Chapter 14
The Effect of Expectation on Student Achievement

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14.1 Introduction

The school environment is a community in which human interaction which included people's beliefs, perceptions and expectations takes place. The members of schools, which include the administrators, teachers and students, have a set of common goals, values, desires or norms regarding achievement, and this set can be called 'academic press' (Shouse 1996). It is argued that academic press includes all these affective elements as well as school practices, policies, norms and expectations (Lee Smith et al. 1999). Lee et al. (1999) see teachers' expectations as one of the most important school factors which can influence students' academic achievement. Within the academic press, teachers and administrators have high expectations for the achievement of students (Lee and Smith 1996). This chapter focuses on the expectation dimension of academic press, enlarging it to include the expectations of teachers, parents and students. These affective constructs have an effect on individuals in that individuals adjust their behaviors, either consciously or not, to match the stereotypical images originating from other people's expectations (Al-Fadhli and Singh 2006). Expectations are defined as the estimation of the potentiality of attaining a goal (Wilson and Wilson 1992).

Drawing attention to the threat of low expectations, Lee and Smith (1999) assert that the level of teachers' expectations is "a brick" for the academic goals of schools and students. Apart from positive expectations, there is also the self-fulfilling prophecy phenomenon which is also called as the Pygmalion effect and is related to the behavioral confirmation of false beliefs (Merton 1948). The self-fulfilling prophecy occurs in three connected events (Darley and Fazio 1980; Jones 1986; Jussim 1986). Firstly, the perceiver holds a false belief about a target. Secondly, the perceiver treats the target in a way matching the false belief. Thirdly, the target

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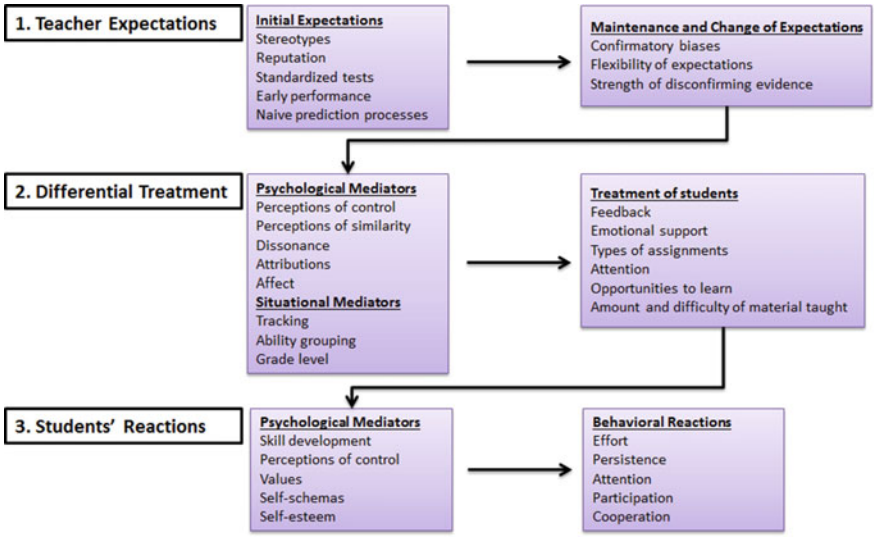

Fig. 14.1 Self-fulfilling prophecies

responds to this treatment in a way that validates the false belief. Self-fulfilling prophesies is a common phenomenon in education settings, and they are a major area of research for educational psychologists. Jussim (1986) lists three sequential stages in an educational environment as follows: (*i*) teachers develop expectations, (*ii*) teachers treat students differently depending on their expectations and (*iii*) students react to this treatment in expectancy-confirming ways (see Fig. 14.1).

A research by Rosenthal and Jacobson (1968) hypothesized and verified that some students may perform more poorly at schools than their peers as a result of their teachers' low expectations about them. Similarly, Parsley and Corcoran (2003) concluded that teachers' behaviors might affect the self-perceptions of students who might see themselves as potential achievers or the other way around as "at-risk failures." Additional studies in the literature support the argument that teachers' expectations may have a major influence on student achievement (Alvidrez and Weinstein 1999; Good and Brophy 2000; Kuklinski and Weinstein 2000; Madon et al. 1997; Weinstein and McKown 1998).

Another dimension of expectations is related to parents. Parental expectations are various beliefs, assumptions and aspirations regarding students' relationship with the factors that contribute to children's achievement, such as faculty or curriculum (Adeniji-Neill 2008). Parental expectations is arguably an important predictor of student achievement (Aldous 2006; Davis-Kean 2005; Jeynes 2007; Patrikakou 1997; Wu and Qi 2006), since the beliefs of parents motivate them to support their children towards achievement (Carden 2005). Furthermore, parental expectations about their children attending a university may be more influential for students than teachers' expectations (Ma 2001). There are a number of parameters

affecting parents' expectations about their children such as societal factors (Hill 2001; Weeks 2008), the education level (Seyfried and Chung 2003; Wood et al. 2010), income (Diamond and Gomez 2004; Grinstein-Weiss et al. 2009; Wood et al. 2010), the child's gender (Hill 2001; Graves 2010; Wood et al. 2010), and the achievement of the child (Englund 2004). Parental expectations are different from parental involvement in that they refer to parents' beliefs while parental involvement focuses on the actual behaviors (Englund et al. 2004).

The third dimension of expectations belongs to the students themselves. Self-expectations and beliefs of students are likely to be based on their prior achievements and experience and on the aspirations of parents and teachers (Rubie-Davies et al. 2010). Students' self-expectations may be twofold including their expectations about the level of education that they will attain (Eccles 1983) and their expectations about the grades they will get in specific courses (Maskey 2012). The literature on students' academic expectations has argued that these expectations influence students' achievement levels (Lucio et al. 2011; Sanders et al. 2001). Furthermore, parental expectations may have an effect on students' academic expectations (Patrikakou 1997). Accordingly, the expectancy-value theory of achievement motivation developed by Wigfield and Eccles (2002) asserts that students' expectations are influenced by students' social context, such as, for example, parents, teachers, peers, neighborhood or community and earlier academic achievement. This theory also suggests that there are causal relationships between social context and students' self-expectations on the one hand and academic achievement on the other hand (Zhang et al. 2011). Similarly, many studies in the literature suggest the existence of a reciprocal relationship between students' achievement and expectations (Bui 2007; Eccles and Wigfield 2002; Sanders et al. 2001).

As it can be seen from the above, while teachers clearly hold expectations for students, students will have self-expectations too and parents will also have certain expectations for their children (Rubie-Davies et al. 2010). The examination of the expectations held by teachers, parents and students suggests that academic achievement is significantly influenced by these expectations. Taking into account the fact that there are a number of studies on the relationship between expectation and student achievement, this study aimed to test the following hypotheses bringing together the results of previous research:

H_1 Expectation has a positive effect on student achievement.
H_2 Publication type is a moderator for the positive effect of expectation on student achievement.
H_3 Sample group is a moderator for the positive effect of expectation on student achievement.
H_4 School subject or assessment type is a moderator for the positive effect of expectation on student achievement.
H_5 Country is a moderator for the positive effect of expectation on student achievement.

H_6 The year of the studies is a moderator for the positive effect of expectation on student achievement.
H_7 Source of expectation is a moderator for the positive effect of expectation on student achievement.

14.2 Method

14.2.1 Study Design

In this study, the effect of expectation on student achievement was tested with a meta-analysis design.

14.2.2 Review Strategy and Criteria for Inclusion/Exclusion

To determine the research studies to include in the meta-analysis, the Science-Direct, Proquest and Ebsco academic databases were used to conduct a literature review. For this process, the terms *expectation/expectancy* and *achievement/success* included in the titles of the studies were used to screen the research studies. The start and end dates for the research studies included in the research were identified as 2005 and February 2016. Doctoral dissertations and peer-reviewed journals were included in the study.

Many strategies were used to identify the research studies that were appropriate for the meta-analysis of the study. First, a research study pool (1641 research studies) was established; it included all studies with expectation/expectancy and student achievement/success in their titles. The abstracts of these studies were reviewed, and all were found to be appropriate to include in the study. In the second stage, all research studies in the pool were examined in detail. The results of the examination found that 67 research studies yielding 126 correlation coefficients were appropriate, and 1574 were not found to be suitable. The descriptive statistics of the 126 correlation coefficients obtained from 67 studies included in the analysis are presented in Table 14.1.

The criteria for inclusion of the research studies in the analysis study were identified as follows:

- To have the statistical information necessary for correlational meta-analysis (n and r, or R^2 values)
- To be a study measuring the correlation between expectation and student achievement/success

Reasons for not including a research study in the meta-analysis:

Table 14.1 Characteristics of the studies included in the meta-analysis

Variables		1	2	3	4	5	6	Total
Type of publication		Article	Thesis/dissertation					–
	n	64	62					126
	%	51	49					100
Sample group/unit		Preschool	Elementary school	Middle school	High school	University	Mixed	
	n	3	28	25	23	21	26	126
	%	2	22	20	18	17	21	100
School subject/assessment type		Language	Mathematics	Other	Mixed			
	n	39	34	14	39			126
	%	31	27	11	31			100
Country		Vertical-collectivist	Horizontal-individualist					
	n	16	110					126
	%	13	87					100
Publication year		2005–2008	2009–2012	2013–2016				
	n	32	46	48				126
	%	25	37	38				100
Source of expectation		Student	Parent	Teacher	Mixed			
	n	55	42	28	1			126
	%	44	33	22	1			100

- Having no quantitative data (qualitative research)
- Not having a correlation coefficient
- Not focusing on student achievement
- Not focusing on expectation.

14.2.3 Coding Process

The coding process was essentially a data sorting process used to ascertain which data were clear and suitable for the study. In this scope, a coding form was developed before the statistical analysis was conducted, and the coding was conducted according to the form. The main aim was to develop a specific coding system that allowed the study to see the entirety of the research studies in general and that would not miss any characteristics of each individual research study. The coding form developed in the study was comprised of:

- References for the research,
- Sample information,
- Type of publication,
- Sample group,
- School subject or assessment type,
- Country,
- The years of the studies,
- Source of expectation,
- Data collection tool(s),
- Quantitative values.

14.2.4 Statistical Processes

The effect size acquired in meta-analysis is a standard measure value used in the determination of the strength and direction of the relationship in the study (Borenstein et al. 2009). Pearson's correlation coefficient (r) was determined to be the effect size in this study. Because the correlation coefficient has a value between *+1* and *−1,* the *r* value calculated was evaluated by converting this value into the value as it appears in the *z* table (Hedges and Olkin 1985). Provided that more than one correlation value is given between the same structure categories in correlational meta-analysis studies, two different approaches are used in the determination of the one to be used in the meta-analysis (Borenstein et al. 2009; Kulinskaya et al. 2008). For this study, (*i*) first, if the Correlations were independent, all the related correlations were included in the analysis and were considered to be independent studies, and (*ii*) if there were dependent correlations, then the *highest correlation value* was

accepted. A *random effect model* was used for the meta-analysis processes in this study. The *Comprehensive Meta-Analysis* program was used in the meta-analysis process.

14.2.5 Moderator Variables

To determine the statistical significance of the differences between the moderators of the study, only the Q_b values were used. Six moderator variables that were expected to have a role in the average effect size were identified in the study. The first of these considered is the *type of publication* as a moderator in regards to the relationship between expectation and student achievement. The second is the *sample group* which was thought to have a role on the average impact of expectation on student achievement. The rest are the *school subject/assessment type, country*, *years of the studies*, and *source of expectation.*

14.2.6 Publication Bias

A funnel plot for the research studies included in the meta-analysis of can be seen in Fig. 14.2. Evidence that publication bias affected the research studies included in the meta-analysis can be seen in Fig. 14.2. A serious asymmetry would be expected in the funnel plot if there were a publication bias. The concentration of plots on one side under the line of average effect size, particularly in the bottom section of the funnel, suggests the probability of a publication bias in the research studies.

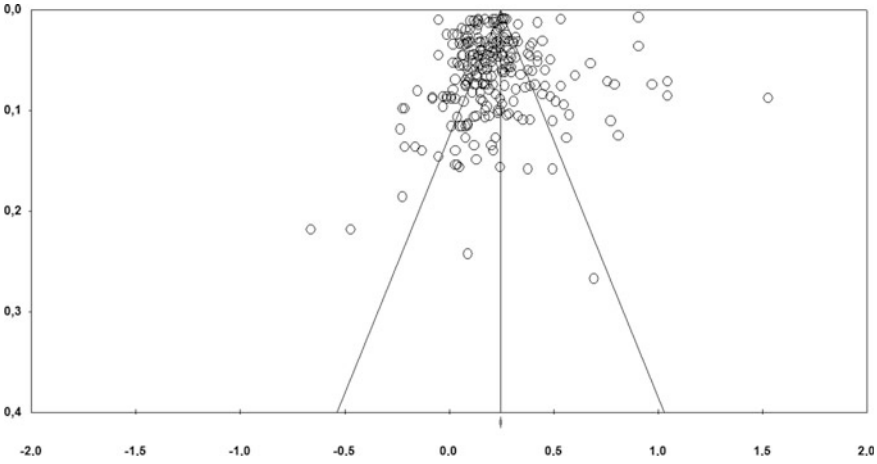

Fig. 14.2 Effect size funnel for publication bias

Table 14.2 Duval and Tweedie's trim and fill test results

	Excluded studies	Point estimate	CI (confidence interval)		*Q*
			Lower limit	Upper limit	
Observed values		.32	.28	.35	4240.66244
Adjusted values	1	.32	.28	.35	4243.90285

Evidence for publication bias was observed for the 126 data included in the meta-analysis study.

A publication bias was observed in the funnel plot, and the results of Duval and Tweedie's trim and fill test, which was applied to determine the effect size related to partiality in the publications that was acquired with the meta-analysis using the random effect model, are shown in. As seen in Table 14.2, there is a difference between the observed effect size and the virtual effect size established to correct the effect of the publication bias. The reason for the difference is the asymmetry of the concentration on both sides of the center line and the studies plotted to the left of and above the center line, skewing the symmetry.

14.3 Findings

Table 14.3 shows the results of the meta-analysis examining the relationship between student achievement and expectation. The findings supported hypothesis H_1 which states that there is a positive relationship between student achievement and expectation. The effect size of expectation on student achievement was calculated to be .32. This value shows that expectation has a medium level effect (*see* Cohen 1988) on student achievement.

The results of the moderator analysis confirmed hypothesis H_2 regarding the moderator role of publication type on the level of effect of expectation on student achievement. The moderator analysis conducted through a random effects model found that the level of effect of publication type on student achievement was significant ($Q_b = 29.104$, $p < .05$). Theses and dissertations have a low level of effect [$r = .23$], while articles have a medium level effect [$r = .40$] on student achievement. In other words, the effect from articles is higher than the effect from theses/dissertations.

The findings did not provide support for hypothesis H_3 which stated that the sample group plays a moderator role on the level of effect that expectation has on student achievement. Although the moderator analysis did not find a statistically significant difference between the levels of effect of the various sample groups ($Q_b = 10.119$, $p > .05$), the level of effect of expectation on student achievement is statistically significant and at a medium level for preschool, [$r = .34$], elementary school [$r = .34$], middle school [$r = .34$], high school [$r = .34$] and mixed group [$r = .34$], while it is significant and at a low level for university [$r = .19$].

Table 14.3 Findings regarding the relationship between student achievement and expectation: meta-analysis results

Variable	k	N	*r*	CI (confidence interval)		*Q*	Q_b
				Lower limit	Upper limit		
Expectation	126	104,926	.32*	.28	.35	**424.662***	
Moderator [Type of publication]							**29.104***
Thesis and dissertation	62	28,971	.23*	.18	.27		
Article	64	75,955	.40*	.36	.44		
Moderator [Sample group]							**10.119**
Preschool	3	494	.34*	.11	.54		
Elementary school	28	17,858	.34*	.27	.41		
Middle school	25	41,514	.34*	.27	.41		
High school	23	31,346	.34*	.26	.41		
University	21	6031	.19*	.09	.28		
Mixed	26	7683	.34*	.27	.41		
Moderator [School subject/assessment type]							**1.329**
Language	39	22,471	.34*	.28	.40		
Mathematics	34	28,361	.32*	.25	.38		
Other	14	7529	.31*	.20	.41		
Mixed	39	46,565	.29*	.23	.35		
Moderator [Country]							**5.832****
Vertical-collectivist	16	17,977	.43*	.33	.52		
Horizontal-individualist	110	86,949	.30*	.26	.34		
Moderator [Year of publication]							**2.970**
2005–2008	32	47,186	.36*	.29	.42		
2009–2012	46	17,103	.33*	.27	.38		
2013–2016	48	40,637	.28*	.23	.34		
Moderator [Source of expectation]							**19.933***
Student	55	64,932	.34*	.30	.39		
Parent	42	30,585	.23*	.17	.28		
Teacher	28	9275	.40*	.34	.46		
Mixed	1	134	.31	−.07	.61		

*p < .01, **p < .05

The moderator analysis also did not find support for hypothesis H_4 asserting that school subject is a moderator variable for the effect of expectation on student achievement. There is no statistically significant difference in the level of effect of the different school subjects (Q_b = 1.329, $p > .05$). The level of effect of expectation on student achievement is, however, statistically significant and at a medium level for language [r = .34], mathematics [r = .32], other subjects [r = .31] and general achievement [r = .29].

The findings supported hypothesis H_5 which formulated that country played a moderator role in the effect expectation has on student achievement. The moderator analysis showed that the difference between the level of effect of the countries examined was statistically significant (Q_b = 5.832, p < .05). In particular, it was found that both the vertical-collectivist [r = .43] and the horizontal-individualist [r = .30] countries had a low level effect on student achievement. The countries with the highest level of effect were found to be the vertical-collectivist ones.

This research did not find support for hypothesis H_6 which hypothesized that publication year plays a moderator role in the effect of expectation on student achievement. The moderator analysis did not reveal a statistically significant difference in the level of effect of the various publication years of the research studies examined (Q_b = 2.970, p > .05), suggesting that the strength of the relationship between expectations and achievement is similar over the years. On the other hand, it was found that publication year has a medium level effect on student achievement with regard to publications dated between 2005 and 2008 [r = .36], between 2009 and 2012 [r = .33] and between 2013 and 2016 [r = .28].

Concerning the sources of expectation, it has been found that the average weighted correlations for each source of expectation and achievement differed significantly (Q_b = 19.933, p < .05). Additionally, it was found that the effects of student [r = .34] and teacher [r = .40] expectations on achievement were significant and at a medium level, while the effect of parent [r = .23] expectations was significant and at a low level. On the other hand, the effect of mixed [r = .31] expectations formed by student, peer, or teacher expectations on student achievement was not significant. Hence, teacher expectations have the strongest and most positive relation with student achievement.

14.4 Conclusion

A total of 67 research studies published between 2005 and 2016, with 104,926 participants, were included in this meta-analysis study aiming to examine the magnitude of the effect size of expectation on student achievement. The type of publication, sample group, school subject or assessment type, country, the year of the studies, and the source of expectation were considered as moderator variables in the study. The results of the meta-analysis showed that there is a medium level positive effect of expectation on student achievement. Such a meta-analysis study examining the aforementioned relationship has not been encountered before in the literature, although there are some other studies investigating the different kinds of expectations and concluding that these expectations had a significant effect on the achievements of students. A meta-analysis study conducted by Fan and Chen (2001) revealed that parents' expectations, which constitute one dimension of parent participation/involvement, have a medium level effect on students'

achievement. This study suggests that parental expectations are positively correlated with academic achievement. Other meta-analysis studies (Hill and Tyson 2009; Jeynes 2005, 2007) looking at the relationship between parental involvement and student achievement have reached the same conclusion that parental expectations influence student achievement. On the other hand, Tavani and Losh (2003) who studied the psychological variables related to academic achievement concluded that student expectations strongly predicted their achievement and that students' self-beliefs and academic attainment are strongly related. Sanders et al. (2001) and Maskey (2012) have also found a relationship between achievement and student expectations. Moreover, there are a number of studies showing the effects of teacher expectations on students' self-perceptions (Rubie-Davies 2006) and hence on student achievement (Rubie-Davies 2007; Smith 1980; Weinstein 2002). Additionally, these three kinds of expectations may influence each other as argued by certain studies for the pairwise groupings (Englund et al. 2004; Zhang et al. 2011).

As different sources of expectations are listed in the literature, this study aimed to test the effect of these different sources treating them as a moderator variable. According to the moderator variable analysis, the source of expectations has been found to play a moderator role in the effect of expectation on student achievement. This result suggests that the effect sizes of the different sources of expectations differ from each other. Moreover, according to the results of the moderator analysis, teachers' expectations have the highest effect size while parents' expectations have the smallest effect size. Similarly, there are studies (Muller 1998) in the literature supporting the argument that teachers' expectations are more influential on student achievement than other kinds of expectations. Ma (2001) has suggested, however, that parents' expectations about their children have a greater effect on students than the expectations of teachers or peers.

The type of publication has also been a moderator variable in the effect of expectation on student achievement. The articles had higher effect sizes than the theses/dissertations.

Regarding the countries in which the research studies examined were conducted, the country variable has been found to play a moderator role in the effect of expectation on student achievement. The sample groups chosen from vertical-collectivist countries yielded higher levels of effect size than the sample grouped from horizontal-individualist countries. This result may be interpreted in the same way that the meta-analysis results of the effect of parent involvement on achievement were interpreted in another chapter of this book. The dual categorization of countries used in this research informs us that people in vertical-collectivist countries focus on enhancing the cohesion and status of their in-groups, while people in the horizontal-individualist countries tend to express their uniqueness and self-reliance (Shavitt et al. 2011). Triandis and Gelfand (1998) also define vertical collectivism as seeing the self as part of a collective, while horizontal individualism is defined as seeing the self as fully autonomous. Although there is no meta-analysis study in the literature focusing on this topic, there are some meta-analysis studies on

the effect of teacher expectations and parental involvement (including parent expectations) on student achievement. These studies did not have a moderator variable of country, but they included the variable of ethnicity and analyzed its effect. These studies (Baron et al. 1985; Dusek and Joseph 1985; McKown and Weinstein 2008; Tenenbaum and Ruck 2007) found statistical differences in the effect size of teacher expectations on achievement according to ethnicity.

Regarding the variables of sample group, school subject and year of publication, the moderator analysis showed that the level of effect of expectation on student performance was not statistically significant for the various sub-categories of those variables. The effect sizes of the sub-categories of sample group (education level) were quite similar except for the university level, the effect size of which is lower than the effect size of the other level. This suggests that the relationship between expectation and achievement does not change throughout the school years until university, but it changes after entering university. This may be the result of the autonomy that the students have when they attend university. Arguably, the effect of teachers' expectations decreases as students move to the next school level; as they become more autonomous they are less easily influenced by teachers' perceptions (Rubie-Davies et al. 2010). Furthermore, parental expectations also tend to remain stable across the schooling years, which in turn influences students' academic performance at later grades (Entwisle et al. 2005). The effect sizes of the subgroups of school subject and publication year were also similar. The highest effect sizes were observed in the language subgroup of school subject and in the subgroup of the years between 2005 and 2008 with regard to publication year.

The results of this meta-analytic study are hard to interpret in that there is no other meta-analysis study encountered in the literature on the relationship of general expectation and student achievement. Given, however, that it is an important psychological construct influencing student achievement as seen from the above findings, expectation should be studied both in its general sense and in its sub-components (the different sources of expectation). The findings concerning the effect of expectation on student performance can be summarized as below:

- Expectation has a medium level positive effect on student achievement [$r = .32$],
- Publication type, country, and source of expectation have been found to be moderator variables for the relationship between the expectation and student achievement, while the variables of sample group, school subject and publication year do not have a moderator role in this relationship.

In light of the findings of this study, it can be argued that expectations have a remarkable effect on student performance, which is thought to be the main outcome of education. Drawing attention to the different kinds of expectations, this meta-analysis adds to the existing literature in that it reveals the need for further in-depth studies examining the relationship between expectation and student performance.

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Note. "*" References marked with an asterisk indicate studies included in the meta-analysis. The in-text citations to studies selected for meta-analysis are not followed by asterisks.

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