



Emotional contagion: A cross-cultural exploration of how teachers' enjoyment facilitates achievement via students' enjoyment

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Abstract

We investigated whether perceived teacher enjoyment of teaching predicted student achievement via students' enjoyment across Eastern and Western contexts. Data came from the Program for International Student Assessment (PISA) 2018 focusing on the reading domain. The respondents were 84,017 adolescents (51% girls) with a mean age of 15.17 years old from both the West (US, UK, Australia, and New Zealand) and the East (Mainland China, Hong Kong SAR, Macau SAR, Taipei, Singapore, Japan, and Korea). The results show that perceived teachers' teaching enjoyment and reading enjoyment predicted reading achievement in both the Western and Asian students. Perceived teacher enjoyment related to student enjoyment demonstrating emotional contagion, and the association between perceived teacher enjoyment and student achievement was mediated by student enjoyment. We did not find cross-cultural differences in the strength of emotional contagion demonstrating cross-cultural universality. Implications for education and cross-cultural research are discussed.

Keywords Enjoyment · Emotional contagion · Reading · PISA · Cross-cultural

Enjoyment is critical to optimizing student achievement (e.g., Frenzel et al., 2018). Students who enjoy learning tend to be more motivated and engaged (Renninger & Hidi, 2016). Teachers' enjoyment is also important. It is not only associated with better teaching quality and lower burnout (e.g., Chang, 2013), but also favorably impacts student learning (Frenzel et al., 2018).

Hatfield et al. (1994) proposed the concept of emotional contagion, indicating that emotions can be transmitted from one individual to the next. Research on

contagion is also consistent with social-cognitive theory which emphasizes the role of socializers such as teachers in impacting self-related beliefs and affect (Bandura, 1986). In the classroom, teachers usually project enjoyment of teaching in their behaviors, which make students feel more enjoyment themselves (Keller et al., 2016). Studies have shown that teachers' enjoyment potentially predicts students' enjoyment (e.g., Becker et al., 2014; Frenzel et al., 2018).

Most existing studies on emotional contagion have only focused on Western contexts. It remains unknown whether emotional contagion is cross-cultural. The East Asian context is rather different from Western cultures in many aspects including interpersonal relationships and learning (Li & Fung, 2020). In East Asia, group identification is more emphasized whereas individuality is less (Yan, 2010). Hence, the teacher-student relationship may be closer among Asian students, and this might lead to stronger emotional contagion. Moreover, East Asian culture provides a relatively high regard for teachers (Li, 2012), which could further enhance contagion effects. Building on this background, this study investigates whether perceived teachers' teaching enjoyment facilitates student learning enjoyment which in turn affects student achievement in both East and West.

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Table 1 Model fit indices

Perceived teacher enjoyment	χ^2	df	p	RMSEA (95% CI)	SRMR	CFI	TLI	Δ CFI
Single-group CFA	113.372	1	.000	.037 (.031, .042)	.003	.999	.996	–
Metric invariance	986.311	5	.000	.068 (.065, .072)	.049	.995	.988	.004
Enjoyment of reading								
Single-group CFA	241.724	3	.000	.031 (.028, .034)	.004	.999	.996	–
Metric invariance	675.746	10	.000	.040 (.037, .042)	.022	.997	.993	.001
MG-MLSEM	9452.058	102	.000	.047	.031	.970	.962	–

MG-MLSEM multi-group multilevel structural equation modeling

Table 2 Descriptive statistics and zero-order correlations

Variables	West	Asia	1	2	3	4	5
	Mean (SD)	Mean (SD)					
1. Perceived teacher enjoyment	2.97 (.69)	2.95 (.68)	–	.13*	.38*	.29*	–.10*
2. Student reading enjoyment	2.37 (.80)	2.80 (.70)	.15*	–	.17*	.09*	–.02*
3. Reading achievement	506.15 (102.86)	530.60 (100.77)	.37*	.15*	–	.14*	–.15*
4. SES	.24 (.93)	–.22 (.97)	.32*	.09*	.16*	–	–
5. Gender			–.12*	–.05*	–.22*	–	–

Gender coded 1 female and 2 male. Western contexts below diagonal and Asian Confucian Heritage contexts above diagonal

* $p < .01$

Methods

Sample

We used the 2018 Program for International Student Assessment (PISA) data and included 84,017 secondary school students (51% girls) with a mean age of 15.17 years old (SD = .29). Among these students, 36,068 (43%) were from Western English-speaking countries, and the rest were from East Asian societies.¹

Measurements

We used student scores of PISA 2018 to indicate their reading achievement. Four items in the PISA questionnaire related to students' perceived teacher enjoyment of teaching and 5 items related to student enjoyment of reading were used (see Appendix Table 3). Students responded to each item from 1 (*strongly disagree*) to 4 (*strongly agree*). The Cronbach's α values were .84 or higher for both the scales in both cultural groups, indicating good internal consistency of the measures. Students' family socio-economic status (SES)

was represented using the ESCS (economic and social culture status) indicator² (OECD, 2019).

Results

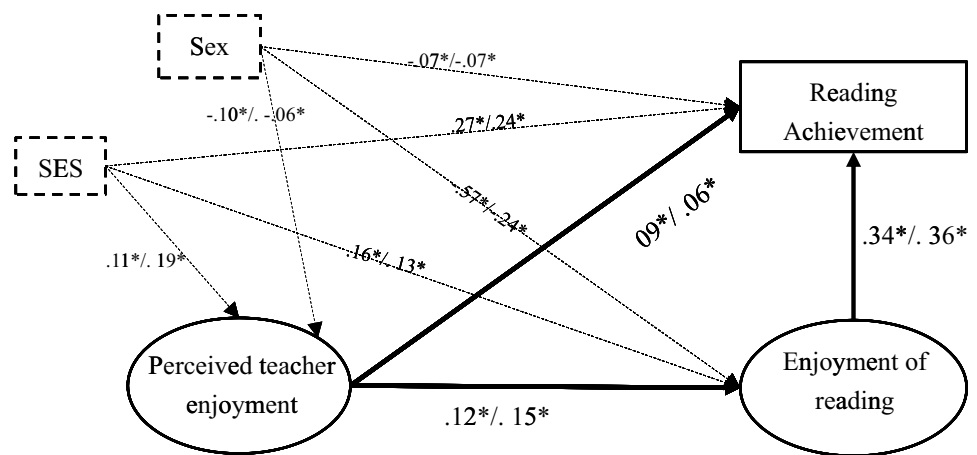
Reading scores were recalibrated by using Rasch scores with a mean of 500 and a standard deviation of 100 (OECD, 2020). The single-group confirmatory factor analysis (CFA) conducted via MPlus 8.2 with full-information maximum likelihood estimation (the same below) shows good fit for the scales of perceived teachers' enjoyment and enjoyment of reading (Table 1). The following multi-group CFA shows metric invariance across the two cultural groups for both the scales (Δ CFI < .01).

Table 2 shows the descriptive statistics and zero-order correlations. Perceived teacher enjoyment, student enjoyment, and achievement positively correlated with each other. Girls and those with higher family SES scored higher in

¹ The students in Western English-speaking countries were from these four countries: the U.S., the U.K., Australia, and New Zealand. The students in East Asian were from the following seven societies: Mainland China, Hong Kong, Macau, Taipei, Singapore, Japan, and Korea

² In PISA 2018, socio-economic status (SES) was represented by ESCS (index of economic, social, and cultural status). ESCS contained students' family background information such as parents' education and occupation, family wealth, culture resources, et cetera (OECD, 2019). We tested gender differences across cultures. For English-speaking countries, there was a significant gender effect on enjoyment of reading: $t(36036) = 42.37$, $p < .001$, with girls ($M = .07$, $SD = 1.17$) obtaining higher scores than boys ($M = -.42$, $SD = 1.03$). There was also a significant gender effect on reading achievement: $t(36036) = 22.31$, $p < .001$, with girls ($M = 518.00$, $SD = 98.53$) obtaining higher scores than boys ($M = 493.99$, $SD = 105.75$).

Fig. 1 MG-MLSEM of perceived teacher enjoyment of teaching and student enjoyment of reading on student reading achievement. $*p < .001$. *Note.* This model depicts Level 1 (within-school) relationships after accounting for effects at Level 2 (school-level) and above. Estimations on the left are for the Western students and on the right are for the Eastern Asian students. Standardized path estimations are presented



reading, had stronger reading enjoyment, and perceived their teachers to enjoy teaching more.

The multi-group multilevel structural equation modeling shows the relation among perceived teacher enjoyment, reading enjoyment, and reading achievement across East and West, controlling for SES and gender (Fig. 1). In both cultural contexts, perceived teacher enjoyment and student reading enjoyment significantly affected student reading achievement. Students' enjoyment of reading mediated the relation between perceived teacher enjoyment and achievement demonstrating contagion effects.

Wald's test shows cultural differences. The total effect of perceived teachers' enjoyment on reading achievement was larger in the West than in Asia: $\chi^2(1) = 12.322$, $p < .001$. The direct effect of perceived teachers' enjoyment on reading achievement was also larger in the West: $\chi^2(1) = 12.413$, $p < .001$. However, the indirect effect of perceived teacher enjoyment on reading achievement via students' enjoyment was smaller in the West than in Asia: $\chi^2(1) = 9.001$, $p < .01$. There was no significant cultural difference in the effect of perceived teacher enjoyment on enjoyment of reading: $\chi^2(1) = 0.031$, $p > .05$. We also conducted a t-test of gender differences across both cultures³

Discussion

Across East and West, perceived teacher enjoyment and student enjoyment were positively associated with student achievement. This suggests the importance of positive

emotions in performance and was in line with the existing literature (e.g., Pekrun, 2017). Students who enjoy reading tend to be more motivated to read and achieve higher in reading. Teachers who enjoy their teaching are also more likely to have better teaching quality (Frenzel et al., 2016) and this in turn may facilitate student achievement.

In addition, our findings show that perceived teacher enjoyment predicted student achievement via students' enjoyment, supporting the emotional contagion mechanism. This was also consistent with previous findings (e.g., Frenzel et al., 2009, 2018) and found to be culturally general. If students perceive that their teacher enjoys teaching, they are more likely to enjoy the subject the teacher teaches and achieve higher on that subject. Though the data in this study were collected pre-pandemic, they suggest that teacher enjoyment can be especially accentuated during the pandemic to help students stay positive and engaged in a crisis.

The degree of emotional contagion, indicated by the association between teachers' and students' enjoyment, did not show significant cultural differences as shown by the Wald's test. Emotional contagion appears equally relevant in both East and West.

This study has limitations. First, we used the items in the PISA questionnaire to measure enjoyment, rather than the scales specifically developed to measure the enjoyment constructs. Second, we only considered the Western and East Asian cultures, and future studies are needed to explore this topic in more varied cultural contexts. Third, we only focused on the theoretical mechanism of emotional contagion. Some other factors (e.g., educational resources, learning environment, etc) might impinge on learning-related outcomes and could confound our findings. Last, our study could not indicate the causal relation between enjoyment and achievement, and hence future longitudinal studies are needed.

³ In the East, there was a significant gender effect on enjoyment of reading: $t(47977) = 31.21$, $p < .001$, with girls ($M = .59$, $SD = .97$) obtaining higher scores than boys ($M = .31$, $SD = .99$). There was also a significant gender effect on reading: $t(47977) = 21.68$, $p < .001$, with girls ($M = 540.46$, $SD = 95.54$) obtaining higher scores than boys ($M = 520.61$, $SD = 104.66$).

Appendix

Table 3 Scales of perceived teacher enjoyment of teaching and student enjoyment of reading

Scales		Items
Perceived teacher enjoyment of teaching	ST213Q01	It was clear to me that the teacher liked teaching us.
	ST213Q02	The enthusiasm of the teacher inspired me.
	ST213Q03	It was clear that the teacher likes to deal with the topic of the lesson.
	ST213Q04	The teacher showed enjoyment in teaching.
Student enjoyment of reading	ST160Q01	I read only if I have to. (reversed)
	ST160Q02	Reading is one of my favorite hobbies.
	ST160Q03	I like talking about books with other people.
	ST160Q04	For me, reading is a waste of time. (reversed)
	ST160Q05	I read only to get information that I need. (reversed)

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Data Availability The data and the measures we used are obtained through The Program for International Student Assessment (PISA) 2018 and are available to the public.

Code Availability We used SPSS 26 and MPlus 8.3 to analyze the data.

Declarations

Ethic Approval Not applicable.

Consent to Participate Not applicable.

Consent to Publication All the authors consent to publish this article in Current Psychology.

Conflict of Interest We do not have conflicts of interest.

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