BIAS IN PRIMARY SCHOOL TEACHERS' EXPECTATIONS OF STUDENTS? A STUDY OF GENERAL AND SPECIFIC BIAS TOWARDS SES, ETHNICITY AND GENDER

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Abstract

Based on teachers' knowledge base of students, teacher expectations of students' (future) abilities and potential are shaped, in which bias may occur. This study investigates data on multiple attributes of 535 sixth-grade Flemish students to find out (1) whether teacher expectations of students' cognitive and non-cognitive attributes, of teacher-student relationships, and of parental involvement in education are biased, and (2) whether teachers differ in their expectation bias towards SES, ethnicity, and gender. By means of correlation analysis, in which we compared teacher expectations with multiple measured student attributes (i.e., their achievement test scores and self-assessments), the results showed statistically significant, positive correlations for all the attributes included, indicating an overall correspondence between teacher expectations and students' measured attributes. At the same time, using an indicator of teacher expectation bias by subtracting the students' measured attributes from the corresponding teacher expectations, this study highlighted an expectation bias in terms of over- and underestimation by teachers, especially with respect to teachers' expectations of students cognitive attributes and parental involvement in education. Also, a specific bias in teacher expectations towards SES and gender was found.

Keywords

teacher expectations, teacher expectation bias, student attributes, academic achievement, self-assessment

Introduction

Making correct judgements of student performance is at the core of the teaching profession. The long tradition of teacher expectancy research provides clear evidence for the impact of teacher expectations of students on students' educational outcomes (e.g., de Boer et al., 2010; Jussim & Harber, 2005; Rosenthal & Jacobson, 1968), irrespective of the accuracy of these expectations (Jussim, 1989, 1991). As a consequence, teachers are addressed upon their views about the students they teach and how these views are shaped. Indications of the existence of bias in teacher expectations have given cause to the erosion of public trust in teachers, as teacher expectations can subsequently drive teachers' assessment and allocation practices at key transition points and can also have far-reaching implications for educational and occupational trajectories of students. For that reason, as stated by Ready and Wright (2011), one of the main aspects of teachers' professionalism is the ability to judge student attributes (i.e., their characteristics, skills, and abilities) accurately. The quality of teacher judgement is known to influence the extent to which education can provide equal and fair educational opportunities for all students (Bonvin, 2003). Surveying the existing literature, Vanlommel (2018) argues that traditionally, researchers and policymakers trusted teachers' intuitive judgement derived from experience within the teaching profession but also that an array of studies showed a lack of accuracy of such judgement. This questioning of the trustworthiness of teachers' judgement nowadays is apparent in many educational systems and affects both the professionalism of teachers along with the status of the teaching profession. Particularly the transition to secondary education is a key transitory moment in which the existence of (non-)bias in teacher expectations calls for academic research, as tracking has progressed most significantly in secondary education (e.g., Ireson & Hallam, 2001; LeTendre et al., 2003). According to Good (1987), teacher expectations are defined as inferences made by teachers about students' (future) abilities and potential, based on teachers' current knowledge base about their students. Teachers can use various information sources to shape their expectations, including students' cognitive attributes (e.g., academic abilities and performance) as well as non-cognitive attributes (e.g., achievement-related behaviours), student background characteristics (e.g., social and ethnic background and gender) and contextual or relationship variables (e.g., the quality of the teacher-student relationship and the extent of parental involvement in education within the teacher-parent relationship) (Hughes et al., 2005; Riley & Ungerleider, 2012; Rubie-Davies et al., 2006; Rubie-Davies, 2010).

Given the (longer-term) implications of teacher expectations on students' academic trajectories, it is of profound importance that these expectations are unbiased. Unfortunately, although there is a general consensus that teacher expectations are fairly accurate (Jussim, 2017), a substantial amount of research points to the biased nature of these expectations, both in general (i.e., bias regarding most of the students) and regarding (subgroups of) students based on their background characteristics (e.g., Machts et al., 2016; Ready & Wright, 2011; Südkamp et al., 2012). In fact, nowadays teacher expectancy research findings are frequently used to address the role of biased expectations in the reproduction of educational inequality (e.g., Bol et al., 2014; Jackson et al., 2012; Van de Werfhorst & Mijs, 2010). As such, teacher expectation bias is found to be related in particular to students' socioeconomic status (SES), ethnicity, and gender (Ready & Wright, 2011). In summary, research into teacher expectation bias often produces inconsistent findings and the extent to which these expectations are (un)biased still remains unclear. Therefore, the aim of the present study is to contribute to the body of knowledge on the extent to which teacher expectations of students are biased or not and, additionally, whether expectation bias is related to student background characteristics.

Theoretical framework

Teacher expectation bias

Teacher expectations of certain attributes of students are considered to be biased only to the degree that they over- or underestimate the actual attributes, indicating discrepancies between teacher expectations and students' measured attributes (Ready & Wright, 2011). Ready and Wright further state that bias can occur in two ways. Whereas general bias refers to teacher expectations that are systematically too high or too low for most of the students, specific bias refers to teacher expectations that are systematically too high or too low for specific (subgroups of) students, based on their background characteristics. Teacher expectations that vary in a non-systematic and random manner are called inaccurate (but unbiased). Thus, biased teacher expectations are inevitably inaccurate, but inaccurate teacher expectations are not necessarily biased.

The definition of Ready and Wright (2011) implies that to decide whether teacher expectations are biased, their expectations need to be compared to other objective measures of the student attributes under investigation. As demonstrated in the meta-analyses of Hoge and Coladarci (1989), Südkamp et al. (2012) and Machts et al. (2016) on teacher expectation bias with respect to students' cognitive attributes, these objective measures are usually

represented by students' performances on achievement tests. In this regard, overall, moderate to high correlations between teacher expectations of students' academic performance and their achievement test scores are reported (i.e., mean effect sizes of r = .66, .63 and .43 in the meta-analyses of Hoge and Coladarci [1989], Südkamp et al. [2012] and Machts et al. [2016], respectively). However, given that much less is known about teacher expectation bias related to attributes other than cognitive attributes, such as students' non-cognitive attributes and contextual variables (Timmermans et al., 2016), we did not wish to reduce this research to teacher-rated students' cognitive attributes and their correspondence with students' achievement test scores. Therefore, in addition to these test scores, we made use of students' self-assessments as expressions of the measures of students' non-cognitive attributes and contextual variables. In what follows, we will use the term students' measured attributes to refer to both students' achievement test scores and students' self-assessed non-cognitive attributes and contextual variables, as counterparts of the teacher expectations.

Influencing information sources of teacher expectations

Students' cognitive and non-cognitive attributes
Although the importance of students' cognitive attributes in shaping teacher expectations of students has been acknowledged, their non-cognitive attributes are just as important (Farkas, 2003; Farrington et al., 2012). From this perspective, multiple attributes, such as work habits and motivation to learn, have been studied in relation to teacher expectations (e.g., Boone & Van Houtte, 2013; Kelly & Carbonaro, 2012; Timmermans et al., 2016). Clearly, these findings suggest the importance of students' non-cognitive attributes in terms of achievement-related or appropriate behavioural aspects. To define the crucial cognitive and non-cognitive attributes of students in the context of teacher expectation bias, we build on Kornblau's (1982) conceptual framework of teachability. This concept refers to teachers' perceptions about how "teachable" their students are. It seems reasonable that teachers consider students' teachability when shaping their expectations of students' (future) abilities and potential. More recently, several studies have demonstrated lower teachers' teachability expectations regarding low SES and ethnic minority students, compared to their counterparts (e.g., Van Houtte & Demanet, 2016; Van Maele & Van Houtte, 2011; Vervaet et al., 2016).

In this study, we address teacher expectations of students' cognitive attributes in terms of two core academic skills (i.e., maths skills and language skills) (cf. cognitive-motivational behaviours). We further address teacher expectations of four non-cognitive attributes categorised as school-appropriate behaviours (Kornblau, 1982), these being students' ability to plan schoolwork,

learning independence, alertness or attention in the classroom, and motivation to learn. We selected these specific non-cognitive attributes based on our hypothesised importance of students' achievement-related or appropriate behaviours, as mentioned previously. As a counterbalance of teacher expectations of students' cognitive attributes, we made use of students' scores on two externally validated, standardised achievement tests (i.e., the OVSG-test and the interdiocesan test) (Janssen, et al., 2017). In Flanders, these tests are used to measure students' academic performance at the end of primary education.

Additionally, to determine teacher expectation bias with respect to students' non-cognitive attributes, we address students' self-assessed school-appropriate behaviours. In order to do so, we build on the theoretical concepts of approaches to learning (Furnham, 2012) and academic self-efficacy (Bandura, 1990). As both concepts refer to students' skills, behaviour and approaches with respect to learning, they have a close similarity to students' perceived school-appropriate behaviours, as defined by Kornblau (1982). Students' learning approach consists of work-related skills, such as learning independence and attention in the classroom (Furnham, 2012). Next, derived from Bandura's (1977) general theoretical concept of self-efficacy, students' academic self-efficacy points to students' beliefs in their capabilities to regulate their own learning and to master different subject matters, including planning of schoolwork (Bandura, 1990). In sum, based on both theoretical concepts and in correspondence with students' non-cognitive attributes included in the study, we address students' self-assessed planning of schoolwork, independence, attention and eagerness to learn.

Teacher-student relationships

The relationships between teachers and students can be considered as one of the most important mediators through which teacher expectations exert an influence on students' educational outcomes (Brophy & Good, 1970; Harris & Rosenthal, 1985). Brophy (1983) and Jussim and Harber (2005) stated that teachers are typically emotionally warmer and more supportive in their attitudes to high expectancy students. However, we do not claim that such findings are typical for all teachers as we expect teachers to vary in their expression of expectations towards certain students. Even the earliest studies on teacher expectations, for instance Brophy & Good (1974), showed that only a subset of teachers behave in more or less productive ways towards high and low expectancy students, pointing to this variability in teachers' expression of high and low expectations of students. However, speaking in more general terms, previous findings have led to the affect-effort theory (Rosenthal, 1973, 2002), indicating that teacher expectations are manifested in differential affect or climates (i.e., the tendency to provide a warm socio-

emotional climate for high expectancy students) and effort or input (i.e., the tendency to teach more material to high expectancy students) towards students. As concluded by Brophy and Good (1970) and Harris and Rosenthal (1985), the differences in teacher behaviour are in quality rather than in quantity, which emphasizes the importance of the socio-emotional climate or the teacher-student relationship. Indeed, research has shown that the perceived quality of teacher-student relationships affects teacher expectations of students' future academic performance (e.g., Hughes et al., 2005; Rubie-Davies, 2010; Timmermans et al., 2016). Therefore, to determine (biased) teacher expectations, we investigate teacher expectations of the overall quality of their relationships with students as well as students' self-assessed overall relationships with teachers.

Parental involvement in education

It has been well documented that parental involvement influences students' academic performance (e.g., Castro et al., 2015; Hill & Tyson, 2009; Ma et al., 2016). Parental involvement can be considered as the active participation of parents in all aspects of their children's social, emotional and academic development (Castro et al., 2015). Parental involvement has been associated with several indicators of school success, such as lower retention rates, and with achievement-related psychological processes and attributes, such as motivation (Hoover-Dempsey et al., 2005). Comparable to the above-mentioned students' cognitive and non-cognitive attributes and the outcomes of supportive teacher-student relationships, we hypothesise that teachers, when shaping their expectations of students' future academic performance, also take features of parental involvement into consideration. In fact, research has indeed shown that teacher-rated parental involvement is related to the expectations of teachers regarding students' future academic performance (Hughes et al., 2005). Rubie-Davies (2010), for instance, stated that teachers hold lower expectations regarding students who are viewed as coming from families that are less favourable for academic development in terms of parental support for education and their encouragement for learning. Similarly, Hauser-Cram et al. (2003) demonstrated lower teacher expectations regarding students whose parents are perceived as having different educational-related values, such as with respect to parental involvement.

Student background characteristics

In many European countries with early tracking systems, research has demonstrated inequality in educational decision-making related to student background characteristics (e.g., Bol et al., 2014; Jackson et al., 2012; Van de Werfhorst & Mijs, 2010). In this study, we consider students' SES, ethnicity, and gender, which are the most commonly investigated background variables

in relation to teacher expectation bias (Timmermans et al., 2016). Teachers tend to judge the academic achievement and abilities of low SES and ethnic minority students less favourably, compared to high SES and ethnic majority students (e.g., Glock & Krolak-Schwerdt, 2013; Kaiser et al., 2017; Rubie-Davies et al., 2006; Tenenbaum & Ruck, 2007; Tobisch & Dresel, 2017). As a result, regardless of students' level of achievement, low SES and ethnic minority students are more likely to receive a recommendation from the teacher to enrol in less academic tracks of secondary education, compared to their counterparts (e.g., Boone & Van Houtte, 2013; Glock et al., 2013). Additionally, alongside the social and ethnic stereotype, the gender stereotype is also widely shared as influencing teacher expectations of students, suggesting that boys perform better in maths than girls and that maths is more appropriate for boys than for girls (e.g., Li, 1999; Timmermans et al., 2015). More recently, research into the gender stereotyping has extended its focus from only maths to STEM (i.e., science, technology, engineering, and maths) (e.g., Hofer, 2015; Mechtenberg, 2009) and language (e.g., Nurnberger et al., 2016; Ready & Wright, 2011), favouring boys and girls, respectively.

In their study, Boone and Van Houtte (2013) suggested that rather than taking students' SES consciously into account when shaping their expectations regarding students' future academic performance, teachers emphasise specific non-cognitive attributes of students, which are considered to be important for school success and to be unequally distributed across social classes. As such, low SES students might be disadvantaged, because these non-cognitive attributes, such as punctuality, seem typical of middle class students (Farkas, 2003). Similarly, as concluded by Timmermans et al. (2016), bias in teacher expectations towards boys and girls primarily stems from differences in teacher-rated non-cognitive attributes of students (i.e., work habits), which also can be considered to significantly differ across gender. These results emphasise the necessity to address, alongside contextual variables, the interplay between students' cognitive and non-cognitive attributes and background characteristics when studying teacher expectation bias.

The present study

The aim of the present study is to contribute to the body of knowledge on the extent to which teacher expectations are (un)biased. More specifically, expectation bias is investigated in the context of students' allocation by primary school teachers at the transition to secondary education. In Flanders (the Flemish speaking part of Belgium), students are commonly allocated to secondary education based on teachers' individual recommendations, which can be considered as the expressions of their judgements of students'

(future) abilities and potential (e.g., Penninckx et al., 2011). Hence, in Flanders, teacher expectations of students are crucial in relation to allocation of students. Because little is known about the role of attributes other than students' cognitive attributes in shaping (biased) teacher expectations and because previous research is generally restricted to a single focus on one particular attribute of teacher expectations instead of multiple attributes that are being studied simultaneously (Rubie-Davies et al., 2006; Timmermans et al., 2016), we address multiple cognitive as well as non-cognitive attributes of students and contextual variables, on top of student background characteristics. As such, the unique character of the current study becomes apparent. The following two research questions are addressed:

(1)   To what extent are teacher expectations of students' cognitive and non-cognitive attributes, of teacher-student relationships and of parental involvement in education biased?
(2)   Does teacher expectation bias with respect to students' cognitive and non-cognitive attributes, teacher-student relationships and parental involvement in education systematically differ, based on students' SES, ethnicity and gender?

Methodology

The research context: The Flemish education system

In Flanders, at the age of six years children typically enrol in primary education. After six years of primary education, they transfer to secondary education, usually by the age of 12. It is only recently that the use of standardised tests at the end of primary education (e.g., the OVSG-test and the interdiocesan test) is mandatory in Flanders (Janssen et al., 2017). Until now, these school leaving tests are not primarily used for allocation purposes (but rather in view of internal quality assurance). Thus, contrary to meritocratic educational systems (e.g., the United States and Great Britain), in which students' allocation is based exclusively on their previous performance in standardised tests, in Flanders, students are commonly allocated to secondary education on the basis of the teachers' perceptions of the students' academic abilities and potential, as expressed in the teacher's track recommendation (e.g., Eurydice, 2011; Gorard & Smith, 2004; Penninckx et al., 2011). In the mandatory so-called class council-meeting, the teachers in the primary school jointly make the final decision based on the data they consider relevant (often combining students' results from formative and summative assessments with the perception of teachers of student attributes the school finds relevant).

Clearly, in the highly decentralised and liberal educational system of Flanders, teachers' perceptions of students and the class councils' decision in terms of track recommendations, are crucial for allocation (e.g., Boone & Van Houtte, 2013). At the onset of secondary education, teachers' track recommendations encompass a specific study curriculum (i.e., a fixed set of different subjects) as well as a secondary school (Department of Education and Training, 2008).

Sample and data collection

The present study's goal was to generate new knowledge concerning the (un) biased nature of teacher expectations of students in the context of Flemish urban, highly multicultural schools. Rather than aiming at being representative for the broader Flemish educational context, our research questions were addressed in the context of urban schools. Therefore, a quantitative research design in a specific sample was set up, in which we were able to question, on a large scale, a focused group of respondents. The analyses were conducted on data gathered in May 2016 from a sample of 36 Flemish primary schools. As part of the project Transbaso (see Acknowledgements) and based on purposive sampling (Cohen et al., 2011), two cities in Flanders were purposively chosen because of their highest levels of social and cultural diversity in their schools. As a reflection of today's multicultural society and the high level of socioeconomic and ethnic school segregation in Belgium (OECD, 2006), Flanders has a large number of schools with a high incidence of low SES students and ethnic minorities, especially in urban contexts. By means of the used sampling method, we were able to address this specific research context and ensure that natural variation in school composition was represented in the total sample.

In total, we gathered data for 535 sixth-grade students (aged 12), who were assessed by their primary school teachers (sixth-grade teachers) by means of a written questionnaire. These 535 students were located in 66 classes. The 66 school teachers of these classes were asked to judge each of their students in terms of (1) specific cognitive and non-cognitive attributes, (2) their relationships with the teacher, and (3) the involvement of the students' parents in education. At the same time, a written questionnaire was completed by the sixth-grade students themselves, to gather information about (4) their self-assessed non-cognitive attributes, and (5) their social and cultural backgrounds and gender. Previously, the students' parents were informed by means of a consent letter. In addition, we had data for all these 535 sixth-grade students about (6) their achievement tests scores on the OVSG-test and the interdiocesan test at our disposal. The latter data were not collected as such by the researchers themselves. Precisely the necessity to make the link between the newly collected data and the existing achievement test scores ultimately brought the number of usable cases at student level to 535.

Instruments

Given that in many educational systems teachers enjoy considerable autonomy in areas of assessment and allocation, the processes in which expectations are shaped are not necessarily based on a deliberate and systematic approach of collection and analysis of the information available to the teacher. On the contrary, teachers are expected to build on a lot of spontaneous and immediately derived experiences and knowledge with respect to their students when shaping their expectations (Klein, 2008; Vanlommel et al., 2017). Therefore, to grasp these spontaneous and immediate expectations of teachers, general and individual items were used, which are discussed below in more detail.

Students' cognitive attributes. Building on the Teachable Pupil Survey of Kornblau (1982) (cf. cognitive-motivational behaviours), all teachers were asked to judge the following two items separately with regard to each of their students: "maths skills" and "language skills". The teachers could nuance their answers, as they were given five answer categories, measured on a 5-point Likert scale ranging from (1) *very weak* to (5) *very strong.* Additionally, we used the students' achievement test scores on the OVSG-test or the interdiosecan test for maths and Dutch language. Theoretically, these test scores could range from 0 to 100, indicating low and high academic performances of students at the end of primary education, respectively (Janssen et al., 2017).

Students' non-cognitive attributes. Building on the Teachable Pupil Survey of Kornblau (1982) (cf. school-appropriate behaviours), all teachers were asked to judge the following four items separately with regard to each of their students: "ability to plan", "motivation to learn", "alertness", and "independent". Again, the teachers' answers were measured on a 5-point Likert scale ranging from (1) *very weak* to (5) *very strong.* Also, all students were asked to self-assess their non-cognitive attributes by means of four separate corresponding items. First, based on the Approaches to Learning Scale as a subscale of the Social Rating Scale (SRS)—which is adapted from the Social Skills Rating System (SSRS) (Crosby, 2011; Gresham & Elliot, 1990)—we included the following three items: "I am eager to learn new things" (cf. perceived motivation to learn), "I pay attention well in the classroom" (cf. perceived alertness) and "I can easily work independently in the class-room" (cf. perceived independence). Second, derived from the Academic Self-Efficacy Scale as one of the Children's Perceived Self-Efficacy (CPSE) scales (Bandura, 1990; Pastorelli et al., 2001), we included a fourth item: "I can plan my school work" (cf. perceived ability to plan). The answers to the four items were collected on a 5-point Likert scale ranging from (1) *not at all* to (5) *totally.*

Teacher-student relationships. All teachers were asked to judge the following item with regard to each of their students: "I have a good relationship with the student." The teachers were given five answer categories, measured on a 5-point Likert scale, ranging from (1) *totally disagree* to (5) *totally agree.* As for the students' self-assessed relationships with teachers, all students were asked to judge the following corresponding item: "I get along well with my teacher", which was measured on a 5-point Likert scale ranging from (1) *totally disagree* to (5) *totally agree.*

Parental involvement in education. All teachers were asked to judge the following item with regard to each of their students: "involvement of parents," by means of five answer categories measured on a 5-point Likert scale ranging from (1) *very weak* to (5) *very strong.* Next, all students were asked to judge the following corresponding item measured on a 5-point Likert scale ranging from (1) *totally disagree* to (5) *totally agree*: "My parents always try to help me when I have questions about what I learn at school (subject matter)."

Students' SES. The students' SES was based on their parents' professional occupation at the time of the survey or, in cases where they were unemployed, what their previous occupation was. These parental occupations were recoded according to the classification of Erikson et al. (1979). Scores could range from one to eight, representing (1) unskilled manual labour, (2) specialised manual labour, (3) skilled manual labour, (4) employees, (5) self-employed craftsman and agriculture, (6) lower middle management, (7) higher middle management, and (8) managers, professionals, and company holders. To obtain the measurement for family SES, the highest score out of the two parents was used. To provide a more informative picture, we recoded SES in four categories, in which one represented working class (regrouping categories one to three), two represented lower middle class (regrouping categories four and five), three represented middle class (regrouping category six), and four represented upper middle class (regrouping categories seven and eight). Both working class (28.2%) and lower middle class (27.2%) students as well as middle class (29.6%) and upper middle class (15%) students were included in the sample.

Students' ethnicity. The students' ethnicity was based on the birthplace of the student's maternal grandmother (e.g., Jacobs et al., 2009; Timmermans et al., 2002). If the student's maternal grandmother was born in Belgium, or another North-Western European country, the student was given value 0; if she was not, the student was given value 1. Our sample consisted of 58.4% students of Belgian or North-Western European origin and 41.6% of students of another origin (mainly from Eastern Europe, Maghreb, and Turkey).

Students' gender. In our sample, girls were given value 0 and boys were given value 1. 48.4% and 51.6% of the students were boys and girls, respectively.

Results

General teacher expectation bias

By means of correlation analysis, we, firstly, investigated the linear relationships between teacher expectations and students' achievement test scores, self-assessed non-cognitive attributes, and self-assessed contextual variables (see Table 1). Since we made use of ordinal level data, the Spearman Rank Order Correlation coefficients (r_s) are presented. Analogous to Cohen's (1988) interpretation of the strength of correlations, a large and medium statistically significant, positive correlation is found between teacher expectations of students' maths skills and language skills and their achievement test scores on maths ($r_s = .64$) and Dutch language ($r_s = .47$). The correlation coefficients suggest that the expectations of teachers are closely related to the academic performance of the students. A somewhat lower, yet still statistically significant, positive correlation is observed between teacher-rated and student-rated independence ($r_s = .29$). Lastly, teacher expectations of the teacher-student relationships, students' alertness, parental involvement in education, students' motivation to learn and students' ability to plan are also found to significantly and positively correlate with the students' self-assessments ($r_s = .25, .22, .20, .17$ and $.16$, respectively). However, the small correlation coefficients suggest that the strength of the relationships between teacher expectations and students' self-assessed non-cognitive attributes (with an exception of students' independence) and contextual variables is rather weak.

Table 1

Bivariate correlations among teacher expectations and measured student attributes

	r_s	p
Students' achievement test scores		
Maths skills	.64	.00
Language skills	.47	.00
Students' self-assessed non-cognitive attributes		
Independence	.29	.00
Alertness	.22	.00
Motivation to learn	.17	.00
Ability to plan	.16	.00
Students' self-assessed relationship variables		
Teacher-student relationships	.25	.00
Parental involvement in education	.20	.00

Based on the correlation analysis, our first conclusion is that the relationships between the variables are positive: the higher the expectations of teachers, the higher students' achievement test scores and self-assessments. However, these findings do not inform us about the extent to which teacher expectations and students' measured attributes correspond or diverge. Considering our definition of teacher expectation bias, we are especially interested in the extent to which the expectations of teachers over- or underestimate the measured attributes of students. Therefore, we additionally calculated a measure of teacher expectation bias by subtracting each measure of the attributes from the corresponding teacher expectations. It was necessary to rescale the continuous students' achievement test scores into discrete data with the same range in accordance with the measuring scales of the teacher-rated and student-rated cognitive and non-cognitive attributes and contextual variables. Hence, when interpreting the results, one must keep this rescaling in mind. Positive and negative values on the subtracted variables indicate teacher expectation bias in terms of, respectively, an overestimation (i.e., the teachers' judgements are higher compared to those of the students) and underestimation (i.e., the teachers' judgements are lower compared to those of the students) of the attributes. Furthermore, the closer they were to zero, the more correspondence there was between teacher expectations and students' achievement test scores or self-assessments.

Descriptive statistics of the teacher expectation bias are shown in Table 2. On average, all teacher expectations are biased to some extent (i.e., over- or underestimated). The largest bias occurs with respect to students' language skills ($M = 0.87$), followed by their maths skills ($M = 0.78$) and parental involvement in education ($M = −0.60$). These results indicate that there is only little correspondence between teacher expectations and students' achievement test scores on the one hand and between teacher expectations and students' self-assessed parental involvement in education on the other hand. Although the teachers overestimate the students' language skills and maths skills, parental involvement in education is, on average, judged higher by the students compared to the teachers. To a lesser extent, bias occurs in teacher expectations of students' non-cognitive attributes and of teachers' relationships with students, with an overestimation of the teacher-student relationships ($M = 0.15$) and students' independence ($M = 0.10$), and an underestimation of the students' motivation to learn ($M = −0.22$), alertness ($M = −0.06$) and ability to plan ($M = −0.01$). The lowest expectation bias occurs with respect to the latter, indicating a fairly close correspondence between teacher expectations of students' ability to plan and students' self-assessed ability to plan. Furthermore, looking at the standard deviations and the range of scores varying from −4 to 4, we can conclude that there are very large individual differences in teacher expectation bias with respect to all the variables included.

Table 2

Descriptive statistics of teacher expectation bias

	M	Min	Max	SD
Bias in maths skills	0.78	−3.00	4.00	1.12
Bias in language skills	0.87	−3.00	4.00	1.31
Bias in independence	0.10	−4.00	4.00	1.21
Bias in alertness	−0.06	−4.00	4.00	1.16
Bias in motivation to learn	−0.22	−4.00	4.00	1.30
Bias in ability to plan	−0.01	−4.00	4.00	1.48
Bias in teacher-student relationships	0.15	−4.00	4.00	1.15
Bias in parental involvement in education	−0.60	−4.00	4.00	1.37

Specific teacher expectation bias

To determine specific teacher expectation bias regarding the students' SES, ethnicity, and gender, we opted for a multivariate analysis of variance (MANOVA) (Tabachnick & Fidell, 2014). We investigated SES differences (i.e., four SES groups: working class, lower middle class, middle class, and upper middle class students), ethnicity differences (i.e., two ethnicity groups: students of Belgian or North-Western European origin and students of an origin other than Belgian or North-Western European) and gender differences in the set of eight dependent variables.

According to the results of the multivariate tests of significance using the Wilks' Lambda statistics, there are statistically significant differences in teacher expectation bias based on students' SES ($F(24, 1486) = 2.26$; $p = .000$; Wilks' Lambda = .90) and gender ($F(8, 512) = 3.54$; $p = .001$; Wilks' Lambda = .95). Table 3 presents the results when considering the main effects of SES and gender on the dependent variables separately. We found no statistically significant differences in teacher expectation bias based on students' ethnicity ($F(8, 512) = 1.53$; $p = .146$; Wilk's Lambda = .98) and, therefore, ethnicity differences are excluded from Table 3. Partial Eta Squared indicates the effect sizes or, in other words, the proportion of the variance in the bias indicators that can be explained by the independent grouping variables.

Firstly, the results indicate that there are statistically significant differences between the SES groups on teacher expectation bias with respect to parental involvement in education ($F(3, 519) = 6.19$; $p = .000$; Partial Eta Squared = .04), students' motivation to learn ($F(3,519) = 3.73$; $p = .011$; Partial Eta Squared = .02) and their language skills ($F(3, 519) = 2.84$; $p = .037$; Partial Eta Squared = .02). Also, statistically significant differences are found between boys and girls on teacher expectation bias regarding students' motivation to learn

($F(1, 519) = 8.13$; $p = .005$; Partial Eta Squared = .02), their ability to plan ($F(1, 519) = 6.66$; $p = .010$; Partial Eta Squared = .01) and teachers' relationships with students ($F(1, 519) = 5.30$; $p = .022$; Partial Eta Squared = .01). However, looking at the sizes of these effects, the impact of SES and gender on teacher expectation bias regarding the attributes concerned, can be considered small. As indicated by Partial Eta Squared, only 3.5%, 2.1% and 1.6% of the variance in bias in parental involvement in education, students' motivation to learn, and students' language skills is explained by SES. Similarly, gender explains 1.5%, 1.3% and 1.0% of the variance in bias in students' motivation to learn, students' ability to plan, and teacher-student relationships, respectively. We found no statistically significant differences between the SES and gender groups on teacher expectation bias with respect to students' maths skills, alertness, and independence.

Table 3

Detailed model results of MANOVA

Group differences on the dependent variables	F	p	Partial Eta Squared
SES			
Bias in maths skills	1.49	.215	.009
Bias in language skills	2.84	.037	.016
Bias in ability to plan	1.78	.150	.010
Bias in motivation	3.73	.011	.021
Bias in alertness	2.31	.075	.013
Bias in independence	1.13	.338	.006
Bias in teacher-student relationships	2.13	.095	.012
Bias in parental involvement in education	6.19	.000	.035
Gender			
Bias in maths skills	0.02	.883	.000
Bias in language skills	2.55	.111	.005
Bias in ability to plan	6.66	.010	.013
Bias in motivation	8.13	.005	.015
Bias in alertness	1.00	.329	.002
Bias in independence	1.90	.169	.004
Bias in teacher-student relationships	5.30	.022	.010
Bias in parental involvement in education	0.41	.523	.001

Post-hoc comparisons using the Tukey HSD test (by means of univariate one-way between-groups analyses of variance) revealed that working class students ($M = –1.08$; $SD = 1.55$) are significantly more underestimated by the teachers in terms of parental involvement in education, compared to all the other SES groups (lower middle class students: $M = –0.70$; $SD = 1.29$, middle class students: $M = –0.19$; $SD = 1.15$ and upper middle class students: $M = –0.22$; $SD = 1.21$). Also, lower middle class students are significantly more underestimated by the teachers, in this regard, compared to middle class and upper middle class students. Post-hoc comparisons further reveal that working class ($M = –0.52$; $SD = 1.40$), as well as lower middle class students ($M = –0.30$; $SD = 1.30$), each significantly differ from middle class ($M = –0.03$; $SD = 1.16$) and upper middle class students ($M = 0.13$; $SD = 1.17$) in terms of a larger underestimation by the teachers of students' motivation to learn for the lower SES groups. What is more, teacher expectations of the upper middle class students' motivation to learn are overestimated by the teachers. Similarly, teacher expectations of students' language skills are overestimated for all the SES-groups, but a significantly larger overestimation occurs in the case of working class students ($M = 1.14$; $SD = 1.30$), compared to middle class ($M = 0.74$; $SD = 1.37$) and upper middle class students ($M = 0.66$; $SD = 1.17$).

Our analysis of the mean scores for the gender groups points to an underestimation of boys and an overestimation of girls by the teachers in terms of their ability to plan (males: $M = –0.25$; $SD = 1.46$, females: $M = 0.22$; $SD = 1.47$) and motivation to learn (males: $M = –0.51$; $SD = 1.31$, females: $M = 0.06$; $SD = 1.23$). As regards bias in teacher expectations of teacher-student relationships, the results show a statistically significant difference in terms of an overestimation by the teachers for boys ($M = 0.19$; $SD = 1.20$) and for girls ($M = 0.12$; $SD = 1.08$), but with a significantly higher mean score for boys, compared to their counterparts.

Conclusions and discussion

The present study investigated (1) whether teacher expectations of students' cognitive as well as non-cognitive attributes and of contextual variables are biased (cf. Research Question 1), and (2) whether teachers systematically differ in their expectation bias with respect to these attributes based on students' SES, ethnicity and gender (cf. Research Question 2).

General teacher expectation bias in terms of both over- and underestimation by teachers
In order to answer the first research question, we used two different methods. First, we performed a correlation analysis between teacher expectations

and corresponding measured attributes of students, in terms of students' achievement test scores (aligned with teacher-rated students' cognitive attributes) and self-assessments (aligned with teacher-rated students' non-cognitive attributes and contextual variables). The results show statistically significant, positive correlations for all the attributes included, indicating an overall correspondence between teacher expectations and students' achievement test scores and self-assessments. In line with the meta-analyses of Hoge and Coladarci (1989), Südkamp et al. (2012), and Machts et al. (2016) on teacher expectation bias towards students' academic performance, our findings suggest that teacher expectations of students' cognitive attributes closely correspond to their achievement test scores. However, the teacher-rated and self-assessed students' non-cognitive attributes, as well as contextual variables, correspond rather weakly.

A different picture occurs based on the results of the second method, in which we created an indicator of teacher expectation bias by subtracting the students' measured attributes from the corresponding teacher expectations. In doing so, we were able to gather additional information about the extent of bias in terms of over- and underestimation of teacher expectations. Indeed, based on the results of the correlation analysis, we know that teacher expectations of students and students' achievement test scores or self-assessments were positively related to each other. However, positive or negative relationships between teacher expectations and students' measured attributes do not fully inform us about the extent to which teacher expectations and students' measured attributes correspond or diverge. After all, a statistically significant correlation between, for instance, teacher-rated maths skills of students and students' achievement test scores on maths does not necessarily mean that both parties judge or assess this attribute the same in absolute terms. Therefore, in line with the definition of expectation bias of Ready and Wright (2011), we obtained an additional measure of teacher expectation bias in order to be able to determine the extent of bias in terms of over- and underestimation by teachers. We conclude that there is an overall bias in teacher expectations in terms of both over- and underestimation, in which, above all, teacher expectations of students' cognitive attributes are found to be biased. Teacher expectations of students' language skills (i.e., overestimation), maths skills (i.e., overestimation) and parental involvement in education (i.e., underestimation) are found to be considerably biased. Teachers only slightly misestimate students' non-cognitive attributes, as well as their relationships with students. Additionally, the descriptive statistics of teacher expectation bias suggest a large variation between teachers in their expectation bias against the attributes included. This raises the question as to whether specific characteristics of teachers are associated with expectation bias. In their meta-analysis, Südkamp et al. (2012) drew similar conclusions

by stating that, although the large variability in teachers' ability to judge their students' academic performance is well documented, research into teacher characteristics that determine expectation bias is scarce. Following their plea, future research could focus on the relationship between teacher characteristics, such as teaching experience (Hofer, 2015), and teacher expectation bias.

In sum, our findings point to discrepancy between teacher expectations and students' achievement test scores, as well as self-assessments. These results are especially important in an educational context where teacher expectations of students are crucial for allocation to secondary education, as is the case in Flanders. Given that the realisation of an optimal allocation in secondary education and equal educational opportunities for students heavily depends on the accuracy of teacher expectations, it is critical that these expectations are unbiased. Students whose attributes are overestimated by teachers may experience difficulties in performing according to the expected academic level of the secondary education track, in which they enrolled. At the same time, students whose attributes are underestimated by teachers may experience difficulties in terms of, for instance, being insufficiently cognitively challenged. In both cases, if students are not in the right place in secondary education, that is not in accordance to their actual abilities and skills, this can logically have major implications not only for students' academic achievement but also for their overall well-being and school functioning.

The findings of the present study have particular relevance to teacher education and educational policy-makers. First, (student) teachers should be able to obtain a clear picture of how and why expectations of students' (future) abilities and potential arise, and how and why bias in these expectations may occur. In order to do so, it is promising to introduce (student) teachers in the teacher expectancy theory, which could become a part of the curriculum in teacher education. Next, (student) teachers should be able to prevent the pitfalls of bias in teacher expectations in the best possible way and to respond accurately to these pitfalls when assessing and allocating students. One way of doing this for (student) teachers is by comparing their expectations of students' (future) abilities and potential with the assessments of appropriate "experts," including fellow (student) teachers and students' parents (Panadero et al., 2016; Topping, 2003). Our findings point to the particular importance of alignment with students' self-assessments, given that these assessments were found to diverge, to a substantial extent, from the expectations or assessments of teachers. These findings alone should be sufficient reason for (student) teachers to look at their expectations with a critical eye and to seek verification from multiple perspectives. In order for (student) teachers to verify or validate their expectations and to provide as complete a picture as possible of students' (future) abilities and potential, they should systematically align their expectations with the experiential expert knowledge and assessments

of students from different, important stakeholders. This multi-informant approach can become a way of doing things in schools, for which a wider support and a common ground has to be created among the different members of school teams. In this respect, an important role is reserved for school leaders, school boards, and educational policy-makers.

Specific teacher expectation bias towards students' SES and gender

As regards the second research question, we conclude that there is a specific bias in teacher expectations towards students' gender and SES, although the effects are found to be rather small. In the case of gender, firstly, bias is found in teacher expectations of the supportive relationships with students in terms of an overestimation for both boys and girls, but with a significantly higher overestimation for boys. Secondly, teacher expectations of students' motivation to learn and their ability to plan are biased in terms of an underestimation for boys and an overestimation for girls. In line with research into students' self-assessments of academic competence (i.e., skills, attitudes and behaviours that contribute to school success) stating that boys and girls tend to increasingly over- and underestimate their academic performance during childhood and adolescence (e.g., Cole et al., 1999), it is not surprising that the motivation to learn and ability to plan are self-assessed higher by boys and lower by girls, compared to the assessments of the teachers.

In the case of SES, biased teacher expectations are found for parental involvement in education, students' motivation to learn, and their language skills. Overall, both teacher expectations of parental involvement in education and of students' motivation to learn are biased in terms of a larger underestimation for the lower SES groups (i.e., working class and lower middle class students), compared to the higher SES groups (i.e., middle class and upper middle class students). In line with what Farkas (2003) called non-cognitive traits and behaviours, Boone and Van Houtte (2013) suggested that rather than taking students' SES consciously into account, teachers focus on specific non-cognitive attributes of students when shaping their expectations of students' (future) abilities and potential. Given that these non-cognitive attributes are considered to be unequally distributed across social classes and to be rather typical of middle class students (Farkas, 2003), this might point to a possible explanation for the expectation bias towards SES related to students' motivation to learn.

Additionally, even though teacher expectations of students' language skills are, on average, biased in terms of an overestimation for all the SES groups, this bias is significantly higher for lower SES students than for higher SES students. Considering the widely shared social stereotype suggesting that teachers have higher expectations of the academic performance of high SES students, compared to low SES students (e.g., Boone & Van Houtte, 2013;

Timmermans et al., 2015; Tobisch & Dresel, 2017), we would rather expect to have found the opposite result. It is not immediately clear why, in the present study, the teachers overestimate their students' language skills, especially in the case of low SES students. A possible explanation may be that in the specific context of Flemish urban, highly multicultural schools with a large social diversity, teachers anticipate their classroom behaviour because they are well aware of the danger of social stereotyping. However, given that, based on our results, this does not seem to be the case for the other biased teacher expectations related to SES, there is still much scope for improvement with regard to teachers in terms of stereotyped thinking and expectation bias. These findings also raise the question of whether the teachers might have responded in a socially desirable way when completing the questionnaire, by wanting to give the impression that they judge low and high SES students in the same way. Therefore, future research could consider (additional) observations in order to verify teachers' actual awareness and behaviour regarding social stereotyping. Either way, it is crucial, especially in tracked educational systems, that (student) teachers are (more) aware of the possibility of general and specific bias in their expectations regarding students' (future) abilities and potential, of the attributes that are important in this regard, and of the possible (longer-term) impact of expectation bias through the assessment and allocation of students.

Limitations of the present study

The limitations worth mentioning are related to the methodologies used in the present study. Firstly, the correlation analysis showed a weak correspondence between teacher-rated and student-rated non-cognitive attributes of students and contextual variables, in contrast to a close correspondence between teacher-rated cognitive attributes of students and students' achievement test scores. These findings may be due to the different items used in the present study, referring to the teacher-rated and student-rated non-cognitive attributes of students and contextual variables (i.e., teacher-student relationships and parental involvement in education). Given the distinction in both perspectives (i.e., the teacher and student perspective), it was a challenge to seek for similar items in order to question each of the attributes. Although the items were not always formulated in exactly the same way, we did pursue a close correspondence. Questions may arise about the use of students' self-assessments as appropriate measures of attributes, alongside objective achievement test scores. In agreement with the model of Brophy and Good (1970) explaining the mechanisms through which teacher expectations exert influence, students' behaviour and self-image are inseparably linked to (differential) teacher

expectations. Hence, similarly to teacher expectations, students' self-assessments might be biased as well and might therefore be considered less objective than achievement test scores. However, in agreement with Panadero et al. (2016) and Topping (2003) who stated that the accuracy of students' self-assessments must be determined by the alignment of these assessments with the judgements of appropriate content experts, such as teachers, it seems reasonable that this principle also applies in the other direction; in order to determine the accuracy of teachers' assessments of students, these assessments must be aligned with the judgements of the students themselves, as they are the obvious experts when it comes down to their own academic functioning. Future research could take into account students' ability to accurately assess their own academic functioning.

Secondly, for the use of the subtraction method, we transformed the measurement scale of students' achievement test scores from continuous to discrete data to obtain comparable measurements for teacher expectation bias. However, important information is lost doing so, more specifically in terms of the variance originally present in the continuous achievement test scores of students. Hence, it is possible that the results of the subtraction method are influenced by the rescaling of data. Furthermore, after rescaling, the new, discrete values have received a different meaning and the question arises as to what extent they can be interpreted in the same way as the original, continuous values. Therefore, our findings with respect to general teacher expectation bias in terms of over- and underestimation of teacher expectations, and in particular with respect to the alignment of teacher expectations of students' cognitive attributes with students' achievement test scores, should be interpreted with caution. It goes without saying that the findings of the present study deserve further clarification through future studies, with special attention to the used methodologies as well as their limitations, in which multiple research methods can complement one another and can develop a more comprehensive understanding of teacher expectation bias.

Acknowledgements

References

Bandura, A. (1977). Self Efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

Bandura, A. (1990). *Multidimensional scales of perceived academic efficacy*. Stanford University.

Bol, T., Witschge, J., Van de Werfhorst, H. G., & Dronkers, J. (2014). Curricular tracking and central examinations: Counterbalancing the impact of social background on student achievement in 36 countries. *Social Forces, 92*(4), 1545–1572. https://doi.org/10.1093/sf/sou003

Bonvin, P. (2003). The role of teacher attitudes and judgement in decision-making: The case of grade retention. *European Educational Research Journal*, 2(2), 277–294. https://doi.org/10.2304/eerj.2003.2.2.6

Boone, S., & Van Houtte, M. (2013). Why are teacher recommendations at the transition from primary to secondary education socially biased? A mixed-methods research. *British Journal of Sociology of Education, 34*(1), 20–38. https://doi.org/10.1080/01425692.2012.704720

Brophy, J. E. (1983). Research on the self-fulfilling prophecy and teacher expectations. *Journal of Educational Psychology, 75*(5), 631–661. https://doi.org/10.1037/0022-0663.75.5.631

Brophy, J., & Good, T. (1970). Teachers' communication of differential expectations for children's classroom performance: Some behavioral data. *Journal of Educational Psychology, 61*(5), 365–374. https://doi.org/10.1037/h0029908

Brophy, J.E., Good, T.L. (1974). *Teacher-student relationships: Causes and consequences*. Holt, Rinehart and Winston.

Castro, M., Exposito-Casas, E., Lopez-Martin, E., Lizasoain, L., Navarro-Asencio, E., & Gaviria, J. L. (2015). Parental involvement on student academic achievement: A meta-analysis. *Educational Research Review, 14*, 33–46. https://doi.org/10.1016/j.edurev.2015.01.002

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Earlbaum Associates.

Cohen, L. Manion, L., & Morrison, K. (2011). *Research methods in education* (7th ed.). Routledge.

Cole, D. A., Martin, J. M., Peeke, L. A., Seroczynski, A. D., & Fier, J. (1999). Children's over- and underestimation of academic competence: A longitudinal study of gender differences, depression, and anxiety. *Child Development, 70*(2), 459–473. https://doi.org/10.1111/1467-8624.00033

Crosby, J. W. (2011). Social Skills Improvement System Rating Scales. *Journal of Psychoeducational Assessment, 29*(3), 292–296. https://doi.org/10.1177/0734282910385806

Department of Education and Training (2008). *Education in Flanders. The Flemish educational landscape in a nutshell*. Die Keure.

de Boer, H., Bosker, R. 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. https://doi.org/10.1037/a0017289

Erikson, R., Goldthorpe, J. H., & Portocarero, L. (1979). Intergenerational class mobility in three West European countries: England, France and Sweden. *British Journal of Sociology, 30*(4), 415–441. https://doi.org/10.1111/j.1468-4446.2009.01246.x

Eurydice (2011). *Grade Retention during Compulsory Education in Europe: Regulations and Statistics*. European Commission.

Farkas, G. (2003). Cognitive skills and noncognitive traits and behaviors in stratification processes. *Annual review of sociology, 29*, 541–562. https://doi.org/10.1146/annurev.soc.29.010202.100023

Farrington, C. A., Roderick, M., Allensworth, E., Nagaoka, J., Keyes, T. S., Johnson, D. W., & Beechum, N. O. (2012). *Teaching adolescents to become learners: The role of noncognitive factors in shaping school performance: A critical literature review.* University of Chicago Consortium on Chicago School Research.

Furnham, A. (2012). Learning styles and approaches to learning. In K. R. Harris, S. Graham, & T. Urdan (Eds.), *APA Educational Psychology Handbook: Individual differences and cultural and contextual factors* (Vol. 2, pp. 59–82). Americal Psychological Association.

Glock, S., & Krolak-Schwerdt, S. (2013). Does nationally matter? The impact of stereotypical expectations on student teachers' judgements. *Social Psychology of Education, 16*(1), 111–127. https://doi.org/10.1007/s11218-012-9197-z

Glock, S., Krolak-Schwerdt, S., Klapproth, F., & Bohmer, M. (2013). Beyond judgment bias: How students' ethnicity and academic profile consistency influence teachers' tracking judgments. *Social Psychology of Education, 16*(4), 555–573. https://doi.org/10.1007/s11218-013-9227-5

Good, T. L. (1987). Two decades of research on teacher expectations: Findings and future directions. *Journal of Teacher Education, 38*(32–47). https://doi.org/10.1177/002248718703800406

Gorard, S., & Smith, E. (2004). An international comparison of equity in education systems. *Comparative education, 40*(1), 15–28. https://doi.org/10.1080/0305006042000184863

Gresham, F. M., & Elliot, S. N. (1990). *Social Skills Rating System.* Minneapolis, MN: NCS Pearson.

Harris, M. J., & Rosenthal, R. (1985). Mediation of interpersonal expectancy effects: 31 meta-analyses. *Psychological Bulletin, 97*(3), 363–386. https://doi.org/10.1037/0033-2909.97.3.363

Hauser-Cram, P., Sirin, S. R., & Stipek, D. (2003). When teachers' and parents' values differ: Teachers' ratings of academic competence in children from low-income families. *Journal of Educational Psychology, 95*(4), 813–820. https://doi.org/10.1037/0022-0663.95.4.813

Hill, N. E., & Tyson, D. F. (2009). Parental involvement in middle school: A meta-analytic assessment of the strategies that promote achievement. *Developmental Psychology, 45*(3), 740–763. https://doi.org/10.1037/a0015362

Hofer, S. I. (2015). Studying gender bias in physics grading: The role of teaching experience and country. *International Journal of Science Education, 37*(17), 2879–2905. https://doi.org/10.1080/09500693.2015.1114190

Hoge, R. D., & Coladarci, T. (1989). Teacher-based judgments of academic achievement: A review of literature. *Review of Educational Research, 59*(3), 297–313. https://doi.org/10.2307/1170184

Hoover-Dempsey, K. V., Walker, J. M. T., Sandler, H. M., Whetsel, D., Green, C. L., Wilkins, A. S., & Closson, K. (2005). Why do parents become involved? Research findings and implications. *Elementary School Journal, 106*(2), 105–130. https://doi.org/doi:10.1086/499194

Hughes, J. N., Gleason, K. A., & Zhang, D. A. (2005). Relationship influences on teachers' perceptions of academic competence in academically at-risk minority and majority first grade students. *Journal of School Psychology, 43*(4), 303–320. https://doi.org/10.1016/j.jsp.2005.07.001

Ireson, J., & Hallam, S. (2001). *Ability grouping in education.* Paul Chapman Publishing.

Jackson, M., Jonsson, J. O., & Rudolphi, F. (2012). Ethnic inequality in choice-driven education systems: A longitudinal study of performance and choice in England and Sweden. *Sociology of Education, 85*(2), 158–178. https://doi.org/10.1177/0038040711427311

Jacobs, D., Rea, A., & Teney, C. (2009). *De sociale lift blijft steken. De prestaties van allochtone leerlingen in de Vlaamse Gemeenschap en de Franse Gemeenschap* [The social lift stops working.

The performance of immigrant students in the Flemish community and the French community]. Koning Boudewijnstichting.

Janssen, R., Van Nijlen, D., De Mulder, L., & Ameel, E. (2017). *Validering van IDP en de OVSG-toets: Eindrapport* [Validation of IDP and the OVSG-test: Final report]. Steunpunt Toetsontwikkeling en Peilingsonderzoek.

Jussim, L. (1989). Teacher expectations: Self-fulfilling prophecies, perceptual biases, and accuracy. *Journal of Personality and Social Psychology, 57*(3), 469–480. https://doi.org/10.1037/0022-3514.57.3.469

Jussim, L. (1991). Social perception and social reality: A reflection-construction model. *Psychological Review, 98*(1), 54–73. https://doi.org/10.1037/0033-295x.98.1.54

Jussim, L. (2017). Precis of social perception and social reality: Why accuracy dominates bias and self-fulfilling prophecy. *Behavioral and Brain Sciences, 40*(1), 1–65. https://doi.org/10.1017/s0140525x1500062x

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. https://doi.org/10.1207/s15327957pspr0902_3

Kaiser, J., Südkamp, A., & Möller, J. (2017). The effects of student characteristics on teachers' judgment accuracy: Disentangling ethnicity, minority status, and achievement. *Journal of Educational Psychology, 109*(6), 871–888. https://doi.org/10.1037/edu0000156

Kelly, S., & Carbonaro, W. (2012). Curriculum tracking and teacher expectations: Evidence from discrepant course taking models. *Social Psychology of Education, 15*(3), 271–294. doi:10.1007/s11218-012-9182-6

Klein, G. (2008). Naturalistic decision making. *Human Factors, 50*(3), 456–460. https://doi.org/10.1518/001872008x288385

Kornblau, B. (1982). The Teachable Pupil Survey: A technique for assessing teachers' perceptions of pupil attributes. *Psychology in the Schools, 19*(2), 170–174. https://doi.org/10.1002/1520-6807(198204)19:2<170::aid-pits2310190206>3.0.co;2-p

LeTendre, G. K., Hofer, B. K. L., & Shimizu, H. (2003). What is tracking? Cultural expectations in the United States, Germany, and Japan. *American Educational Research Journal, 40*(1), 43–89. https://doi.org/10.3102/00028312040001043

Li, Q. (1999). Teachers' beliefs and gender differences in mathematics: A review. *Educational Research, 41*(1), 63–76. https://doi.org/10.1080/0013188990410106

Ma, X., Shen, J. P., Krenn, H. Y., Hu, S. S., & Yuan, J. (2016). A meta-analysis of the relationship between learning outcomes and parental involvement during early childhood education and early elementary education. *Educational Psychology Review, 28*(4), 771–801. https://doi.org/10.1007/s10648-015-9351-1

Machts, N., Kaiser, J., Schmidt, F. T. C., & Möller, J. (2016). Accuracy of teachers' judgments of students' cognitive abilities: A meta-analysis. *Educational Research Review, 19*, 85–103. https://doi.org/10.1016/j.edurev.2016.06.003

Mechtenberg, L. (2009). Cheap talk in the classroom: How biased grading at school explains gender differences in achievements, career choices and wages. *Review of Economic Studies, 76*(4), 1431–1459. https://doi.org/10.1111/j.1467-937X.2009.00551.x

Nurnberger, M., Nerb, J., Schmitz, F., Keller, J., & Sutterlin, S. (2016). Implicit gender stereotypes and essentialist beliefs predict preservice teachers' tracking recommendations. *Journal of Experimental Education, 84*(1), 152–174. https://doi.org/10.1080/00220973.2015.1027807

OECD (2006), *Where immigrant students succeed: A comparative review of performance and engagement in PISA 2003*, PISA, OECD Publishing. https://doi.org/10.1787/9789264023611-en

Panadero, E., Brown, G. T. L., & Strijbos, J. W. (2016). The future of student self-assessment: A review of known unknowns and potential directions. *Educational Psychology Review, 28*(4), 803–830. https://doi.org/10.1007/s10648-015-9350-2

Pastorelli, C., Caprara, G. V., Barbaranelli, C., Rola, J., Rozsa, S., & Bandura, A. (2001). The structure of children's perceived self-efficacy: A cross-national study. *European Journal of Psychological Assessment, 17*(2), 87–97. https://doi.org/10.1027/1015-5759.17.2.87

Penninckx, M., Vanhoof, J., & Van Petegem, P. (2011). *Beleid in het Vlaamse Onderwijs. Beleid en praktijk van leerling tot overheid* [Evaluation in the Flemish education. Policy and practice of student to government].Garant.

Ready, D. D., & Wright, D. L. (2011). Accuracy and inaccuracy in teachers' perceptions of young children's cognitive abilities: The role of child background and classroom context. *American Educational Research Journal, 48*(2), 335–360. https://doi.org/10.3102/0002831210374874

Riley, T., & Ungerleider, C. (2012). Self-fulfilling prophecy: How teachers' attributions, expectations, and stereotypes influence the learning opportunities afforded Aboriginal students. *Canadian Journal of Education, 35*(2), 303–333. https://doi.org/10.14288/1.0055749

Rosenthal, R. (1973). The mediation of Pygmalion effects: A four factor "theory". *Papaua New Guinea Journal of Education, 9*, 1–12.

Rosenthal, R. (2002). The Pygmalion effect and its mediating mechanisms. In J. Aronson (Ed.), *Improving academic achievement: Impact of psychological factors on education* (pp. 25–36). California: Academic Press.

Rosenthal, R., & Jacobson, L. (1968). *Pygmalion in the classroom: Teacher expectations and student intellectual development*. Holt.

Rubie-Davies, C., Hattie, J., & Hamilton, R. (2006). Expecting the best for students: Teacher expectations and academic outcomes. *British Journal of Educational Psychology, 76*, 429–444. https://doi.org/10.1348/000709905x53589

Rubie-Davies, C. M. (2010). Teacher expectations and perceptions of student attributes: Is there a relationship? *British Journal of Educational Psychology, 80*(1), 121–135. https://doi.org/doi:10.1348/000709909x466334

Südkamp, A., Kaiser, J., & Möller, J. (2012). Accuracy of teachers' judments of students' academic achievement: A meta-analysis. *Journal of Educational Psychology, 104*(3), 743–762. https://doi.org/10.1037/a0027627

Tabachnick, B. G., & Fidell, L. S. (2014). *Pearson new international edition. Using multivariate statistics* (6th ed.). Pearson Education Limited.

Tenenbaum, H. R., & Ruck, M. D. (2007). Are teachers' expectations different for racial minority than for European American students? A meta-analysis. *Journal of Educational Psychology, 99*(2), 253–273. https://doi.org/10.1037/0022-0663.99.2.253

Timmermans, A. C., de Boer, H., & van der Werf, M. P. C. (2016). An investigation of the relationship between teachers' expectations and teachers' perceptions of student attributes. *Social Psychology of Education, 19*(2), 217–240. https://doi.org/10.1007/s11218-015-9326-6

Timmermans, A. C., Kuyper, H., & van der Werf, G. (2015). Accurate, inaccurate, or biased teacher expectations: Do Dutch teachers differ in their expectations at the end of primary education? *British Journal of Educational Psychology, 85*(4), 459–478. https://doi.org/10.1111/bjep.12087

Timmermans, C., Hermans, P., & Hoornaert, J. (2002). *Allochtone jongeren in het onderwijs. Een multidisciplinair perspectief* [Immigrant youth in education: A multidisciplinary perspective]. Garant.

Tobisch, A., & Dresel, M. (2017). Negatively or positively biased? Dependencies of teachers' judgments and expectations based on students' ethnic and social backgrounds. *Social Psychology of Education, 20*(4), 731–752. https://doi.org/10.1007/s11218-017-9392-z

Topping, K. J. (2003). Self and peer assessment in school and university: reliability, validity and utility. In M. Segers, F. Dochy, & E. Cascallar (Eds.), *Optimising new modes of assessment: in search of qualities and standards* (Vol. 1, pp. 55–87). Springer.

Van de Werfhorst, H. G., & Mijs, J. J. (2010). Achievement inequality and the institutional structure of educational systems: A comparative perspective. *Annual review of sociology, 36*, 407–428. doi:10.1146/annurev.soc.012809.102538

Van Houtte, M., & Demanet, J. (2016). Teachers' beliefs about students, and the intention of students to drop out of secondary education in Flanders. *Teaching and Teacher Education, 54*, 117–127. https://doi.org/10.1016/j.tate.2015.12.003

Van Maele, D., & Van Houtte, M. (2011). Collegial trust and the organizational context of the teacher workplace: The role of a homogeneous teachability culture. *American Journal of Education, 117*(4), 437–464. https://doi.org/10.1086/660754

Vanlommel, K. (2018). *Opening the black box of teacher judgement : The interplay of rational and intuitive processes*. University of Antwerp, Faculty of Social Sciences, Department of Training and Education Sciences.

Vanlommel, K., Van Gasse, R., Vanhoof, J., & Van Petegem, P. (2017). Teachers' decision-making: Data based or intuition driven? *International Journal of Educational Research, 83*, 75–83. https://doi.org/10.1016/j.ijer.2017.02.013

Vervaet, R., D'Hondt, F., Van Houtte, M., & Stevens, P. A. J. (2016). The ethnic prejudice of Flemish teachers: The role of ethnic school composition and of teachability. *Cultural Diversity & Ethnic Minority Psychology, 22*(4), 552–562. https://doi.org/10.1037/cdp0000085

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