on, a few studies focused on the shared low expectations of teachers for classes in particular schools (e.g., Ennis, 1998; Timperley & Robinson, 2001). In studies of American urban schools, teachers were found to hold lowered expectations for classes (Ennis, 1995; Ennis, 1998). Because of the students' low socioeconomic background, the teachers formed uniformly low expectations for student achievement. Therefore, students were given little independence and few cognitively demanding tasks; teachers spent much time in controlling student classroom behaviours; and teachers provided students with limited opportunities to work with their peers. Teachers felt unable to overcome student background influences so that their teaching efficacy declined and they were less willing to deliver innovative instruction (Ennis, 1995; Ennis, 1998). However, in these studies, low expectations were assumed from teacher behaviours, reports, and attitudes but were not empirically measured.

Another study reported similar results of normatively low teacher expectations in poor socioeconomic communities (Timperley & Robinson, 2001). It seemed that the teachers in Timperley and Robinson's study collectively blamed external factors, such as the students' and their parents' deficits, for their negative expectations of student learning. With the help of a professional development programme, the teachers increased their expectations for student achievement, provided more learning opportunities for their students, and changed in their attitude, beliefs and teaching practices for the classes (Timperley & Rivers, 2003). However, this study is limited in that it includes only three teachers. A fourth teacher appeared to have high expectations. Further, as with the studies above, teacher expectations were not measured in this study.

The studies reviewed above have mainly focused on teachers' low expectations for classes, but neglected the possibility of high expectations for the whole class. However, more recent studies have provided evidence of teachers' general expectations, both high and low. Diamond and colleagues (2004) surveyed five elementary schools in Chicago and found that teachers in the schools serving mostly African American, Latino American, and low-income students commonly held low expectations, while in schools serving mostly Asian American, European American, and middle-class students, teachers held high academic expectations. Such shared expectations and beliefs has an effect on teachers' responsibility for all students' learning (Diamond et al., 2004), student opportunity to learn, and quality of instruction (Tate, 2005). Rubie-Davies' research has more convincingly identified teachers' uniform expectations for the whole class which were either exceptionally high or low (Rubie-Davies, 2008; Rubie, 2004). Her research investigated teachers and their students with various demographic characteristics from schools with different academic and social features, and found that teachers were likely to hold uniform expectations for all the students in the class at the beginning of the new school year. Rubie-Davies has argued that such class-level expectations were shaped by teacher beliefs about teaching, learning, and students (Rubie-Davies, 2008).

Some studies have further examined the relationship between generalised teacher expectations and student average achievement. For example, Rumberger and Palardy's (2005) analysis of longitudinal data showed that in schools with high teacher expectations, students had high rates of completion of homework and enrolment in advanced courses, and high performance in reading and mathematics. In Rubie-Davies's studies (2008; 2004) , it has also been found that classes with high expectation teachers acquired more academic gains than classes with low expectation teachers in reading and physical skills after one school year, which indicated a self-fulfilling prophecy effect. Archambault and colleagues (2012) explored teacher expectations as a class-level predictor, assessing the effects of teacher expectancy on classroom outcomes. Their analysis demonstrated that the more teachers maintain high expectations and high efficacy, the more students' achievement increased over the year. In conclusion, the authors appealed for special efforts to be made to help teachers develop positive expectations towards all students (Archambault et al., 2012).

Li's research examined a large sample of first-year undergraduate students learning English as a foreign language in China (Li, 2014; Li & Rubie-Davies, 2014). In her thesis, findings showed that teachers were likely to develop normatively high or low expectations for all the students, though students were randomly assigned to each class and teacher at the beginning of the school year. These normative expectations were even found to be pervasive across different classes. Teachers were clustered into three groups depending on their expectations, with high expectation teachers holding higher expectations than medium expectation and low expectation teachers. Furthermore, students with high expectation teachers scored significantly higher in the national standardised test than those with medium and low expectation teacher one school year later, even though those there were no significant differences in prior achievement of students at the beginning.

The samples of some studies were composed of teachers and students from schools with particular demographic features, such as schools serving low socioeconomic areas (e.g., Ennis, 1995). The shared teacher expectations in those cases still could be explained by student characteristics. However, Rubie-Davies' (2008) and Li's (2014) research merit great attention, because their work provided solid evidence that controlling for student variables, teachers develop normatively high or low expectations and students' later achievement conformed to teachers' normative expectations. They explicitly stated that TEEs were related to individual characteristics of the teacher more than to those of the students. It is the teacher rather than the students who may generate TEEs, and it seems that students' potential achievement depends on which teacher they happen to be placed with.

Mediating Models for Teacher Expectation Effects

Researchers have proposed various mediating models of self-fulfilling effects of teacher expectations (e.g., Brophy & Good, 1970; Brophy & Good, 1974; Cooper, 1979; Darley & Fazio, 1980; Jussim, 1986). Undoubtedly, most proposed models have elaborated the dichotomous mechanisms of differential teacher treatment that basically have all agreed on three broad stages in the mediating process. First, teachers must develop expectations; secondly, teachers behave differently towards students; and finally, students react to confirm teacher expectations (Jussim et al., 1998). The model hypothesised by Brophy and Good (1970) is taken as an example here. The researchers, for the first time in TEEs field, focused on observing teacher behaviours in the classroom which recorded dyadic teacher–student interactions and determined the differential behaviours of teachers towards high and low expectation students. This proposed model is composed of the following steps:

1. Teachers form differential expectations for student performance.
2. Teachers behave differently towards different students.
3. The differential teacher behaviour communicates differential teacher expectations to individual students.
4. Students' self-concept, achievement motivation, level of aspiration, classroom conduct, and interaction with teachers are affected by differential teacher treatment.
5. These effects complement and reinforce teachers' initial expectations.
6. Ultimately, students show a difference in their achievement and other outcomes, indicating that teacher expectations can function as self-fulfilling prophecies.

Brophy and Good's model made a significant contribution to the understanding of the mediation process of teacher expectations. First, their model highlighted the differential proximal behaviours of teachers, which prompted later research to focus on observing teacher behaviours in the real classroom. The second major contribution of Brophy and Good's model was to recognise the student role in the expectation mediating process. This model laid the foundation for other models which were extended later; for example, that of Darley and Fazio (1980). However, one limitation of Brophy and Good's model was that the researchers mainly focused on the dyadic teacher–student interactions as the mediator for teacher expectations, but neglected the communication of teacher expectations to the classroom as a whole. Another limitation was that this model solely concentrated on proximal behaviours of teachers and students, but failed to include distal variables, such as learning opportunities and classroom climate.

A more recently developed model has been introduced by Rubie-Davies (2008). The model integrated and complemented previous models, and further advanced understanding of the mediating process of generalised TEEs by proposing:

1. The teacher holds beliefs about teaching and learning and about students; these beliefs shape the teacher's decisions about learning opportunities and expectations for students.
2. Based on information about students and information about student prior achievement, the teacher forms expectations for individual students' academic performance and behaviour. Both the instructional and socioemotional climate of the classroom are structured as a result.
3. (a) The teacher communicates expectations to individual students and the class through verbal and nonverbal interactions. The classroom and instructional climate further enhances the expression of these expectations. (b) The teacher plans and delivers opportunities to learn based on expectations for student learning.
4. (a) The students interpret the teacher's verbal and nonverbal interactions and behaviours. The instructional and emotional climate of the classroom will contribute to this interpretation. (b) The students participate in the learning opportunities provided by the teacher.
5. (a) The students may or may not act on the teacher's interactions that indicate teacher expectations for academic performance and behaviour. The student's self-efficacy and motivation may act as mediators. (b) Student learning occurs according to the learning opportunities provided by the teacher.
6. Student outcomes occur as a result of the learning opportunities students have experienced, how students have interpreted teachers' expectations from the teacher's verbal and nonverbal behaviours, and the degree students to which have accepted teachers' expectations.

This model specifically incorporated distal behaviours, including teacher beliefs about teaching and learning, which may underpin teacher expectations and in turn shape learning opportunities and the socioemotional climate for student learning. Also, this model explained how teacher expectations for intact classes were mediated more by varying instructional practices and classroom climate than by dyadic interactions. Finally, it highlighted the teacher's role in the mediation process of teacher expectations while also including the student component.

Teacher Beliefs and generalised Teacher Expectation Effects

As stated in the first step of the mediating process proposed by Rubie-Davies (Rubie-Davies, 2008), teacher beliefs may shape teachers' normative expectations for student future achievement. Research on teacher beliefs contributing to generalised TEs is reviewed in this section.

First of all, what teachers believe about their ability to influence student learning may be related to teacher expectations. It has been argued that when teachers have stronger beliefs in their work competence, they are more likely to have high expectations for all students.

Researchers have proposed that teachers who believe that they can make a large difference to student learning are more likely to set higher goals (Midgley, Feldlaufer, & Eccles, 1988), adopt innovative and advanced instructional strategies (Nie, Tan, Liau, Lau, & Chua, 2013), take responsibility for student learning (Soodak & Podell, 1996), and persist through problems and obstacles (Soodak & Podell, 1993), which may lead to greater classroom success and higher expectations (Ross, 1998; Tschannen-Moran & Hoy, 2001). In contrast, teachers with lower self-efficacy are believed to rely on weaker and easier teaching approaches (Ashton & Webb, 1986), respond to management problems permissively (Dibapile, 2012), and fail to keep students on task (Ashton, 1983), which may result in poor classroom outcomes and lower expectations. Meanwhile, it has been assumed that teachers with lower efficacy are more vulnerable to stereotype biases and form low expectations for students from stigmatised groups, because they may not believe that they can enhance those students' academic achievement (Ashton & Webb, 1986). Very little work has been done to empirically measure the relationship between teachers' self-efficacy and expectations, and the results of those studies seemed to be equivocal. For example, Archambault, Janosz, and Chouinard (2012) conducted a study on a sample of 79 Grade 7–11 mathematics teachers in Canada which assessed teachers' self-efficacy and expectations for student achievement, and the authors found the correlation between teachers' expectancy and self-efficacy was high (.55). However, in a study conducted in New Zealand (Rubie-Davies, Flint, & McDonald, 2012), the authors investigated 68 teachers' self-efficacy and goal orientation beliefs, and found teacher self-efficacy did not significantly predict teachers' class-level expectations. Although it seems plausible that a teacher who has high expectations may have the confidence to make a large difference to student learning (Roeser, Marachi, & Gehlbach, 2002), this proposition still needs further empirical studies and evidence.

Whether the teacher's notion of intelligence and ability is fixed or incremental—that is, if the teacher believes student intelligence and ability to be a stable or a developmental trait—seems to be related to whether teacher expectations are high or low. It has been argued in previous research that teachers who hold beliefs that intelligence and student ability are fixed are likely to have low expectations for their students because the teachers believe that some students simply have low ability and cannot progress markedly (Brophy, 1982; Dusek et al., 1985; Eccles & Wigfield, 1985; Jussim, 1989). On the other hand, teachers with beliefs that intelligence is incremental have higher expectations for students, and interact more often and at higher cognitive levels with all their students because the teachers believe it is the educator who provides learning opportunities and experiences that will enhance student development (Jordan & Stanovich, 2001). Dweck and colleagues found that teachers who believed that intelligence or personal traits can be changed tended to be less likely to diagnose students for their presumed low ability (Rattan, Good, & Dweck, 2012), were less biased by stereotypical information (Plaks, Grant, & Dweck, 2005; Plaks, Stroessner, Dweck, & Sherman, 2001), and had higher expectations for and greater openness towards student improvement (Chiu, Hong, & Dweck, 1997; Erdley & Dweck, 1993; Plaks et al., 2001).

There is a paucity of studies about other teacher characteristics which may account for their expectations. There is a need for further and broader investigations into the role that teacher personal traits may play in forming expectations, especially for all their students.

Future Research

The perspective generalised TEEs to date has not been fully explored. Some limitations of existing studies, for example only in specific curriculums and school levels, may hinder generalisation of the results. More extensive investigations are needed to provide more convincing evidence to the generalised TEEs arguments. For example, TEs for intact student groups in different school settings, and their relation to various student outcomes should be explored.

In addition to identification of generalised TEEs, great importance should be attached to the mediating mechanisms. Empirical studies are encouraged to conduct to explain the formation, transmission, and confirmation of TEs for students as a whole. Emphasis should be placed on what variables may shape teacher expectations for overall students and how students perceive and react to teachers' expectations.

Moreover, although it has been hypothesised that generalised TEEs may be even more powerful than TEEs for individuals, this hypothesis merits systematic research, perhaps with comparison of effect sizes. Another question is whether there are any moderating variables for generalised TEEs, which could strengthen or weaken the relations ship between TEs and the overall student achievement. If there is any moderator, it would be meaningful to enhance positive TEs for all students and minimize negative ones.

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