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The relationship between cultural capital and the students' perception of feedback across 75 countries: Evidence from PISA 2018

Abstract

This paper employs Pierre Bourdieu's cultural capital theory to examine the extent to which students' cultural capital is related to teacher-student interaction in the context of feedback. The study uses PISA (2018) data to implement multilevel modelling for each participating country. The findings show that objectified and embodied components of cultural capital have a positive and statistically significant effect on students' perception of feedback across all countries. Institutionalised cultural capital, however, has no significant effect in most countries. Furthermore, the findings show that boys perceived receiving considerably more feedback than girls. Recommendations for future studies and implications for theory, practice and policy are discussed.

Keywords: Pierre Bourdieu, cultural capital, educational inequality, perceived feedback, reading classrooms, multilevel modelling, PISA

Introduction

Pierre Bourdieu's cultural capital theory has often been used to explain the relationship between socioeconomic status and educational attainment. Contemporary literature has provided evidence for the relationship between different forms of cultural capital and students' academic achievement (Caro *et al*., 2014; Chiu, 2010; Chiu and McBride-Chang, 2010; Martins and Veiga, 2010; Xu and Hampden-Thompson, 2012; Puzić *et al.*, 2016; Tan, 2017; Tan and Liu, 2018; Xie and Ma, 2019) and varying effect regarding students' subject test scores (Perera, 2014; Atas and Karadag, 2017; Sebestian *et al.*, 2017). However, little attention has been paid to how, and to what extent, students' cultural capital affects classroom interaction practices, in particular, how it affects teacher's feedback to students (Sortkaer, 2019).

The literature over the last few decades has demonstrated the importance of feedback in promoting students' learning (Black and Wiliam, 1998; Hattie and Timperley, 2007; Shute, 2008; Lipnevich and Smith, 2018). Feedback is an essential process for students to develop their capacity on a task (Sadler, 1989). Hattie (2009) found that feedback is the most efficient predictor of student academic achievement. Students' perceptions are of considerable concern in determining the effectiveness of feedback on learning (Williams, 2010; Winstone and Boud, 2020; Winstone et al. 2020). However, few studies have investigated whether feedback has the same impact on all students or whether the perceived amount of feedback received from teachers differs depending on a student's gender, socioeconomic, and cultural background (Hattie and Gan, 2011; OECD, 2008; Sortkaer, 2019). There is therefore an urgent need to examine how students' cultural background and socio-demographic characteristics affect students' perception of feedback from different countries and contexts.

To address this need, this paper examines the influence of students' cultural capital on their perception of feedback, drawing on Pierre Bourdieu's cultural capital theory (1986). We use data from the latest cycle of Programme for the International Student Assessment (PISA) 2018, an assessment conducted by the Organisation for Economic Cooperation and Development (OECD) across 75 countries. We choose to conduct this study in reading classes in lower secondary school all over the world, which has

called for studies by Sortkaer (2019) since Van der Kleij and Lipnevich (2020) highlighted in their scoping review that whereas over two-thirds of studies had been done in the context of higher education, the minority of studies had been conducted in the context of secondary school. The study is guided by the following questions:

Research Questions

1. To what extent is students' cultural capital related to students' perception of feedback in lower secondary reading classrooms across countries?
2. To what extent is students' gender, social and ethnic background related to students' perception of feedback in lower secondary reading classrooms across countries?

In the following section, we first provide some information about Pierre Bourdieu's cultural capital theory, the feedback, the students' perceptions of feedback, and relevant previous work in this research area. We then discuss the PISA data, our samples, variables, analytical strategy and present our findings. Lastly, we mention the implications, limitations, and future directions of the research.

Literature Review

Pierre Bourdieu's Cultural Capital Theory

Pierre Bourdieu Cultural Reproduction theory (1986) focuses on how parents' fortunes are passed on to their children, thereby reproducing the distinguished standing of the family. He defines capital as a concept that "takes time to accumulate and which, as a potential capacity to produce profits and the reproduce itself in identical or expanded form, contains a tendency to persist in its being" (p. 241). Essentially, three forms of capital can be acknowledged: economic capital, "which is immediately and directly convertible into money and might be institutionalized in the form of property rights"; social capital, "which is convertible, in certain conditions, into economic capital and might be institutionalized in the form of a title of nobility"; and cultural capital, "which is convertible, in certain conditions, into economic capital and might be institutionalized in the form of educational qualifications" (Bourdieu, 1986, p.242).

Cultural capital is addressed in three forms – embodied or incorporated cultural capital, objectified cultural capital and institutionalized cultural capital (Bourdieu, 1997). Embodied cultural capital is comprised of a person's linguistic expertise and cognitive and cultural inclinations and selections. In this sense, parents play a crucial role in engaging their children in cultural participation, parent-child academic discussions, and parent-child reading at home. Objectified cultural capital consists of a person's cultural possessions, belongings and home educational resources that enhance knowledge and skills valued by teachers. Institutionalized cultural capital includes educational qualifications and certificates that are valued in society.

Cultural capital has an influence not only on students' academic achievement (Puzić *et al.*, 2016; Tan, 2017; Tan and Liu, 2018) but also on teaching and learning practices in the classroom. DiMaggio (1982, p.190) explicitly states that 'teachers communicate more easily with students who participate in elite cultures, give them more attention and special assistance, and perceive them as more intelligent or gifted than students who lack cultural capital'. Hence, pedagogical action (teaching and learning practices) is "the cause of the failure of many non-elite children because they lack the values and language that the children of the elite share with their teachers" (Broadfoot, p.76-77). Having appropriate language skills for pedagogical communication is called "cultural capital" by Bourdieu and Passeron (1990). Therefore, it is essential to note that students' cultural capital is shaped by external factors from formal educational settings, and students are treated in the classroom accordingly.

Feedback

In the educational setting, feedback is seen as any information that is provided to students related to their performance after completing a task by the teacher to boost their learning (Black and Wiliam, 1998, Hattie and Timperley, 2007). Carless (2016, p.1) identifies feedback as a "dialogic process whereby learners make sense of information from various sources and use it to enhance their work or

learning strategies". Interpretation of this implies teachers' value as a source of feedback for students. Straub (1996) distinguishes between two types of feedback from teachers: facilitative and directive feedback. He considers directive feedback as a teacher-centred approach where explicit information is given about students' performance. He defines facilitative feedback as shared communication between student and teacher which provides the student implicit information about their performance.

Although feedback is an essential process for student learning (Kluger and DeNisi, 1996; Shute, 2008; Lipnevich and Smith, 2018), existing studies haven't been able to establish consistent results related to the favourable effects of feedback on student achievement (Shute, 2008; Van der Kleij et al., 2015). This study adds to the existing feedback effectiveness literature by focusing on students' perception of the amount of feedback they receive and whether this perception is affected by a student's background. We also distinguish between two types of feedback: summative and formative. Summative feedback is a teacher's ultimate evaluation of work completed by their students in the past. Formative feedback is a type of feedback given to help students change and improve their current situation and is more closely related to the classroom, teachers, practice and the teaching subjects. In this regard, teachers should put forth an effort and must demonstrate dedication to understand the student in order to provide better formative feedback which will in turn improve student performance (Dwyer, 1998).

There has been a consensus that student perceptions of feedback are a vital indicator of the influence of feedback on student learning (Lipnevich and Smith, 2009; Rakoczy et al., 2013). However, there have been relatively few studies on how students' socio-demographic and cultural background influence students' perceptions of feedback (Carvalho et al. 2014; Hattie and Gan, 2011). For example, Calarco (2011, 2014) found that students' inclination to consult their teachers for support was affected by a students' social class background. She found that, as a result, middle-class children received more help from teachers than their working-class peers and that social class background also leads to teachers treating students differently according to their class. More recently, in a Danish study, Sortkaer (2019), using only the embodied form of cultural capital, found that cultural capital is positively and significantly related to students' perception of feedback in lower secondary mathematics classes. However, Breinholt and Jæger (2020), using ECLS-K data from the United States, investigated whether cultural capital positively influences teacher evaluations since teachers misinterpret cultural capital as academic brilliance. They found that no aspect of cultural capital has an impact on teacher evaluation. Due to the sparsity of research in this area and the conflicting results of the few studies that do exist, there is an urgent need to examine how students' cultural capital affects students' perception of feedback across diverse countries.

The impact of gender on students' perception of feedback

Research exploring the impact of students' gender on their perception of feedback has produced inconsistent results. On the one hand, some studies have found that girls perceived receiving more feedback from their teachers than boys (Alhaysony, 2016; Carvalho et al. 2004; Chen and Thompson, 2003; Nicaise et al. 2006, 2007). On the other hand, studies conducted by Havnes et al. (2012) and Rucker and Thomson (2003) provided evidence that boys perceived receiving more feedback than girls did. Furthermore, Williams (2010) found gender differences in students' perception of feedback's usefulness. More recently, Sortkaer (2018, 2019, 2019) reported that girls perceived receiving more feedback than boys using PISA 2015 data, PISA 2012 data in five Nordic countries, and Danish Feedback and Cultural Capital data, respectively. Thus, as highlighted above, current studies on gender differences in perceived feedback are inconsistent and yield varying results depending on the context in which the research was conducted. Therefore, it is necessary to conduct further research in this area that utilises data from different countries to obtain a clearer picture of how a student's gender affects their perception of feedback.

The impact of language and immigration status on students' perception of feedback

Language status study

Studies using PISA data have found ambiguous results when investigating the relationship between the language spoken at home and a student's perception of feedback (Sortkaer, 2018; Sortkaer, 2019).

Among the following countries, Denmark, Finland, Iceland, Norway and Sweden, Sortkaer (2019) found that Iceland was the only country where students that spoke a different language at home to the test language perceived receiving statistically more feedback than children who spoke the test language at home. This study was conducted using PISA 2012 data which focussed on mathematics classrooms. Among the aforementioned countries, Sortkaer (2018) reported that it was only in Sweden that students who spoke a different language at home to the test language, perceived statistically more feedback than children who spoke the test language at home. This study used PISA 2015 data and focused on science classrooms. As the two papers described above are the only studies to have looked at whether speaking the test language at home related to students' perception of feedback, there is a requirement for further investigations across different countries.

Immigration status study

Empirical studies focused on students' immigration background and students' perceptions of feedback have found mixed results. For example, Sortkaer (2018) found that in Finland, Norway and Sweden, students who were not born in the test country (immigrant students) perceived receiving significantly more feedback than students who were born in the test country (native students). Moreover, in an Australian study, in the higher education context, Rowe and Wood (2008) found that domestic students are more pleased than international students with the amount and type of feedback they received from their teachers. Thus, there is room for further studies to investigate the effect of students' immigration background on their perception of feedback to understand how the effect differs across different countries and contexts.

The existing literature investigating students' perception of feedback predominantly treats all students as coming from the same cultural capital background. Only one study explicitly investigates the impact of cultural capital but this merely focuses on the embodied form of cultural capital on students' perception of feedback. Moreover, when it comes to the influence of gender, social and ethnic background, the findings of existing studies have yielded contradictory results. Therefore, this study investigates how students' perceptions of feedback are influenced by three forms of cultural capital, gender, spoken language at home and immigration status. We employ nationally representative data in each country in order to ensure the generalisability of findings to present a clearer pattern for all participating countries in PISA 2018.

Method

Data

This research uses secondary data analysis of data from the Programme for International Student Assessment (PISA) 2018 conducted by the Organisation for Economic Co-Operation and Development (OECD, 2019b). PISA 2018 collected data from 15-year-old students across 79 countries and evaluated their mathematics, science and reading proficiency levels with a focus on reading proficiency level (OECD, 2019). In addition to students' proficiency levels, PISA obtained a variety of background information about students, parents, teachers, principals, and schools to give insights into how background characteristics impact students' learning.

PISA applies a two-stage stratified sampling strategy. In the first stage, schools are sampled using probability selection based on the number of eligible students enrolled in the school. In the second stage, a certain sample of students is randomly chosen from each school. More than 600 000 students took part in PISA 2018 across the world, representing about 32 million 15-year-olds in the schools of the 79 participating countries and economies which sat the 2-hour PISA test in 2018 (OECD, 2019).

In this study, we used data from student questionnaires in each participating country. The present study employed 75 countries in the analysis. Four countries were removed from the analysis as these countries did not have valid information for the outcome variable (PERFEED, see variables section).

Variables

This section details the variables used for this study. We chose five latent variables and four categorical variables included in the 2018 PISA dataset established by the OECD. The dependent variable and four independent variables (our interest variables) and four control variables are presented below.

In this research, the two main variables of interest are students' cultural capital and students' perception of feedback. In order to constitute three forms of cultural capital, we followed the cultural capital conceptualization utilized by Tan (2017): objectified (home educational resources), institutionalised (parental education and occupational status) and embodied (students' reading pleasure and frequency) (Puzić et al. 2016; Sortkaer, 2019; Sullivan, 2001; Tan, 2017).

Dependent Variable: The dependent (outcome) variable of this study is the perceived feedback by student scale (PERFEED). This scale mainly measures the students' perception of feedback given by their teachers. In the PISA, students were asked *Item: How often do these things happen in your <test language lessons> ?* "*ST104Q02NA The teacher gives me feedback on my strengths in this subject" "ST104Q03NA The teacher tells me in which areas I can still improve", "ST104Q04NA The teacher tells me how I can improve my performance"* and students responded on a four-point Likert scale with the categories "Never or almost never", "Some lessons", "Many Lessons", and "Every lesson or almost or almost every lesson" (OECD, 2020a). Even though PISA used to measure directive and facilitative feedback, in its last cyle only directive feedback was included in the international dataset. Therefore, in this study, our conceptualization of feedback is restricted to directive feedback (King et al., 2009; Sortkaer, 2019).

Independent variables: The independent variables used in our analyses are summarised in the table below (Table 1). Descriptive statistics are provided for all countries in table 2.

Table1. Independent Variables

	Variables/Scales	*Description*
Objectified Cultural Capital	HEDRES	Home educational resources was calibrated using IRT based on student responses (Yes/No) for the following questions, *A desk to study at, A quiet place to study, A computer you can use for school work, Educational software, Books to help with your school work, <Technical reference books>, A dictionary*
Institutionalised Cultural Capital	PARED	Students' response about their parents' education level into the following categories: 0=none, 1=primary education, 2=lower secondary, 3=vocational/pre-vocational upper secondary, 4=general upper secondary/non-tertiary post-secondary, 5=vocational tertiary, 6= theoretically oriented tertiary and postgraduate.
	HISEI	Highest occupational status of parents (ISEI), which corresponds to the higher ISEI score of either parent or to the only available parents' ISEI score.

Embodied Cultural Capital	JOYREAD	The questions contained the extent to which students agree or disagree the statements about reading. "*I read only if I have to, Reading is one of my favourite hobbies, I like talking about books with other people, For me, reading is a waste of time, I read only to get information that I need".* The response categories ranged from "Strongly disagree", "Disagree", "Agree", to "Strongly agree". The responses for each student were summarised in a scale, where weighted likelihood estimates (WLE) were made use of as individual participant scores (JOYREAD).
	FEMALE	Students Gender. Response categories: "Male" and "Female". The dummy variable is female.
	LANGUAGE	Students were asked what language they speak at home most of the time with their mother, father and siblings. The dummy variable is language of test.
	IMMIGRATION	The index of immigrant background (IMMIG) was calculated from these variables with the following categories: native students (those students who had at least one parent born in the country), (2) second-generation students (those born in the country of assessment but whose parent(s) were born in another country) and (3) first-generation students (those students born outside the country of assessment and whose parents were also born in another country).

Source: Adapted from OECD (2020a)

Cultural capital is a comprehensive and multidimensional concept that is connected to different types of cultural capital variables. Accordingly, in this study, different forms of cultural capital were captured to the extent permitted by the data. Specifically, we used variables measuring home educational resources (objectified capital), parental education and occupational status (institutionalised), and enjoyment of reading (embodied). However, the other aspects of cultural capital included in Bourdieu's theory (1986), such as cultural outings (visiting a theatre, museum, art gallery) and cultural communication (discusses politics and schoolwork with family) were not included in the PISA dataset and, therefore, are missing in this study.

Table 2. Descriptive statistics for the variables used in this study for all countries

	Minimum(min)	Maximum(max)	Mean	Standard deviation (SD)
Dependent Variable				
PERFEED (index)	-1.6391	2.0165	0.10065	1.0029
Independent Variables				
HEDRES (index)	-4.5253	1.2196	-0.1991	1.1083
PARED (index)	3	18	13.7099	3.0726
HISEI (index)	11.01	88.96	50.4746	22.8856
JOYREAD (index)	-3.2096	4.0128	0.1539	1.0222

GENDER	0	1	0.4983	0.50
LANGUAGE	0	1	0.8266	0.3785
SECOND GENERATION	0	1	0.0623	0.2416
FIRST GENERATION	0	1	0.0614	0.240

Note: All variables based on the questionnaire for students

Analytical Strategy

We addressed our research questions by estimating multilevel regression models in a similar way to Kameshwara and colleagues (2020), with students nested within schools, and estimating one model for each of the countries incorporated in the analysis. We estimated two models for each analysed country. First, we estimated a null model (Model 0), also known as a one-way random-effects ANOVA, with no student-level predictors. This model ensures information about estimates for the student level and the school level variance components; namely, how much the total variance in the students' perception of feedback can be attributed to student-level and school-level characteristics (see Appendix 1). The equation for Model 0 is:

$$PERFEED_{ij} = \beta_{0j} + e_{ij} \quad (1)$$

$$\beta_{0j} = \gamma_{00} + u_{0j} \quad (2)$$

Where $PERFEED_{ij}$ is the perception of feedback score of student i in school j and e_{ij} is the error statement or the deviation of individual students from their school means (1). The coefficient β_{0j} is the mean perception of feedback of the school j, γ_{00} is the grand mean or average perception of feedback across all schools, and u_{0j} indicates the deviation of schools from the grand mean (2).

In the next section, we estimate a random intercept models, also known as ANCOVA, including a series of student-level predictors. This model allows us to estimate the relationship between cultural capital (*HEDRES, PARED, HISEI, JOYREAD*) and students' perception of feedback as well as controlling for a set of theoretically relevant and ubiquitous variables (*gender, language spoken at home and immigration status)* in previous studies (Sortkær, 2018, 2019). In this model, the regression coefficients (slopes) equal to the average estimated effect (constant across all schools) of each of the independent variables on the students' perception of feedback. The equation for Model 1 can be presented as follows:

$$PERFEED_{ij} = \beta_{0j} + \beta_1 x_{1\,ij} + \beta_2 x_{2\,ij} + \_ + \beta_5 x_{5\,ij} + \beta_6 x_{6ij} + \_ + \beta_8 x_{8ij} + e_{ij} + u_j \quad (3)$$

$$e_{ij} \sim N(0, \sigma_e^2) \quad (4)$$

$$u_j \sim N(0, \sigma_u^2) \quad (5)$$

$PERFEED_{ij}$ is the score of perception of feedback by the i^{th} student in j^{th} school. The main variables of interest are HEDRES ($x_{1\,ij}$), PARED ($x_{2\,ij}$), HISEI ($x_{3\,ij}$) and JOYREAD ($x_{4\,ij}$). The parameters to estimate are β_1 , the coefficient of HEDRES variable, β_2, the coefficient of PARED variable, β_3, the coefficient of HISEI variable, β_4, the coefficient of JOYREAD variable. In addition to the main variables of interest, the other student-level variables are used as control variables. These include gender ($x_{5\,ij}$), language ($x_{6\,ij}$), second generation (x_{7ij}) and first generation (x_{8ij}) (3).

In equations 4 and 5, e_{ij} and u_j show the random part of the random intercept model. The e_{ij} and u_j are valuable in estimating parameter σ_u^2 (difference across all schools) and parameter u_j (difference between students). Also, in the random intercept model, β_0 is the overall intercept and $\beta_0 + u_j$ indicates the group order for the j^{th} school.

In the random intercept models, each level was weighted separately in the analysis. In the PISA database, the student level consists of a combination of student (W_FSTUWT) and class weights. The school-level consists of pure school weight (W_SCHGRNRABWT). Following the suggestion from Rutkowski et al. (2010) on the usage of sampling weights in multilevel analysis, the pure school weight was used at the cluster level. The pure student weight was calculated by dividing a combination of student and class weights with the final school weight and was employed at the student level. Furthermore, we centred student-level variables using a group-mean centring approach (student-level variables were centred at the school mean) suggested by Caro and Lenkeit (2012) and Enders and Tofighi (2007). Lastly, all estimations were performed using Mplus 8.4 (Muthen & Muthen, 2019).

RESULTS

The multilevel regression models depict the estimates of the relationship between students' perception of the amount of feedback received from teachers and the cultural capital of students, which consists of HEDRES, PARED, HISEI and JOYREAD, as well as other covariates. This is done for 75 participating countries in PISA 2018 with results displayed in Table 3. Canada, Cyprus, Lebanon and Macedonia are excluded from the analysis as the latent outcome variable of feedback had a missing value issue for these four countries. The parameter estimates of all eight variables with their significance levels and standard errors in parentheses are provided in conjunction with the sample size of participating schools and students (Table 3).

The results of this study indicate a consistent pattern across countries. Home educational resources (HEDRES) were found to be a statistically significant indicator ($p<0.001$ or $p<0.01$) of a student's perception of feedback, except in Thailand. In Thailand, this relationship is also positive but it is non-significant. The results, therefore, show a positive relationship in every country without exception. As a result, we can conclude that students who have more home educational resources tend to have a higher-level perception of their feedback than students who have fewer home educational resources.

A similar pattern to the one found for HEDRES can be seen in the relationship between enjoyment of reading and perception of feedback across different countries. The enjoyment of reading (JOYREAD) was a positive, statistically significant predictor ($p<0.001$, $p<0.01$ or $p<0.05$) of student perception of feedback except for in the Netherlands and the Moscow region. This relationship is also positive but non-significant in Netherlands and Moscow region. Thus, students who have more enjoyment of reading tend to have more perception of feedback than students who have less reading enjoyment.

When it comes to parental education (PARED), there is a mixed pattern across different countries. PARED was a statistically significant indicator of student perception of feedback in only six countries, Albania, Belgium, Estonia, Jordan, Turkey and BSJZ_China. However, effects differ within these countries. In Belgium, Estonia and BSJZ_China, parental education was found to positively impact student perception of feedback, whereas, in Albania, Jordan and Turkey, parental education was found to impact student perception of feedback negatively. The effect of parental education is statistically insignificant in 69 countries.

The estimates for parents' highest occupational status (HISEI) showed some impact in some countries. In most countries, HISEI was found to not significantly impact students' perception of feedback. However, in 20 countries (out of 75), HISEI had a negative statistically significant association with students' perception of feedback. Therefore, students who have high occupational status parents are less likely to have a higher perception of feedback in these countries.

The gender dummy variable demonstrated that boys perceived more feedback than girls across all countries. This effect was statistically significant for every country. The results showed that the effect was lowest in Qatar ($\beta= -0.030$, $p<0.05$) and highest in the USA ($\beta= -0.274$, $p<0.001$).

Whether the test language was spoken at home was found to be not statistically significantly associated with students' perception of feedback in the majority of countries except for Azerbaijan, Malaysia, Serbia, Ukraine and the United States. In Azerbaijan, Malaysia, Serbia and Ukraine, it is positively associated with students' perception of feedback. In contrast, in the United States, this relationship is negatively associated with students' perception of feedback. This means that in the United States,

students who do not speak the test language at home perceived receiving more feedback than students who speak the test language at home.

The estimates for the dummy variable of second-generation immigrant students show a mixed pattern across countries. In the majority of countries, no statistically significant difference was found between second-generation immigrant and native students. Second-generation immigrant students perceived receiving statistically significantly more feedback than native students only in Australia, France, and United Arab Emirates. In Brazil, Indonesia, Romania, Serbia and BSJZ_China, the opposite relationship was found; this was also statistically significant. First-generation immigrant students, compared to native students, perceive statistically significantly more feedback in Argentina, Belgium, Hong Kong, Luxemburg, Singapore, Spain, and Turkey. However, in Azerbaijan, Brunei Darussalam, Belarus, Chineset, Philippines and BSJZ_China, native students perceived statistically significant more feedback than first-generation immigrant students. The effects of the second and first-generation student dummies were statistically insignificant in the majority of countries.

Table 3. Multilevel regression models on perceived feedback in reading for all countries

PISA CNT NO.	Country	HEDRES	PARED	HISEI	JOYREAD	FEMALE	LANGUAGE	SECOND GENERATION	FIRST GENERATION	N	n
8	Albania	0.064***	-0.050**	0.022	0.147***	-0.086***	0.012	0.010	0.011	327	5842
		(0.016)	(0.017)	(0.018)	(0.021)	(0.017)	(0.014)	(0.017)	(0.012)		
31	Baku (Azerbaijan)	0.123***	-0.002	-0.013	0.158***	-0.065***	0.046**	-0.010	-0.024*	197	5184
		(0.015)	(0.015)	(0.017)	(0.016)	(0.014)	(0.015)	(0.015)	(0.011)		
32	Argentina	0.057**	-0.014	-0.016	0.057**	-0.071***	-0.026	0.009	0.040*	452	9211
		(0.017)	(0.020)	(0.016)	(0.018)	(0.017)	(0.017)	(0.017)	(0.016)		
36	Australia	0.102***	0.007	0.001	0.077***	-0.061***	-0.001	0.029*	0.010	731	11412
		(0.014)	(0.014)	(0.015)	(0.014)	(0.015)	(0.015)	(0.014)	(0.017)		
40	Austria	0.055**	0.002	-0.046**	0.066***	-0.060**	-0.016	0.010	0.011	282	6040
		(0.017)	(0.018)	(0.017)	(0.017)	(0.020)	(0.020)	(0.019)	(0.018)		
56	Belgium	0.057***	0.046**	-0.047**	0.027*	-0.059***	-0.024	0.000	0.037*	269	7291
		(0.016)	(0.016)	(0.017)	(0.014)	(0.015)	(0.016)	(0.016)	(0.016)		
70	BosniaandHerzegovina	0.083***	-0.010	-0.019	0.153***	-0.117***	0.020	0.007	0.009	213	5482
		(0.015)	(0.019)	(0.017)	(0.018)	(0.017)	(0.017)	(0.015)	(0.016)		
76	Brazil	0.094***	0.013	-0.050**	0.084***	-0.097***	0.006	-0.034*	-0.009	586	8178
		(0.014)	(0.015)	(0.016)	(0.019)	(0.014)	(0.016)	(0.013)	(0.013)		
96	Brunei Darussalam	0.073***	0.009	0.008	0.126***	-0.093***	-0.006	-0.015	-0.028*	55	6218
		(0.018)	(0.014)	(0.013)	(0.019)	(0.015)	(0.013)	(0.012)	(0.014)		
100	Bulgaria	0.096***	-0.041	0.025	0.112***	-0.043*	0.025	0.040	0.009	195	3825
		(0.020)	(0.023)	(0.022)	(0.025)	(0.021)	(0.019)	(0.022)	(0.015)		
112	Belarus	0.090***	-0.011	-0.026	0.147***	-0.101***	-0.011	-0.013	-0.032*	233	5384
		(0.014)	(0.015)	(0.015)	(0.017)	(0.017)	(0.014)	(0.015)	(0.015)		
152	Chile	0.107***	-0.023	-0.040**	0.055**	-0.077***	0.011	0.015	0.015	250	6463
		(0.016)	(0.017)	(0.015)	(0.018)	(0.015)	(0.013)	(0.014)	(0.015)		
158	Chineset	0.086***	0.009	-0.007	0.135***	-0.096***	-0.006	0.016	-0.015*	192	6646
		(0.017)	(0.023)	(0.022)	(0.021)	(0.017)	(0.019)	(0.008)	(0.006)		
170	Colombia	0.064**	-0.013	-0.036	0.072***	-0.064***	0.021	0.004	-0.006	246	6693
		(0.020)	(0.018)	(0.019)	(0.015)	(0.015)	(0.021)	(0.008)	(0.011)		
188	Costa Rica	0.061***	-0.026	-0.021	0.072***	-0.095***	0.003	0.007	-0.006	205	6134
		(0.017)	(0.021)	(0.018)	(0.019)	(0.017)	(0.019)	(0.014)	(0.017)		
191	Croatia	0.103***	-0.007	-0.049**	0.071***	-0.119***	-0.007	-0.009	0.007	183	6145
		(0.013)	(0.017)	(0.018)	(0.018)	(0.015)	(0.014)	(0.015)	(0.013)		

203	Czech Republic	0.075*** (0.015)	0.026 (0.016)	-0.032 (0.017)	0.061*** (0.016)	-0.126*** (0.016)	0.002 (0.021)	0.011 (0.016)	0.001 (0.018)	328	6172
208	Denmark	0.070*** (0.017)	-0.005 (0.016)	-0.010 (0.017)	0.041* (0.017)	-0.110*** (0.016)	0.022 (0.227)	0.013 (0.017)	0.029 (0.015)	342	6397
214	Dominican Republic	0.079*** (0.021)	-0.003 (0.021)	-0.002 (0.022)	0.099*** (0.019)	-0.028 (0.019)	0.011 (0.027)	-0.013 (0.025)	-0.027 (0.017)	227	4096
233	Estonia	0.086*** (0.015)	0.055** (0.016)	-0.021 (0.017)	0.124*** (0.014)	-0.148*** (0.018)	-0.025 (0.013)	-0.011 (0.018)	-0.013 (0.014)	230	4803
246	Finland	0.085*** (0.017)	-0.024 (0.017)	-0.032 (0.017)	0.104*** (0.019)	-0.149*** (0.016)	-0.030 (0.021)	-0.018 (0.021)	0.019 (0.019)	206	5096
250	France	0.084*** (0.020)	0.013 (0.024)	-0.046* (0.019)	0.066** (0.022)	-0.074*** (0.019)	-0.006 (0.023)	0.048** (0.017)	0.009 (0.031)	251	5489
268	Georgia	0.044* (0.017)	-0.002 (0.020)	-0.039* (0.018)	0.093*** (0.018)	-0.065*** (0.018)	0.010 (0.021)	0.031 (0.017)	-0.009 (0.014)	315	3994
276	Germany	0.082*** (0.019)	-0.016 (0.019)	-0.001 (0.019)	0.070** (0.022)	-0.100*** (0.019)	-0.022 (0.021)	-0.011 (0.020)	0.028 (0.021)	210	4069
300	Greece	0.069*** (0.017)	0.001 (0.017)	0 (0.016)	0.130*** (0.017)	-0.119*** (0.015)	0.029 (0.021)	0.010 (0.018)	0.029 (0.018)	241	5778
344	Hong Kong	0.093*** (0.016)	0.012 (0.016)	0 (0.014)	0.092*** (0.015)	-0.065*** (0.016)	-0.007 (0.018)	-0.013 (0.015)	0.050** (0.018)	152	5328
348	Hungary	0.100*** (0.018)	-0.012 (0.016)	0.006 (0.019)	0.041* (0.019)	-0.068** (0.020)	-0.011 (0.021)	-0.008 (0.017)	0.010 (0.015)	236	4738
352	Iceland	0.088*** (0.016)	0.021 (0.020)	-0.069*** (0.020)	0.063** (0.021)	-0.189*** (0.017)	0.015 (0.024)	0.010 (0.018)	0.032 (0.023)	141	2916
360	Indonesia	0.045* (0.022)	-0.030 (0.022)	-0.001 (0.017)	0.128*** (0.020)	-0.042* (0.017)	0.024 (0.017)	-0.029** (0.009)	0.018 (0.023)	397	11388
372	Ireland	0.080*** (0.016)	0.011 (0.016)	-0.041* (0.016)	0.062*** (0.016)	-0.049** (0.016)	0.013 (0.021)	0.006 (0.016)	0.012 (0.021)	157	5037
376	Israel	0.066*** (0.019)	-0.014 (0.030)	-0.044 (0.023)	0.058** (0.018)	-0.059*** (0.016)	0 (0.018)	0.003 (0.021)	-0.020 (0.020)	152	4848
380	Italy	0.059*** (0.016)	-0.017 (0.016)	0 (0.020)	0.064** (0.020)	-0.099*** (0.020)	-0.021 (0.019)	0.010 (0.018)	0.002 (0.016)	531	10608
383	Kosovo	0.066** (0.020)	-0.005 (0.019)	-0.048** (0.018)	0.123*** (0.022)	-0.054** (0.020)	-0.018 (0.015)	0.015 (0.022)	-0.020 (0.013)	211	4491
392	Japan	0.063** (0.023)	0.008 (0.009)	0.000 (0.001)	0.077*** (0.016)	-0.265*** (0.046)	-0.043 (0.197)	-	-	183	5452
398	Kazakhstan	0.077*** (0.010)	-0.007 (0.011)	-0.027** (0.010)	0.197*** (0.011)	-0.055*** (0.010)	-0.002 (0.009)	0.000 (0.010)	-0.018 (0.009)	615	17602

400	Jordan	0.109***	-0.052**	-0.010	0.099***	-0.017	-0.005	0.009	0.019	313	7671
		(0.020)	(0.018)	(0.021)	(0.019)	(0.016)	(0.017)	(0.015)	(0.016)		
410	Korea	0.126***	0.005	-0.028	0.083**	-0.139***	-0.018	0.033	-0.008	188	6309
		(0.017)	(0.020)	(0.017)	(0.024)	(0.017)	(0.019)	(0.056)	(0.005)		
428	Latvia	0.038*	0.006	0.034	0.105***	-0.122***	-0.004	-0.015	0.011	306	4545
		(0.016)	(0.017)	(0.019)	(0.018)	(0.018)	(0.016)	(0.015)	(0.016)		
440	Lithuania	0.127***	-0.015	0.002	0.082***	-0.079***	0.019	0.008	0.032	354	5833
		(0.015)	(0.016)	(0.016)	(0.017)	(0.015)	(0.013)	(0.013)	(0.018)		
442	Luxembourg	0.064**	0.006	-0.013	0.076***	-0.078***	0.023	-0.006	0.038*	44	4397
		(0.019)	(0.015)	(0.016)	(0.018)	(0.017)	(0.016)	(0.014)	(0.017)		
446	Macao	0.115***	0.033	0.007	0.077***	-0.107***	0.018	-0.035	0.026	45	3622
		(0.016)	(0.018)	(0.017)	(0.017)	(0.018)	(0.016)	(0.022)	(0.016)		
458	Malaysia	0.127***	-0.012	-0.037*	0.145***	-0.089***	0.060**	-0.002	0.002	191	5809
		(0.020)	(0.016)	(0.017)	(0.018)	(0.015)	(0.021)	(0.015)	(0.008)		
470	Malta	0.087***	-0.003	-0.010	0.057**	-0.047**	-0.020	0.002	0.017	50	2938
		(0.019)	(0.020)	(0.022)	(0.019)	(0.016)	(0.019)	(0.022)	(0.017)		
484	Mexico	0.086***	-0.058	-0.020	0.064**	-0.037	-0.019	-0.013	-0.005	284	6002
		(0.019)	(0.032)	(0.027)	(0.024)	(0.025)	(0.042)	(0.029)	(0.027)		
498	Moldova	0.073***	0.024	0.003	0.138***	-0.104***	-0.029	-0.010	0.016	235	4288
		(0.017)	(0.018)	(0.017)	(0.021)	(0.018)	(0.015)	(0.012)	(0.013)		
499	Montenegro	0.060***	-0.001	-0.004	0.125***	-0.078***	0.024	0.006	-0.022	61	5565
		(0.017)	(0.015)	(0.015)	(0.015)	(0.022)	(0.012)	(0.011)	(0.014)		
528	Netherlands	0.102***	0.016	-0.040*	0.026	-0.125***	-0.005	0.011	0.031	151	3561
		(0.018)	(0.019)	(0.019)	(0.019)	(0.021)	(0.024)	(0.022)	(0.018)		
554	New Zealand	0.053**	0.016	-0.038*	0.071**	-0.040*	0.012	0.030	-0.003	192	5407
		(0.017)	(0.020)	(0.017)	(0.021)	(0.017)	(0.017)	(0.023)	(0.018)		
578	Norway	0.073***	0.014	-0.033*	0.076***	-0.077***	-0.010	0.012	0.017	249	5117
		(0.018)	(0.018)	(0.017)	(0.019)	(0.017)	(0.019)	(0.015)	(0.022)		
604	Peru	0.090***	-0.029	-0.018	0.096***	-0.061***	-0.007	0.028	-0.003	338	5500
		(0.017)	(0.017)	(0.019)	(0.018)	(0.016)	(0.018)	(0.020)	(0.011)		
608	Philippines	0.058**	0.015	0.008	0.090***	-0.024	-0.015	-0.005	-0.022*	187	6161
		(0.019)	(0.020)	(0.018)	(0.024)	(0.021)	(0.022)	(0.020)	(0.009)		
616	Poland	0.061***	0.001	-0.002	0.071***	-0.069***	0.008	-0.006	0.012	239	5123
		(0.017)	(0.017)	(0.018)	(0.016)	(0.017)	(0.016)	(0.012)	(0.012)		
620	Portugal	0.060**	0.027	-0.062**	0.085***	-0.153***	-0.006	-0.016	-0.004	275	5286
		(0.019)	(0.025)	(0.023)	(0.020)	(0.017)	(0.019)	(0.016)	(0.016)		
634	Qatar	0.082***	-0.006	0.005	0.094***	-0.030*	-0.007	-0.002	0.015	187	11287
		(0.010)	(0.010)	(0.010)	(0.012)	(0.012)	(0.008)	(0.011)	(0.011)		

642	Romania	0.064*	0.047	-0.017	0.090***	-0.061**	0.000	-0.050**	-0.008	169	3406
		(0.028)	(0.025)	(0.028)	(0.022)	(0.020)	(0.022)	(0.018)	(0.011)		
643	Russia	0.115***	-0.006	-0.033*	0.091***	-0.108***	-0.015	-0.006	0	261	6566
		(0.014)	(0.016)	(0.015)	(0.016)	(0.016)	(0.012)	(0.013)	(0.012)		
682	Saudi Arabia	0.045*	-0.034	-0.013	0.064**	-	0.035	0.001	0.011	232	4505
		(0.019)	(0.026)	(0.022)	(0.019)		(0.024)	(0.015)	(0.014)		
688	Serbia	0.071***	0.015	0.007	0.097***	-0.013	0.046*	-0.049*	-0.008	186	5405
		(0.016)	(0.019)	(0.019)	(0.019)	(0.022)	(0.018)	(0.024)	(0.014)		
702	Singapore	0.056***	-0.014	-0.003	0.093***	-0.074***	0.000	0.014	0.059***	166	6133
		(0.013)	(0.019)	(0.016)	(0.015)	(0.017)	(0.015)	(0.016)	(0.016)		
703	Slovak Republic	0.060***	-0.004	-0.020	0.056**	-0.087***	0.026	0.018	0.001	355	5105
		(0.016)	(0.016)	(0.016)	(0.018)	(0.017)	(0.017)	(0.016)	(0.014)		
704	Vietnam	0.043*	0.002	-0.002	0.232***	-0.159***	0.054	-	0.052	151	4750
		(0.019)	(0.006)	(0.001)	(0.030)	(0.035)	(0.136)		(0.258)		
705	Slovenia	0.088***	0.013	-0.021	0.095***	-0.110***	-0.029	0.001	0.002	308	5751
		(0.015)	(0.019)	(0.019)	(0.014)	(0.015)	(0.024)	(0.016)	(0.025)		
724	Spain	0.072***	-0.012	-0.026*	0.031**	-0.073***	-0.010	0.006	0.040***	1089	32574
		(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.009)	(0.008)	(0.008)		
752	Sweden	0.063***	-0.029	-0.001	0.095***	-0.143***	-0.012	0.016	0.043	222	4782
		(0.016)	(0.017)	(0.019)	(0.015)	(0.016)	(0.022)	(0.017)	(0.024)		
756	Switzerland	0.045*	0.039	-0.095***	0.066**	-0.102***	-0.014	0.005	0.023	228	5129
		(0.019)	(0.022)	(0.022)	(0.021)	(0.022)	(0.019)	(0.023)	(0.020)		
764	Thailand	0.004	0.018	0.035	0.118***	-0.133***	0.031	0.027	-0.008	287	7032
		(0.018)	(0.020)	(0.019)	(0.021)	(0.020)	(0.019)	(0.014)	(0.011)		
784	United Arab Emirates	0.096***	-0.016	0.003	0.113***	-0.054***	0.001	0.021*	0.020	752	16076
		(0.011)	(0.010)	(0.009)	(0.011)	(0.009)	(0.018)	(0.011)	(0.015)		
792	Turkey	0.127***	-0.044*	-0.009	0.111***	-0.061***	-0.015	-0.011	0.023*	186	6495
		(0.016)	(0.017)	(0.018)	(0.016)	(0.016)	(0.014)	(0.016)	(0.010)		
804	Ukraine	0.106***	0.009	-0.019	0.127***	-0.050**	0.039*	0.002	-0.020	250	5253
		(0.015)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.014)	(0.017)		
826	United Kingdom	0.102***	-0.021	-0.012	0.120***	-0.067***	0.000	0.001	0.011	467	10885
		(0.015)	(0.013)	(0.019)	(0.016)	(0.013)	(0.022)	(0.019)	(0.018)		
840	United States	0.071**	0.002	0.000	0.103***	-0.274***	-0.243**	-0.065	-0.105	162	4236
		(0.026)	(0.009)	(0.002)	(0.020)	(0.051)	(0.083)	(0.089)	(0.126)		
858	Uruguay	0.054**	0.030	-0.013	0.050*	-0.071**	-0.004	-0.003	-0.006	186	4069
		(0.020)	(0.023)	(0.023)	(0.023)	(0.023)	(0.021)	(0.015)	(0.016)		
975	BSJZ_China	0.100***	0.036*	-0.043*	0.257***	-0.121***	-0.020	-0.008***	-0.023*	361	11440
		(0.012)	(0.017)	(0.019)	(0.017)	(0.015)	(0.012)	(0.002)	(0.010)		

982	Moscowregion	0.092***	-0.024	0.015	0.037	-0.093***	-0.021	-0.014	-0.019	61	1736
		(0.024)	(0.028)	(0.027)	(0.027)	(0.025)	(0.030)	(0.026)	(0.024)		
983	Tatarstan	0.059***	-0.017	-0.002	0.145***	-0.094***	-0.002	-0.003	0.021	238	4982
		(0.016)	(0.018)	(0.019)	(0.018)	(0.016)	(0.016)	(0.017)	(0.021)		

Standard errors in parentheses ***p<0.001, **p<0.01, *p<0.05**,** N=School, n=Student

Discussion

Using data from PISA 2018, the results of this study present evidence that two forms of cultural capital (objectified and embodied) lead to an improvement in students' perception of the amount of feedback received from teachers, albeit to varying degrees across countries. However, the institutionalized form of cultural capital did not significantly contribute to the students' perception of feedback in most countries. The results show that boys had more perception of feedback than girls across all countries. Furthermore, findings on the impact of the spoken language at home and immigration status on the students' perception of feedback are inconsistent across countries.

Our findings echo the study conducted by Sortkaer (2019), who found that students' cultural capital (based on only the embodied form of cultural capital) positively affects students' perception of how much feedback they receive in Danish lower secondary mathematic classes. Our study finds consistent evidence to support this relationship but expands Sortkaer's results by covering reading classrooms across the world. Specifically, teachers pay more attention to students who like and enjoy reading. One way of explaining this issue might be that students who enjoy reading are better prepared to participate in class and, therefore, intervene more in classroom activities and discussions than students who do not enjoy reading (Sullivan, 2008).

Our study's findings also expand the results of previous research by testing the association of other forms of cultural capital on student feedback. Our results suggest that not only the embodied form of cultural capital but also the objectified form of cultural capital (home educational resources) have a significant influence on students' perception of feedback in lower secondary reading classrooms across all countries (75 countries). Our study's findings also coincide with the recent study conducted by Wilson and Urick (2021) using PISA 2012 data with a US sample in mathematics classrooms. They found that students who have more access to normative education-based resources outside of school have greater opportunities to learn and are therefore better able to engage directly in the learning process. One interpretation of this finding is that teachers may be able to identify those students who come from more affluent families (have more home educational resources) based on their appearance and consider them as more able. This bias could influence the attitudes of teachers towards these more affluent students and lead to teachers paying more attention to them (Bourdieu, 1979).

Parents' occupational status, an institutionalised form of cultural capital, had a negative impact on students' perception of feedback in 20 countries (out of 75). In other words, students who have high occupational status parents are less likely to have a higher perception of feedback in these countries. Sortkaer (2019) explained that teachers are usually aware of the professions of the parents of their students with the occupation of students' parents usually being one of the questions asked to students in the first meeting between teachers and students. The difference in the amount of perceived feedback may result from teachers paying more attention to students whose parents have low-level institutionalised cultural capital in these 20 countries. This group of countries is mainly composed of highly developed countries such as Norway, Switzerland, Ireland, China, Iceland and the Netherlands, etc., and predominantly European countries (14 out of 20). The reason for this might be related to the fact that these countries have strong compensatory programmes in education. Therefore, socially disadvantaged students (with parents with lower occupational status) would receive more attention (feedback) through these programmes.

For the institutionalised form of cultural capital, there is a less consistent association between parental education and student's perception of feedback. A significant effect was found in only 6 out of 75 countries. This relationship was negative in Albania, Jordan and Turkey, and positive in Belgium, Estonia and BSJZ_China. One way of explaining why parental education is associated with feedback in only six countries could be that knowing and remembering that a parent's education level is more difficult than remembering the profession of parents. Therefore, teachers would not use parental occupation to differentiate the attention they pay to students in the majority of countries.

Overall, certain types of cultural capital (objectified and embodied form of cultural capital) might consistently enhance students' perception of the amount of feedback received from teachers in lower secondary reading classrooms across countries. However, we cannot infer the same idea for other educational levels, such as primary education. Therefore, this study calls for further examinations in different educational stages.

Previous studies on gender differences in perception of feedback offer mixed results. Sortkaer (2019; 2019), Havnes et al. (2012) and Rucker and Thomson (2003), have found that boys perceived more feedback than girls did. On the other hand, authors like Alhaysony (2016), Chen and Thompson (2003) and Nicaise et al. (2006, 2007), found that girls tend to perceive more feedback than boys. Our results are in agreement with the first group of studies. Using multilevel-models and controlling for other important cultural capital variables and demographic characteristics, we found a consistent pattern: boys perceived more feedback than girls across all the countries analysed. It is hard to explain the mechanisms underlying this pattern using an aggregated dataset as PISA. However, other authors have advanced some hypotheses. For example, Sadker & Sadker (1994) and Beaman and colleagues (2006) suggest that boys receive more attention than girls because boys tend to have more disruptive behaviour than girls. Pierre Bourdieu's (2002) theory can be used in a complementary way to explain the reasons why girls might be perceived to be less disruptive than boys. For example, highlighting girls' position in the classroom:

"The submissive demeanour which is imposed on Kabyle women is the limiting case of what is still imposed on women, even today, as much in the United States as in Europe, and which, as a number of observers have shown, is summed up in a few imperatives: smile, look down, accept interruptions" (p. 28).

For spoken test language at home, we investigate a relatively new hypothesis that feedback might constitute a mechanism to mitigate the disadvantage of speaking a different language at home to the one used for learning. However, our findings did not yield consistent results across all countries. Only in the United States did students who do not speak the test language at home perceive more feedback than students who do speak test language at home. This could be related to specific policies to address language barriers in this country (Ricento & Wright, 2008). However, the limitations imposed by using secondary data prevent us from analysing this issue further, and therefore, our study calls for further examinations in different educational contexts to investigate this relationship.

For immigration status, we followed the same line of thinking with spoken language at home, assuming that feedback might play a key role in engaging immigrant students in classroom activities by getting more attention from their teachers. However, again, results are not consistent across all countries. As only second-generation immigrants in Australia, France and the United Arab Emirates and first-generation immigrants in Argentina, Belgium, Hong Kong, Luxemburg, Singapore, Spain and Turkey, perceived more feedback than native students. Turkey, for example, started to pay more attention to immigrant students only after the civil war in Syria by adopting policies to engage them in daily life and the education system. This could be the reason why, in Turkey, immigrant students might get more attention from their teachers. Further studies should focus on immigration status to investigate the relationship with students' perceptions of the amount of feedback received across diverse countries.

The findings of this study have implications for theory, practice and policy. In terms of theory and practice implications, previous studies have clearly demonstrated the role of cultural reproduction in explaining inequalities in the school system. This study demonstrated how important cultural capital that students obtain from their families is. Therefore, schools and teachers should see feedback as an opportunity to mitigate inequalities in the education system. According to our results, teacher feedback can play an important role in minimising the differences resulting from cultural capital. We consider that the findings provided by this study could be useful for both teachers' practices in the classroom and teacher training programmes in higher education. Moreover, schools could invest efforts in the development of programmes to compensate for the lack of cultural capital of their most disadvantaged students.

In turn, parents could contribute to increasing the cultural capital of their children by, for example, emphasising the importance of reading, participating in reading activities with their children at home, and encouraging discussions about the books their children read (Tan et al., 2019).

In terms of policy implications, we consider that the findings of this study contribute valuable insights to policies across countries. This study is related, for example to the United Nations Sustainable Development Goal 4 (UN, 2015) and the World Bank Report on improving learning and equity through stronger education systems (2016). These focus on providing comprehensive and equitable education for all, closing the gap between boys and girls, and encouraging opportunities for all students regardless of their socioeconomic background and cultural capital.

Conclusion

To identify disparities in student academic performance, students' cultural capital has been exhaustively used in many studies by researchers and practitioners. However, the current study adds more evidence as to how students' cultural capital influences student-teacher communication in the context of feedback. Furthermore, our study provides empirical results using PISA 2018 data across 75 countries. This study argues that the objectified and embodied forms of cultural capital are positively and significantly associated with students' perception of the amount of feedback received from teachers across countries. The institutionalized form of cultural capital, however, was not significantly associated with students' perception of feedback in many countries. Moreover, boys perceived more feedback than girls across all countries, and findings on the impact of the spoken language at home and immigration status on students' perception of feedback are inconsistent.

This study has limitations that should not be overlooked. Firstly, one limitation of our study is the cross-sectional nature of our data. The fact that the analysed data was limited to one point in students' educational careers did not allow the analysis of cumulatively disadvantaged processes resulting from classroom instructions or teachers. Second, cross-cultural comparisons must be made with caution because measurement invariance (Eryilmaz et al., 2020; Sandoval-Hernandez, et al., 2019) has not been tested in this study.

This study allowed us to identify robust patterns to describe the association between students' cultural capital and the frequency with which they receive feedback at school using nationally representative samples of 15-year-old students from 75 countries. This enabled us to generalise our results to the target population of each analysed country. However, in order to produce more detailed information to inform the design of policies and interventions at the school level, our results could be complemented with qualitative case studies that unveil the mechanisms underlying the patterns that we describe here. These studies could focus, for example, on the change in students' perception of feedback over time. First, getting students' expectation of feedback and later getting students' perception of feedback, in order to see the effect of teachers' stimulation of engagement practices in the class and/or teachers' adaptation of instructions. Thus, this research calls for further investigations in different contexts and countries. The fundamental concern here is that quantitative models used on cross-sectional data cannot directly establish causal relationships between the variables studied. Qualitative analyses could generate data on the meanings of students' interaction styles and linguistic competencies and skills in school (Bernstein, 1975; Bourdieu, 1977). An example of this kind of study is Jæger (2009) which found that cultural capital was an important factor in determining teachers' spoken ratings of students. Further research could also focus on other school subjects such as science or mathematics.

As feedback is vital for student learning and development, there is a need to consider student perspective to ensure that feedback is equally distributed and perceived by all students regardless of their cultural capital and socio-demographic background. Having relevant and timely information on how students perceive feedback and how their perceptions vary across countries and social groups is vital to inform the design of effective policies to improve education for all.

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Appendix 1.

Table1. Interclass correlation for all participating countries

PISA CNT NO.	Country	ICC	n(observations)
8	Albania	0.046	6148
31	Baku (Azerbaijan)	0.008	6059
32	Argentina	0.07	11272
36	Australia	0.038	12598
40	Austria	0.032	6512
56	Belgium	0.047	7916
70	BosniaandHerzegovina	0.037	6005
76	Brazil	0.052	9686
96	Brunei Darussalam	0.04	6725
100	Bulgaria	0.064	4760
112	Belarus	0.046	5693
152	Chile	0.076	7257
158	Chineset	0.038	7126
170	Colombia	0.045	7036
188	Costa Rica	0.048	6442
191	Croatia	0.065	6477
203	Czech Republic	0.06	6765
208	Denmark	0.041	6886
214	Dominican Republic	0.055	4961
233	Estonia	0.058	5159
246	Finland	0.033	5433
250	France	0.058	6024
268	Georgia	0.059	5021
276	Germany	0.025	4603
300	Greece	0.05	6197
344	Hong Kong	0.039	5857
348	Hungary	0.053	5029
352	Iceland	0.07	3096
360	Indonesia	0.029	11787
372	Ireland	0.036	5497
376	Israel	0.089	5442
380	Italy	0.049	11281
383	Kosovo	0.013	4793
392	Japan	0.066	6017
398	Kazakhstan	0.089	19079
400	Jordan	0.086	8613
410	Korea	0.06	6597
428	Latvia	0.064	5125
440	Lithuania	0.046	6672
442	Luxembourg	0.035	5039
446	Macao	0.074	3766

458	Malaysia	0.073	6021
470	Malta	0.063	3205
484	Mexico	0.064	6374
498	Moldova	0.067	5087
499	Montenegro	0.035	6239
528	Netherlands	0.046	3829
554	New Zealand	0.051	6018
578	Norway	0.062	5496
604	Peru	0.057	5806
608	Philippines	0.077	7042
616	Poland	0.043	5527
620	Portugal	0.047	5596
634	Qatar	0.05	12704
642	Romania	0.065	4913
643	Russia	0.071	7223
682	Saudi Arabia	0.063	5761
688	Serbia	0.036	6057
702	Singapore	0.04	6623
703	Slovak Republic	0.059	5576
704	Vietnam	0.081	5347
705	Slovenia	0.064	6111
724	Spain	0.067	34850
752	Sweden	0.058	5307
756	Switzerland	0.058	5625
764	Thailand	0.022	8520
784	United Arab Emirates	0.076	18019
792	Turkey	0.075	6766
804	Ukraine	0.044	5866
826	United Kingdom	0.055	13067
840	United States	0.036	4686
858	Uruguay	0.056	4690
975	BSJZ_China	0.065	11968
982	Moscow region	0.047	1941
983	Tatarstan	0.044	5550