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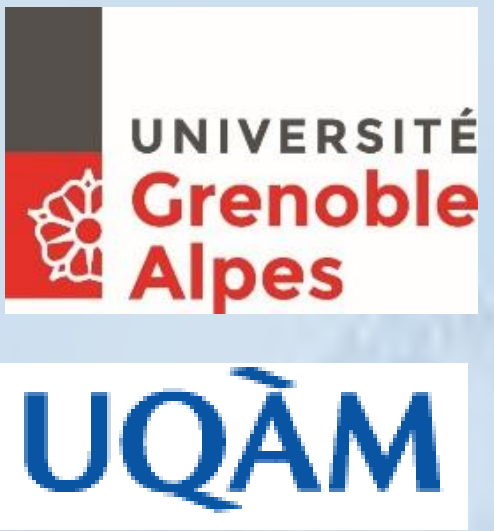
# How social comparison mechanisms and students' self-evaluation in mathematics influence Chinese teachers' judgments ?

Laurent LIMA<sup>1</sup>, Pascal PANSU<sup>1</sup>, Feng-Feng YU<sup>1</sup>, & Thérèse Bouffard<sup>2</sup>

1- Laboratory of Research on Acquisition in Context, Université Grenoble Alpes

2-URAMAS, Université du Québec à Montréal

laurent.lima@univ-grenoble-alpes.fr



## Introduction

The self-evaluation bias of academic competence (the discrepancy between a student's actual potential and their self-evaluation of academic competence) can be either positive (overestimation) or negative (underestimation).

Although results highlight the harmful effect of a negative self-evaluation bias for students, little is known about how teachers judge the students who have a self-evaluation bias of academic competence. The only existing results were mainly produced in North America or Europe (Bouffard & Narciss, 2011, Bouffard, Pansu, Boissicat, 2013), so less is known about the adaptive character of a positive self-evaluation bias in other cultures.

Self-evaluation of academic competence could be influenced by social comparison mechanisms. In the literature, identification with an upward target is the most frequent mechanism that students report to use. However the contribution of the identification and the contrast mechanisms to the distortion of students' self-perceived competence still remains unclear.

The main aims of this study are to examine :

- whether the self-evaluation bias of academic competence and importance of mathematics results mediates the links between social comparison and teachers' judgment
- if the adaptive effect of a student self-evaluation positive bias on teacher's judgment of student academic performance could be extended to the Chinese schooling system.

## Materials and methods

### Participants:

191 Chinese students (sixth graders; 46% girls) and their mathematics teachers (n=5) from the city of Hangzhou .

### Method:

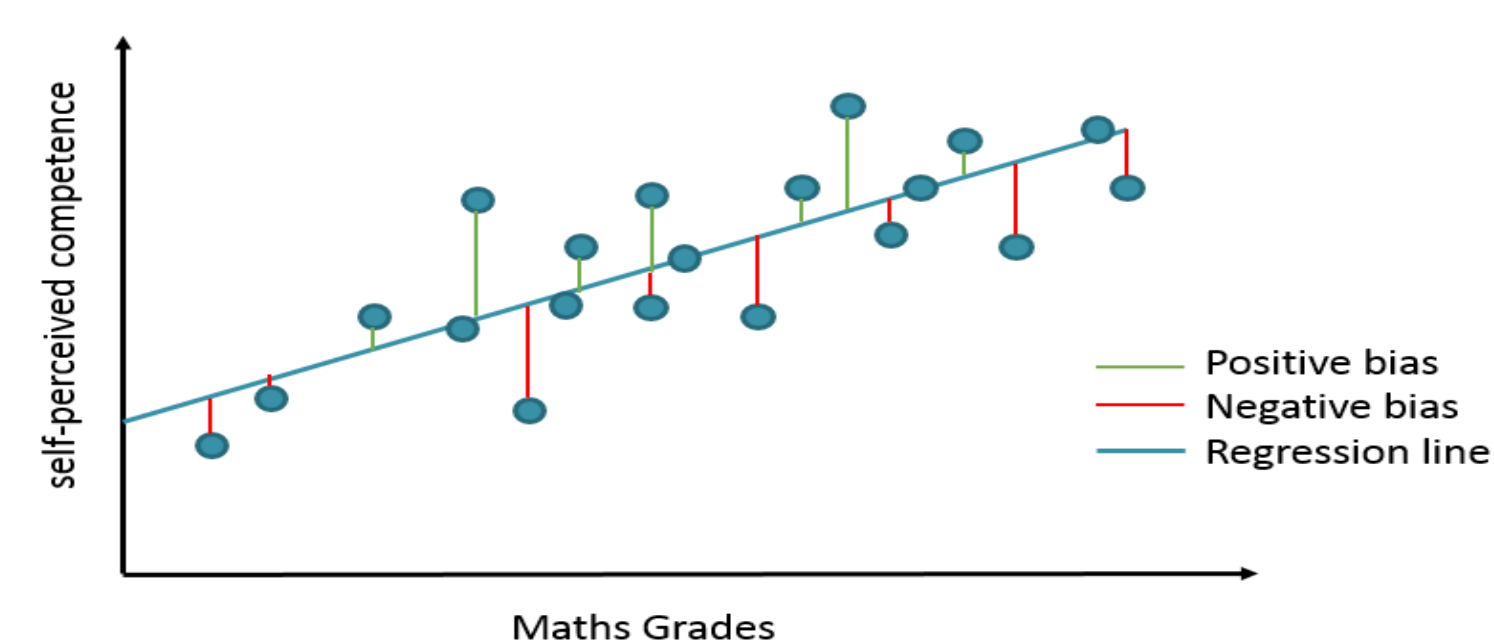
The students were asked to answer a questionnaire about their self-perceived competence in mathematics (6 items adapted from the *Perceived Competence Scale for Children* (Harter, 1982);  $\alpha=.76$ ), the level of importance they place on their mathematics grades (6 items,  $\alpha=.58$ ), and social comparison mechanisms (12 items equally distributed between upward contrast  $\alpha=.57$ , downward contrast  $\alpha=.62$ , upward identification  $r=.36^*$  and downward identification  $\alpha=.82$ ; (Buunk & Ybema, 1997)). (\*only two items due to ceiling effect on the third item of the scale)

COMPARISON MECHANISMS	UPWARD	DOWNWARD
IDENTIFICATION	I hope to improve when I see that other students are doing better than before <i>J'ai espoir de m'améliorer quand je vois que d'autres élèves réussissent mieux qu'avant</i>	I'm afraid of getting worse when I see other students succeed less well than before <i>J'ai peur de devenir moins bon quand je vois d'autres élèves réussir moins bien qu'avant</i>
CONTRAST	I feel frustrated when I see other students doing better than me <i>Je me sens frustré quand je vois que d'autres élèves font mieux que moi</i>	I feel relieved to have succeeded when I see that other students have been less successful than me <i>Je me sens soulagé d'avoir réussi quand je vois que d'autres élèves ont moins bien réussi que moi</i>

We collected students' mathematics grades obtained at the regional tests.

The self-evaluation bias in mathematics was calculated using the residual scores of the regression of students' self-perceived competence on their grades at a regional mathematics test (Gramzow et al., 2003).

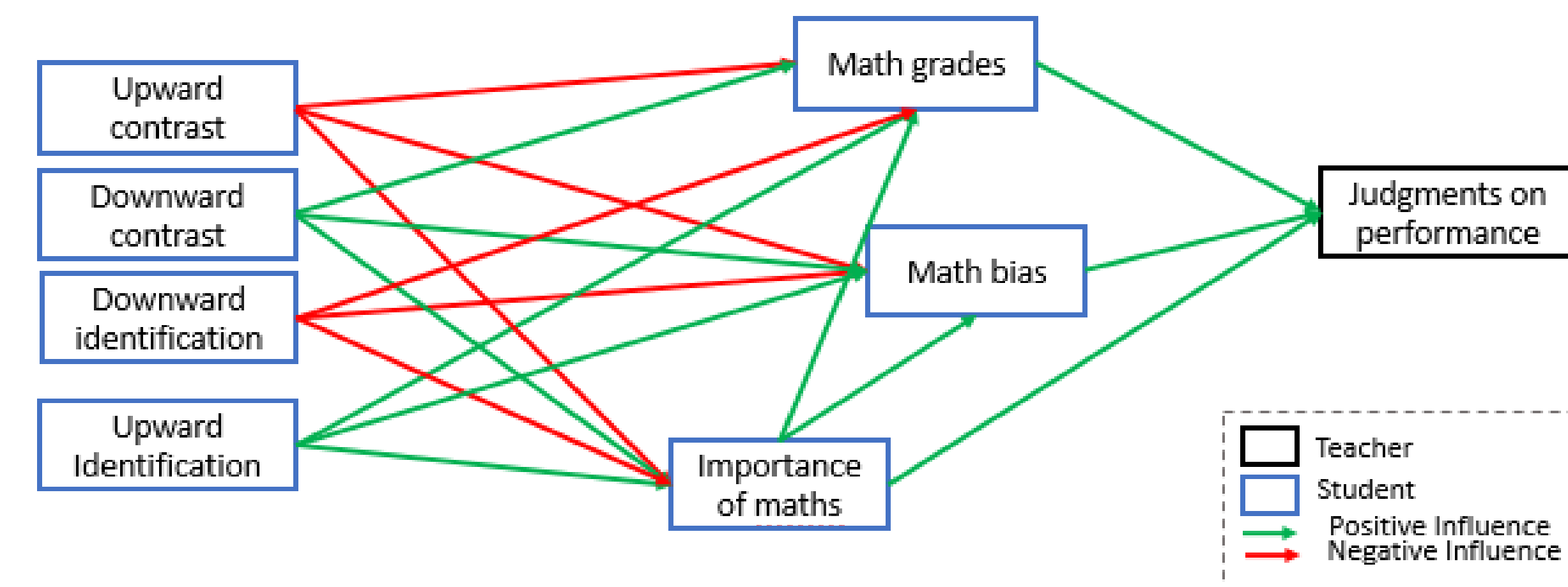
The teachers assessed their students' competence in mathematics on a scale from 0 (very weak) to 10 (very strong).



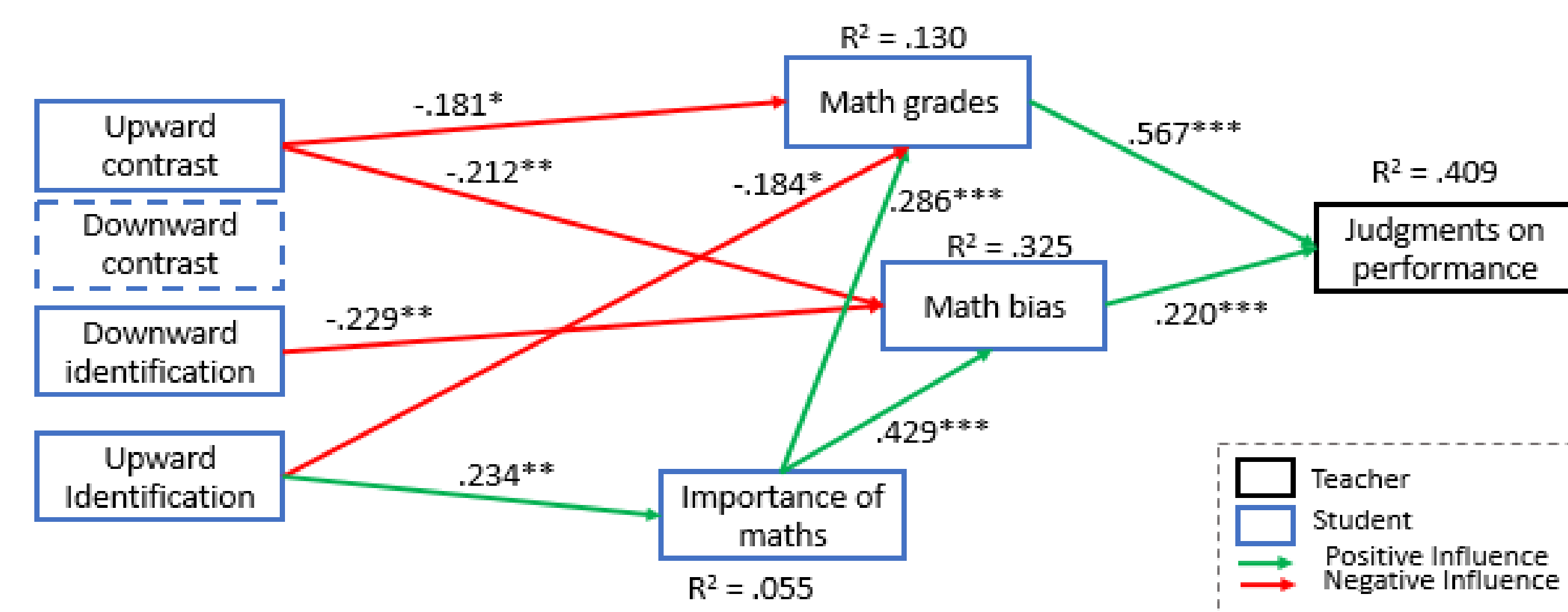
## Results

A structural equation model revealed the mediation effect of the level of importance of mathematics grades and self-perceived competence on the link between social comparison mechanisms and teachers' judgments of mathematics competence.

### Theoretical model of teacher judgments on student mathematics performance



### Fitted model of teacher judgments on student mathematics performance



KHI<sup>2</sup>(9)=15.062 (ns); CFI = .960; TLI = .920; RMSEA = .059; SRMR = .045  
\*\*\*p<.001; \*\*p<.01; \*p<.05

Upward identification was positively linked to teachers' judgment *via* students' ratings of the importance they put on mathematics and self-evaluation bias of competence in mathematics.

Upward contrast and downward identification were negatively linked to on teachers' judgment *via* students' mathematics grades and self-evaluation bias of competence in mathematics.

Students' self-evaluation bias of competence in mathematics was strongly and positively related to teachers' judgment.

## Conclusions

Our results confirm the adaptive character of a positive self-evaluation bias in the Chinese schooling system: for the same level of competence in mathematics, students with a positive bias are judged more competent than students with a negative self-evaluation bias.

Social comparison mechanisms play a role in the construction of the self-evaluation bias:

- Upward identification is not directly linked to self-evaluation bias but is positively and indirectly linked through the importance they put on mathematics: those who identify themselves with better students tend to attribute more importance to mathematics which in turn is positively linked to both math grades and self-evaluation bias
- Downward Identification and upward contrast are directly and negatively linked to self-evaluation bias that tend to lower teacher judgment on student performance
- Downward contrast has no link, direct nor indirect, with self-evaluation bias or teacher judgment on student performance.

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