

The Magnitude of Teacher Expectation Effects: Differences in Students, Teachers and Contexts

Zheng Li

College of International Studies,
Southwest University,
Chongqing, China

Abstract. This article aimed to present a comprehensive review of the moderators of teacher expectation effects. It concluded the factors which may strengthen or weaken the effects of teacher expectancies in classrooms. Apart from student characteristics, this article highlighted the individual differences in teachers and contextual features which have not been systematically reviewed to date. It seemed that some teacher and contextual variables were likely to generate and modify teacher expectation effects to a significant extent. Implications and future research direction were also discussed.

Keywords: Teacher expectation effects, Teacher beliefs, Moderation Effects, Individual differences

Introduction

With the publication of *Pygmalion in the Classroom* (Rosenthal & Jacobson, 1968), the self-fulfilling prophecy theory was acknowledged within educational psychology. In the classic Pygmalion experiment, it seemed that the students (randomly selected) whose teachers were induced to hold high expectations for tended to show greater gains in IQ than control group students one and two years later. The Pygmalion study immediately provoked extremely controversial reactions. Advocates accepted the findings enthusiastically and praised the study as the key to eliminating educational and social inequalities (see Spitz, 1999; Wineburg, 1987 for reviews). However, among some researchers studying educational psychology and intelligence, the experiment generated a storm of criticism (see Spitz, 1999 for a review). After a large number of replication studies examining teacher expectation effects (TEEs) on

students' IQ, academic and social outcomes in both laboratory settings and real classrooms (see reviews by Brophy & Good, 1974; Hall & Merkel, 1985; Spitz, 1999), the debate came to an end, as Rosenthal's series of meta-analyses finally demonstrated the existence of TEEs (Rosenthal, 1968, 1974, 1976, 1985; Rosenthal & Rubin, 1978; Rosenthal & Rubin, 1971). The meta-analyses examined studies of interpersonal expectancy effects in laboratory and everyday situations, and revealed that overall 34–40% of the previous expectation effect studies had reported significant self-fulfilling prophecy effects, with the percentage of positive results being slightly higher in the classroom studies than in laboratories. These data and other reviews (e.g., Brophy, 1983; Jussim & Harber, 2005; Raudenbush, 1984) have supported the existence of TEEs and the concept that teachers' initial expectations increase the probability of students conforming to meet the teachers' perceptions and predictions.

Though it has been acknowledged that self-fulfilling effects of teacher expectations do exist, there have been concerns about the strength of TEEs in naturalistic classrooms. Some research argued that the magnitude of TEEs was relatively small. For example, Brophy and Good (1974) reported that the effects of teacher expectancies averagely contributed to only 5–10% differences per student on academic achievement, and Cooper and Good also stated that there was relatively little evidence in favour of sizeable self-fulfilling effects of teacher expectations (Cooper, 1979; Cooper & Good, 1983). However, researchers have also contended that stronger TEEs may be found in particular classrooms (e.g., Raudenbush, 1984), suggesting that the magnitude of TEEs varied by different teachers, students, classrooms or other circumstances.

Student Moderators of Teacher Expectations Effects

In terms of student moderators, findings have shown that students with specific characteristics are more susceptible to TEEs. These characteristics include student individual differences in race, socioeconomic status, gender, age, prior achievement and so on.

Student ethnic group

Jussim and colleagues (1996) found that teacher expectations influenced the standardised test scores of African Americans ($\beta = .37$) more strongly than they influenced the scores of European American students ($\beta = .14$). Steele (1992, 2003) also conducted studies primarily on African American students and argued that they were more susceptible to TEEs than their European American counterparts. McKown and Weinstein (2002, 2003) investigated the role that student race may play as a moderator of the relationship between teacher expectations and student mathematics and reading achievement and they found that African American children were more vulnerable to stereotype threat and

TEEs, especially negative expectancy effects, than other student groups, for instance Caucasian children. In New Zealand, researchers (Rubie-Davies, Hattie, & Hamilton, 2006) have also reported that Māori students were more subject to unfavourable TEEs than other ethnic groups. More recently, one study about children from kindergarten to sixth grade in Europe (Speybroeck et al., 2012) documented differing associations between teacher expectations and student mathematics achievement for ethnic minority and majority children, and the findings showed TEEs seemed to be somewhat stronger for ethnic majority students ($\beta = .16$) than for ethnic minority students ($\beta = .11$). Generally, previous research has concluded that expectancy effects are more powerful among students who are from ethnic minority groups. The latest research (Jacoby-Senghor, Sinclair, & Shelton, 2016) has also provided evidence that teachers' biased expectations may predict black students' underperformance. In most cases, ethnic minority students may be particularly likely to suffer negative self-fulfilling prophecy effects of teacher expectations.

Student socioeconomic status

Investigation of students from lower socioeconomic status (SES) groups whose family has a low income and poor education background has shown that low SES students may be more vulnerable to TEEs, with standardised coefficients of .11 relating teacher expectations to student future achievement for higher SES students, and .25 for students from lower SES backgrounds respectively (Jussim et al., 1996). Another longitudinal study (Alvidrez & Weinstein, 1999) explored the relations between preschool teacher expectations and student high school performance and found that teacher predictions were weakest for students with higher SES families. Another study (Hinnant, O'Brien, & Ghazarian, 2009) about teacher expectations in the early school years as a predictor of future academic achievement in the reading and mathematics domains investigated nearly 1000 children and families at first, third and fifth grades. The findings showed that teacher expectations seemed to be significantly and positively predicting subsequent mathematics performance of children from families low ($\beta = .20, p < .001$) and average incomes ($\beta = .12, p < .01$) families. However, teacher expectations tended to be not significantly linked to later mathematics achievement of students from high income families ($\beta = .04, p > .10$). More recent studies have also reported consistent results of the student SES moderator. For example, one study (Gregory & Huang, 2013) about teachers' college-going expectations and student postsecondary education status collected data from more than 4000 tenth-grade students and their teachers and parents, which found that teacher expectations had the strongest link to post-secondary education for lower income students. Sorhagen's study (2013) also used prospective longitudinal data to examine the associations between teachers' inaccurate

expectations in first grade and students' high school performance at age 15; the findings suggested a significant interaction between teacher expectations and student family income, with stronger TEEs on mathematics, reading comprehension, word knowledge and verbal reasoning scores of children from relatively poorer families. Findings have consistently shown that students from lower SES families may be more susceptible to expectancy effects and therefore more likely to conform to what their teachers expected.

Student gender

Previous studies have shown that female students may be more vulnerable to teachers' stereotyped expectations in mathematics, especially when they themselves have incorporated this stereotype into their own views (Eccles & Hoffman, 1984; Eccles & Jacobs, 1986; Meece, Parsons, Kaczala, & Goff, 1982). However, Jussim and colleagues (1996) conducted a study which examined nearly 2000 students in seventh-grade mathematics classes, and documented that girls' scores were not significantly affected by teacher expectations for their talent more than boys' were; the predictive effects of teacher expectations on both boys' and girls' later scores in mathematics were comparatively small (.10 to .20). Hinnant and colleagues' work (2009) found that first-grade teachers' expectations were consistently related to ethnic minority boys' reading scores in their third-grade, but not to ethnic minority girls'. A more recent study (Wood, Kurtz-Costes, & Copping, 2011) into African American students found that for boys, but not girls, educational attainment expectations made a significant contribution to their post-secondary progress, with eleventh-grade teacher expectations predicting college attendance one year after high school graduation. An investigation (Karwowski, Gralewski, & Szumski, 2015) revealed that the relationship between teachers' expectations of student creativity and students' creative self-perception was markedly stronger for female students and males. It seemed that student gender generally was reported as a moderator of TEEs. However, the gender moderator functioned in a complicated manner; it seemed to interact with some other variables, like subject and student ethnicity.

Student age

It has been commonly acknowledged that student age works as a moderator of the TEEs mechanism, which indicates that stronger TEEs may occur for children at earlier ages. In the classic Pygmalion study, Rosenthal and Jacobson (1968) evidenced that students of younger ages would be more likely to be affected by TEEs than older students. Later studies confirmed that assumption (e.g., Kuklinski & Weinstein, 2001; Weinstein, Marshall, Sharp, & Botkin, 1987; West & Anderson, 1976). For example, Kuklinski and Weinstein's study (2001) reported a significant age-related decline in the impacts of teacher expectations on student

future achievement, and this outcome may suggest that TEEs tend to magnify children's performance gap in the early grades but gradually diminish in later grades.

Student prior achievement

In Madon, Jussim and Eccles' study (1997) of naturally occurring effects of teacher expectancies, evidence showed that teacher perceptions were more precisely connected to student future achievement for low achieving students than for high achievers. The authors (Madon et al., 1997) argued that low achieving students may "find school consistently difficult and unpleasant" (p. 793), and their greater susceptibility to both positive and negative teacher expectations may result from their lower self-concept (Jussim, 1986), which may lead to greater likelihood of internalising their teachers' expectations. A more recent study conducted in the Netherlands (de Boer, Bosker, & van der Werf, 2010) explored the relationship between teacher expectation bias—"the difference between observed teacher expectations and predicted teacher expectations on the basis of students' talent, effort and achievement (p. 169)"—and long-term student later achievement. The findings of the study (de Boer et al., 2010) demonstrated that teacher expectations, positive or negative ones, were more closely related to low-achieving student performance after one year; however, TEEs were stronger for high-achieving students' performance after five years. Another study (Archambault, Janosz, & Chouinard, 2012) reported different results; it was found that teacher expectancy effects on student academic accomplishment in mathematics one year later were similar for all students regardless of their prior grades. However, the results may be not representative because the samples for this study were all from schools serving low SES students. In general, student susceptibility to TEES may vary as a function of their prior achievement. Although some studies present different and even contradictory findings, they appear to suggest that the moderation effects of student prior achievement may be influenced by other factors as well (e.g., student SES), which calls for more intensive investigations.

Other student personal characteristics

Other student personal characteristics, such as motivation, attribution pattern (Brophy, 1983), and self-concept (Madon et al., 1997), have also been found to moderate TEEs. Students who are more motivated are more prone to TEEs (Brophy, 1983). Students who attribute their success at least partially to their own efforts are more vulnerable to TEEs than students who attribute success completely to uncontrollable factors such as ability or luck (Brophy, 1983). Teacher expectations produce considerably stronger impact for students with lower self-concept in mathematics than students with higher self-concept

(Madon et al., 1997). When students desire to initiate friendly social interactions with teachers, they are more likely to conform to what they expect from them (Snyder, 1992).

Teacher Moderators of Teacher Expectation Effects

Susceptibility to TEEs is also an individual variable in teachers (Brophy, 1983). TEEs are more likely to occur to some teachers with particular characteristics.

Proactive, reactive and overreactive teacher

Based on teachers' behaviour towards students' previous and current performance, Brophy and Good (1974) hypothesised teachers as being proactive, reactive, or overreactive. Proactive teachers, who were most likely to have positive expectation effects on students, performed their own analysis of their students' characteristics and needs, had well-articulated ideas about what and how to teach, and consequently shaped students through teachers' expectations rather than through other sources (Brophy, 1983). According to Brophy and Good (1974), most teachers were reactive and had few self-fulfilling prophecy effects on students. Reactive teachers held their expectations more lightly, adjusting them to respond to new feedback and emerging trends. However, overreactive teachers, according to the authors (Brophy & Good, 1974), usually developed and maintained rigid, stereotyped expectations of students based on student prior records or first impressions, and treated students as stereotypes when interacting with them. These overreactive teachers were most likely to foster undesirable expectation effects in low achievers.

The proposal of proactive, reactive and overreactive teachers lacked empirical evidence, however. The authors hypothesised such teacher groupings on the basis of speculated teacher responses to students' prior records and present behaviour. In their studies (Brophy, 1983; Brophy & Good, 1974), teachers' expectations, teaching behaviours and the effects on student outcomes were not measured or recorded at all, but the speculations about teacher individual differences shed light upon teachers' susceptibility to TEEs.

High bias and no-bias teachers

Babad and his colleagues distinguished teachers as high bias teachers and no-bias teachers and explored the features of teachers with different susceptibility to biasing information (Babad, 1979; Babad, Inbar, & Rosenthal, 1982a, 1982b; Babad & Inbar, 1981; Babad, 2009). Babad (1979) devised a performance measure to identify teachers who were prone to demonstrate expectancy effects in the classrooms. In this measure (Babad, 1979), students of a physical education college were asked to score two drawings which they were told were drawn by a high SES and a low SES child (based on ethnic and socioeconomic information

provided about the two imaginary children). In fact, the two pictures were reproduced from a test manual and the drawing created by the so-called “high SES child” had a test manual score three points higher than the one by the “low-SES child”. The differences between the scores given to the two children by the subjects (minus the three-point objective difference) were interpreted as the scorers’ susceptibility to biasing information. Unbiased teachers were not easily influenced by social status information in grading students’ assignments, but highly biased teachers assigned notably higher scores to high SES students than to students with low SES.

In a series of experimental studies conducted among physical education pre-service teachers (Babad, 1979; Babad et al., 1982a, 1982b; Babad & Inbar, 1981), Babad and colleagues reported stable distributions of bias scores for the student teachers, with one sixth of the subjects scoring the drawings objectively, half mildly biased, and one fourth highly biased (Babad, 1998). Substantial differences were found between unbiased and highly biased individuals. Although highly biased teachers, not the unbiased ones, were more likely to describe themselves as over-reasonable, highly objective, logically reasoned, and unbiased (Babad, 1979), they used more dogmatic statements in written analyses of educational events and manifested more dogmatic behaviours, while no-bias teachers behaved towards students in a more democratic, balanced, flexible, and open manner (Babad & Inbar, 1981). Highly biased teachers held more strongly expressed political views (Babad, 1979) and educational beliefs (Babad, 1985) and exaggerated much more the achievement difference between high expectation students and low expectation students (Babad, 1998). Unbiased teachers perceived and predicted more accurately the differences between students, while highly biased teachers treated different students with different degrees of friendliness, different motivational strategies, and different degrees of criticism (Babad et al., 1982a). Highly biased teachers demonstrated more nonverbal leakage indicating expectation and affect cues towards their classrooms than unbiased teachers (Babad, Bernieri, & Rosenthal, 1989a, 1989b). Most importantly, teachers’ differing susceptibility to biasing information may lead to varying probability of generating TEEs (Babad, 2009). Highly biased teachers created more substantial negative expectancy effects on their students than unbiased teachers (Babad, 1985; Babad et al., 1982a). The series of studies by Babad and colleagues (Babad, 1979, 1985; Babad et al., 1989a, 1989b; Babad et al., 1982a, 1982b; Babad & Inbar, 1981; Babad, 2009) demonstrated teachers’ susceptibility to biasing information and their subsequent differential treatment towards students. Limitations of their studies were that the participants were not in-service teachers but student teachers, the studies mainly focused on a single subject, physical education, and scorers’ expectation biases were manipulated by the experimenters rather than naturally occurring.

High differentiating and low differentiating teachers

Another major teacher moderator that has been investigated is the extent to which teachers are perceived to treat students differentially (Brattesani, Weinstein, & Marshall, 1984; Weinstein, Marshall, Brattesani, & Middlestadt, 1982; Weinstein, 2002). In a series of studies of children in elementary schools (Weinstein, 2002; Weinstein et al., 1982; Weinstein et al., 1987; Weinstein & Middlestadt, 1979), Weinstein and colleagues developed an instrument, the Teacher Treatment Inventory (TTI), in which children independently reported on the frequency of a variety of teacher behaviours towards an imaginary high and low achiever respectively in their classrooms, and thus perceptions of teachers' differential treatment were reflected in the difference between the ratings towards those two hypothetical "students". Consistent reports of teacher differentiating treatment supported the classification of high differentiating teachers and low differentiating teachers (Weinstein et al., 1982), and classrooms may be also "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 et al., 1984; Kuklinski & Weinstein, 2001; Marshall & Weinstein, 1986; McKown & Weinstein, 2008) showed stronger 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 colleagues' work (e.g., Brattesani et al., 1984; Kuklinski & Weinstein, 2000, 2001; Marshall & Weinstein, 1986; McKown & Weinstein, 2008; Weinstein, 2002; Weinstein & Middlestadt, 1979) has contributed to further understanding of the teacher's role in moderating TEEs. Their findings provide evidence that TEEs in natural classrooms are associated with teacher individual characteristics and the degree of differential treatment of students; however, the studies were mostly conducted in reading classrooms at elementary schools, which indicates a need for investigations within different samples.

High expectation and low expectation teachers

In more recent studies, Rubie-Davies has explored teachers' class-level expectations and pointed out that teacher expectations can be class-centred as well as individually centred (Rubie-Davies, 2004, 2006, 2007, 2008a, 2008b; Rubie-Davies, Flint, & McDonald, 2012). Rubie (2004) identified teachers who held uniformly high or low expectations for all the students in classes. One

month into the school year, teachers were asked to predict their students' academic achievement at the end of the year on a seven-point scale. These predicting scores were compared with students' actual running records at the beginning of the year. According to the differences between teachers' prediction and students' actual performance, teachers were identified as high or low expectation teachers who had expectations that were significantly either above or below students' actual achievement. Data were reanalysed and showed that teachers' expectations were pervasive for all the students in the identical classroom. When teachers had high expectations for the high achieving students, they were likely to have similarly high expectations for the average and low achieving students in the same class; likewise the low expectation teachers held uniformly low expectations for all achievement levels.

Through teacher interviews, and classroom observations, Rubie-Davies found that high expectation teachers and low expectation teachers differed greatly in their pedagogical beliefs and instructional practices (Rubie-Davies et al., 2012), provided varying learning opportunities, and created a diverse socioemotional climate in classrooms (Rubie-Davies, 2004, 2007, 2008a, 2008b). After one school year, students with high expectation teachers made markedly more academic gains than the peers with low expectation teachers did (Rubie-Davies, 2004, 2007, 2008a). In addition, students' self-perceptions in both academic and non-academic areas were also found to be associated with teachers' class-level expectations (Rubie-Davies, 2004, 2006, 2008a). Although no statistically significant differences in student self-perceptions were identified at the beginning of the school year, statistically significant differences were found at the end of the school year, because the self-perceptions of students with low expectation teachers declined substantially after one school year. Rubie-Davies' work about teachers' uniform expectations for the overall class, and the effects on the overall class outcomes added weight to the argument that TEEs may be a function of individual differences in teachers, especially in their beliefs (Rubie-Davies et al., 2012). Her work identified the teachers who were more likely to enact expectancy effects on the whole class, and suggested possible mechanisms for such effects. However, a larger sample size is needed to enable generalisation of the results. Further, Rubie-Davies' studies were conducted in reading and physical education courses in elementary schools, which left other subjects and school levels unexplored.

Situation Moderators of Teacher Expectation Effects

Teacher-student interaction can also be moderated by the situation or context in which students are placed (Brophy & Evertson, 1978). Research in relation to context moderators is not abundant within the teacher expectancy field.

Transitional situations

A meta-analysis completed by Raudenbush (1984) showed that the strongest TEEs tended to take place in the first, second and seventh grades. Larger effects of teacher expectancies have also been reported for adult trainees in a military programme (Eden & Shani, 1982). It seemed that these findings denied a moderating function of age, but they suggested moderation effects of situational factors (Jussim, Smith, Madon, & Palumbo, 1998). People, even adults, may be more vulnerable to self-fulfilling effects of interpersonal expectancy when they were transferring to new and unfamiliar situations (Weinstein & McKown, 1998). When people engage in major transitions, they may have unclear and weakened self-perceptions, which may increase the likelihood of expectancy effects (Jussim et al., 1998). Results from other findings also consistently show that when students are in transition phases, such as entering a new school level, they are more likely to behave in ways that confirm teacher expectations (Jussim, 1986; Swann & Ely, 1984; Li, 2014).

Ability grouping

Grouping students refers to segregating students into different groups or classes according to their abilities. Grouping, in the eyes of students and teachers, represents institutional justification for believing that students are different in IQ or academic potential (Jussim et al., 1998). Thus grouping may lead to more rigid teacher expectations. Also, compared with students who are not grouped, students in ability groups appear to be more susceptible to labelling effects, which are more likely to provoke self-fulfilling prophecy effects or perceptual biases of teacher expectations (Eccles & Wigfield, 1985; Hall & Merkel, 1985; Jussim, 1986, 1990; Palardy, 1969). Self-fulfilling effects of teacher expectations have been found to be strongest among students in the low ability groups when teachers use within-class grouping (A. E. Smith et al., 1998). Poor quality instruction (Jussim et al., 1998), reduced teacher effort (Evertson, 1982) and limited learning opportunities (Slavin, 1993) for students in low-ability groups may restrain student academic gains considerably. Some studies (e.g., Kelly & Carbonaro, 2012; Weinstein, 2002) have also discussed TEEs on students who are placed in higher groups. Teachers may hold higher expectations for students in higher groups, and placement in higher ability groups may provide students with increased learning opportunities and lead to greater academic gains over time. In addition, it has been argued that TEEs may be stronger for intact groups than for individuals in the classroom (Brophy, 1983; Jussim & Fleming, 1996; Rubie-Davies, 2008a). Group-level expectancy effects are anticipated to be more powerful because students may function as a member of a group more than an individual, a false belief about a group may be more credible and more difficult to disconfirm, and teachers spend more time addressing the classes or

groups as a whole than addressing their students individually (A. E. Smith et al., 1998).

Class/group size

TEEs may be more likely to happen in classrooms or groups with larger numbers of students than in smaller classrooms or groups. This is because teachers in larger classrooms or groups are busier and more occupied, and therefore more susceptible to biases or rigid expectations (Brophy, 1983; M. L. Smith, 1980). On the other hand, teachers in smaller classrooms or groups show less differential attitudes to students and even put in more effort to compensate for low expectation students (Weinstein, 1976). In addition, with limited resources in larger classrooms or groups, such as computers, laboratories, and athletic facilities, teachers may find it more difficult to manage instructional practice, and thus be more subject to perceptual biases and self-fulfilling expectancy effects (Rosenthal & Rubin, 1971).

Nature of the content being taught

It has been proposed that with tasks of familiar content and predictable difficulty, teachers are likely to form accurate expectations and therefore expectancy effects are less probable (Brophy, 1983). One empirical study has found that larger TEEs take place in relation to student reading achievement than for mathematics achievement (M. L. Smith, 1980), which may be due to the differences in instructional practice used in teaching reading and mathematics. For example, reading may be taught in small groups while mathematics is often taught to the class as a whole (Cooper, 1985; Good & Brophy, 2009). Rubie-Davies (2008a) reported that class-level TEEs varied across curriculum areas, being more salient in reading than in physical skills. Sorhagen's longitudinal study (2013) also found varying TEEs across academic subjects. Teachers' false expectations in mathematics and language abilities "seemed to have a more meaningful effect on students from lower income families" (p. 475) than the effect in students' reading abilities. Another moderator related to the subject is when new content is being introduced. The relationship between teachers' expectations and student outcomes may be strengthened when students are highly reliant on teachers as limited sources of the new content (Braun, 1976; West & Anderson, 1976). Li's study (2014) argued that TEEs in foreign language classrooms were pronounced because teachers and classrooms were the major sources of learning opportunities. Additionally, if subject matter is taught through peer-tutoring or self-pacing to a larger degree than through teacher delivery, TEEs probably would be reduced (Cooper, 1985).

Implications and Future Research

The review showed that individual differences in teacher, students and contexts may strengthen or weaken expectancy effects to a significant degree. That is to say, TEEs could possibly be modified by shaping and altering teachers' and students' beliefs and behaviours and some contextual factors.

More importance should be attached to the teacher' role in generating expectancy effects, because research highlighting the "teacher" factor has been comparatively scarce and has become the latest focus in the related field. Apart from what has been reviewed above, some studies have also shed lights on the teacher's role in producing TEEs. For example, a study in Singapore (Ker, 2016) reported that students' achievement in mathematics was more likely to vary in line with their teachers' beliefs and expectations. Another investigation into Mexican American students (Wentzel, Russell, & Baker, 2016) found that teacher variables were significantly predicting student academic outcomes. Professional development programmes for pre-service and in-service teachers could be planned to enhance teachers' expectations and modify their behaviours in instructing and interacting with their students. However, caution should be taken because teacher expectations are not isolated but interrelated with other teacher variables for example teacher beliefs and self-efficacy. Teachers may modify their beliefs and behaviours to build a more positive instructional and socioemotional environment and more and better opportunities for student learning, which may lead to substantial academic gains by their students. Hence, how to distinguish different types of teachers seems worthwhile. Teachers' expectations may be functions of some characteristics, such as some demographic features, and pedagogical beliefs and self-efficacy; and these could be identified by large-scale empirical studies in the future.

In addition, very little research has been done to investigate the contextual moderators of teacher expectation effect, compared with studies of teachers and students in the mechanism. Contextual factors should not be neglected and merit more attention. For example, the impact of "curriculum area" has not been fully explored in the expectancy field. It can be anticipated that TEEs would be more salient in some classrooms because of the features of particular subjects. What is worth noting is the institutional settings. For instance, TEEs have been seldom studied in tertiary institutions. In future research, to enhance student academic gains and to achieve educational equality, there is a need to explore closely all variables for promoting positive expectancy effects and eliminating negative expectation effects.

Acknowledgement:

This article was supported by the Southwest University Teaching Reform Fund [2015JY062]

References

- Alvidrez, J., & Weinstein, R. S. (1999). Early Teacher Perceptions and Later Student Academic Achievement. *Journal of Educational Psychology, 91*(4), 731.
- 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*(5), 319–328.
- Babad, E. (1979). Personality correlates of susceptibility to biasing information. *Journal of Personality and Social Psychology, 37*(2), 195-202. doi: 10.1037/0022-3514.37.2.195
- Babad, E. (1985). Some correlates of teachers' expectancy bias. *American Educational Research Journal, 22*(2), 175-183.
- Babad, E. (1998). Preferential affect: The crux of the teacher expectancy issues. In J. Brophy (Ed.), *Advanced in research on teaching: Expectations in the classroom* (Vol. 7, pp. 183-214). Greenwich, CT: JAI Press.
- Babad, E.. (2009). *The social psychology of the classroom*. New York, NY: Routledge.
- Babad, E., Bernieri, F., & Rosenthal, R. (1989a). Nonverbal communication and leakage in the behavior of biased and unbiased teachers. *Journal of Personality and Social Psychology, 56*(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*(3), 281-295.
- Babad, E., Inbar, J., & Rosenthal, R. (1982a). Pygmalion, Galatea, and the Golem--Investigations of biased and unbiased teachers. *Journal of Educational Psychology, 74*(4), 459-474.
- Babad, E., Inbar, J., & Rosenthal, R. (1982b). Teachers' judgment of students' potential as a function of teachers' susceptibility to biasing information. *Journal of Personality and Social Psychology, 42*(3), 541-547.
- Babad, E., & Inbar, J. (1981). Performance and personality correlates of teachers' susceptibility to biasing information. *Journal of Personality and Social Psychology, 40*(3), 553-561.
- 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*(Comprehensive Tests of Reading Skills), 236-247.
- Braun, C. (1976). Teacher expectations: Sociopsychological dynamics. *Review of Educational Research, 46*, 185-213.
- Brophy, J. (1983). Research on the self-fulfilling prophecy and teacher expectations. *Journal of Educational Psychology, 75*(5), 631-661.
- Brophy, J., & Evertson, C. M. (1978). Context variables in teaching. *Educational Psychologist, 12*(3), 310-316.
- Brophy, J., & Good, T. L. (1974). *Teacher-Student Relationships: Causes and Consequences*. New York: Holt, Rinehart and Winston.
- Cooper, H. M. (1979). Pygmalion grows up: A model for teacher expectation

- communication and performance influence. *Review of Educational Research*, 49(3), 389-410.
- Cooper, H. M., & Good, T. L. (1983). *Pygmalion Grows up : Studies in the Expectation Communication Process*. New York: Longman.
- Cooper, H. M. (1985). Models of teacher expectation communication. In J. B. Dusek, V. Hall & W. Meyer (Eds.), *Teacher expectancies* (pp. 135-158). Hillsdale, NJ: Lawrence Erlbaum.
- de Boer, H., Bosker, Roel J., & van der Werf, M. P. C. (2010). Sustainability of teacher expectation bias effects on long-term student performance. *Journal of Educational Psychology*, 102(1), 168-179.
- Eccles, J., & Hoffman, L. W. (1984). Socialization and the maintenance of a sex-segregated labor market. In H. Stevenson & A. Siegel (Eds.), *Research in child development and social policy* (Vol. 1, pp. 367-420). Chicago, IL: University of Chicago Press.
- Eccles, J., & Jacobs, Janis E. (1986). Social forces shape math attitudes and performance. *Signs*, 11(2), 367-380.
- Eccles, J., & Wigfield, A. (1985). Teacher expectations and student motivation. In J. B. Dusek (Ed.), *Teacher Expectancies*. Hillsdale, NJ. : L. Erlbaum.
- Eden, D., & Shani, A. B. (1982). Pygmalion goes to boot camp: Expectancy, leadership, and trainee performance. *Journal of Applied Psychology*, 67(2), 194-199.
- Evertson, C. M. (1982). Differences in instructional activities in higher- and lower-achieving junior high English and math classes. *The Elementary School Journal*, 82(4), 329-350.
- Good, T L , & Brophy, J. (2009). *Looking in Classrooms* (10th ed.). New York, NY. : Longman.
- 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*, 1-15.
- Hall, V., & Merkel, S. (1985). Teacher expectancy effects and educational psychology. In J. B. Dusek, V. Hall & W. Meyer (Eds.), *Teacher expectancies* (pp. 67-92). Hillsdale, NJ: Lawrence Erlbaum.
- 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(3), 662-670.
- Jacoby-Senghor, D. S., Sinclair, S., & Shelton, J. N. (2016). A lesson in bias: The relationship between implicit racial bias and performance in pedagogical contexts. *Journal of Experimental Social Psychology*, 63, 50-55. doi: <http://dx.doi.org/10.1016/j.jesp.2015.10.010>
- Jussim, L. (1986). Self-fulfilling prophecies: A theoretical and integrative review. *Psychological Review*, 93(4), 429-445.
- Jussim, L. (1990). Social reality and social problems: The role of expectancies. *Journal of Social Issues*, 46(2), 9-34.

- Jussim, L., Eccles, J., & Madon, S. (1996). Social perception, social stereotypes, and teacher expectations: Accuracy and the quest for the powerful self-Fulfilling prophecy. In P. Z. Mark (Ed.), *Advances in Experimental Social Psychology*. New York: Academic Press.
- Jussim, L., & Fleming, C. (1996). Self-fulfilling prophecies and the maintenance of social stereotypes: The role of dyadic interactions and social forces. In N. Macrae, C. Stangor & M. Hewstone (Eds.), *The foundations of stereotypes and stereotyping* (pp. 161-192). New York, NY: Guilford.
- 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(2), 131-155. doi: 10.1207/s15327957pspr0902_3
- Jussim, L., Smith, A. E., Madon, S., & Palumbo, P. (1998). Teacher expectations. In J. Brophy (Ed.), *Advances in Research on Teaching: Expectations in the Classroom*. Greenwich, CT: JAI Press
- 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: <http://dx.doi.org/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(3), 271-294.
- Ker, H. W. (2016). The impacts of student-, teacher- and school-level factors on mathematics achievement: an exploratory comparative investigation of Singaporean students and the USA students. *Educational Psychology*, 36(2), 254-276. doi: 10.1080/01443410.2015.1026801
- Kuklinski, M., & 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), 1-34. doi: 10.1023/A:1009904718353
- Kuklinski, M., & Weinstein, R. S. (2001). Classroom and developmental differences in a path model of teacher expectancy effects. *Child Development*, 72, 1554-1578.
- Li, Z. (2014). *Teachers matter: Expectation effects in foreign language classrooms at university*. (PhD), University of Auckland, Auckland, New Zealand.
- Madon, S., Jussim, L., & Eccles, J. (1997). In search of the powerful self-fulfilling prophecy. *Journal of Personality and Social Psychology*, 72(4), 791-809.
- Marshall, H. H., & Weinstein, R. S. (1986). The classroom context of student-perceived differential teacher treatment. *Journal of Educational Psychology*, 78, 441-453.
- 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(1), 159-184.
- McKown, C., & Weinstein, R. S. (2003). The development and consequences of stereotype consciousness in middle childhood. *Child Development*, 74(2), 498-515.
- McKown, C., & Weinstein, R. S. (2008). Teacher expectations, classroom context, and the

- achievement gap. *Journal of School Psychology, 46*(3), 235-261.
- Meece, J. L., Parsons, J. E., Kaczala, C. M., & Goff, S. B. (1982). Sex differences in math achievement: Toward a model of academic choice. *Psychological Bulletin, 91*(2), 324.
- Palardy, J Michael. (1969). What teachers believe: What children achieve. *The Elementary School Journal, 69*(7), 370-374.
- 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*(1), 85-97.
- Rosenthal, R. (1968). Experimenter expectancy and the reassuring nature of the null hypothesis decision procedure. *Psychological Bulletin Monograph Supplement, 70*, 30-47.
- Rosenthal, Robert. (1974). *On the social psychology of the self-fulfilling prophecy: Further evidence for Pygmalion effects and their mediating mechanisms*. New York, NY: MSS Modular Publications.
- Rosenthal, R. (1976). *Experimenter Effects in Behavioral Research* (2nd ed.). New York, NY. : Irvington Publishers.
- Rosenthal, R. (1985). From unconscious experimenter bias to teacher expectancy effects. In J. B. Dusek, V. Hall & W. Meyer (Eds.), *Teacher expectancies* (pp. 37-65). Hillsdale, NJ: Lawrence Erlbaum.
- Rosenthal, R., & Jacobson, L.. (1968). *Pygmalion in the Classroom: Teacher Expectation and Pupils' Intellectual Development*. New York: Holt, Rinehart and Winston
- Rosenthal, R., & Rubin, D. B. (1978). Interpersonal expectancy effects: The first 345 studies. *Behavioral and Brain Sciences, 1*(3), 377-386.
- Rosenthal, R., & Rubin, D. B. (1971). Pygmalion reaffirmed. In J. D. Elashoff & R. E. Snow (Eds.), *Pygmalion reconsidered* (pp. 139-155). Worthington, OH: Jones.
- Rubie-Davies, C. (2004). *Expecting the best : instructional practices, teacher beliefs and student outcomes*. (Doctoral dissertation), University of Auckland. (UoA1207968)
- Rubie-Davies, C. (2006). Teacher expectations and student self-perceptions : Exploring relationships. *Psychology in the Schools, 43*(5), 537-552.
- Rubie-Davies, C. (2007). Classroom interactions: Exploring the practices of high- and low-expectation teachers. *British Journal of Educational Psychology, 77*(2), 289-306.
- Rubie-Davies, C. (2008a). *Expecting Success : Teacher Beliefs and Practices that Enhance Student Outcomes*. Saarbrücken. : VDM Verlag
- Rubie-Davies, C. (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: Nova Science
- Rubie-Davies, C, Hattie, J., & Hamilton, R.. (2006). Expecting the best for New Zealand students: Teacher expectations and academic outcomes. *British Journal of Educational Psychology, 76*(New Zealand), 429-444.
- Rubie-Davies, C, Flint, A., & McDonald, Lyn G. (2012). Teacher beliefs, teacher characteristics, and

- school contextual factors: what are the relationships? *The British journal of educational psychology*, 82(Pt 2), 270. doi: 10.1111/j.2044-8279.2011.02025.x
- Slavin, R. E. (1993). Ability grouping in the middle grades: Achievement effects and alternatives. *The Elementary School Journal*, 535-552.
- Smith, A. E., Jussim, L., Eccles, J., VanNoy, M., Madon, S., & Palumbo, P. (1998). Self-fulfilling prophecies, perceptual biases, and accuracy at the individual and group levels. *Journal of Experimental Social Psychology*, 34(6), 530-561.
- Smith, M. L. (1980). Meta-analysis of research on teacher expectation. *Evaluation in Education*, 4, 53-55.
- Snyder, M. (1992). Motivational foundations of behavioral confirmation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 25, pp. 67-114). New York, NY: Academic Press.
- Sorhagen, N. S. (2013). Early teacher expectations disproportionately affect poor children's high school performance. *Journal of Educational Psychology*, 105(2), 465-477.
- 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).
- Spitz, H. H. (1999). Beleaguered Pygmalion: A History of the Controversy Over Claims that Teacher Expectancy Raises Intelligence. *Intelligence*, 27(3), 199-234. doi: 10.1016/s0160-2896(99)00026-4
- Steele, C. (1992). Race and the schooling of Black Americans. *Atlantic Monthly*, April, 68-78.
- Steele, C. (2003). Race and the schooling of Black Americans. In S. Plous (Ed.), *Understanding prejudice and discrimination* (Vol. xiii, pp. 98-107). New York, NY: McGraw-Hill.
- Swann, W. B., & Ely, R. J. (1984). A battle of wills: Self-verification versus behavioral confirmation. *Journal of Personality and Social Psychology*, 46(6), 1287-1302.
- Weinstein, R. S. (1976). Reading group membership in first grade: Teacher behaviours and pupil experience over time. *Journal of Educational Psychology*(68), 103-116.
- Weinstein, R. S. (2002). *Reaching Higher : The Power of Expectations in Schooling*. Cambridge, MA.: Harvard University Press.
- 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(5), 678-692.
- 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(4), 1079-1093.
- Weinstein, R. S, & McKown, C. (1998). Expectancy effects in "context": Listening to the voices of students and teachers. In J. Brophy (Ed.), *Advances in Research on*

- Teaching* (pp. 215-242). Greenwich, CT: JAI Press.
- Weinstein, R. S., & Middlestadt, S. E. (1979). Student perceptions of teacher interactions with male high and low achievers. *Journal of Educational Psychology, 71*(4), 421-431.
- Wentzel, K. R., Russell, S., & Baker, S.. (2016). Emotional support and expectations from parents, teachers, and peers predict adolescent competence at school. *Journal of Educational Psychology, 108*(2), 242-255. doi: 10.1037/edu0000049
- West, C. K., & Anderson, T. H. (1976). The question of preponderant causation in teacher expectancy research. *Review of Educational Research, 613-630*.
- Wineburg, S. S. (1987). The self-fulfillment of the self-fulfilling prophecy. *Educational Researcher, 16*(9), 28-37.
- Wood, D., Kurtz-Costes, B., & Copping, K. E. (2011). Gender differences in motivational pathways to college for middle class African American youths. *Developmental Psychology, 47*(4), 961.