De-stereotyping Public Performance Evaluation

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Stereotyping: The Mechanism

Dual process theory (Tversky and Kahneman 1974)

System 1: quick and intuitive

System 2: rational and mathematical

Stereotyping happens in **system 1**, in which people select certain information as a mental shortcut to save capacities for evaluation and decision making.

Stereotypes biases citizens to understand public performance, such as:

1. Racial stereotype: Black and White (e.g. Riccucci, Van Ryzin, and Jackson 2018)
2. Sector stereotype: public and private (e.g. Hvidman and Andersen 2019; Marvel 2016)

Reducing Stereotypes by Switching Evaluation Modes

In **Separate Evaluation (SE)**: alternatives are presented and judged in isolation

- Performance is not comparable
- Performance information (numerical merits) < contextual information (stereotypes)
- People evaluate information with **system 1**

In **Joint Evaluation (JE)**: alternatives are presented and judged simultaneously

- Performance is comparable
- Performance information > contextual information
- People evaluate information with **system 2**

Proposition

When performance information is presented in isolation (SE), people's perceived performance of the organization will be varied according to the contextual information; when pieces of performance information are presented jointly (JE), people's perceived performance will be determined by the numerical information.

Research Design: 3 studies on MTurk: performance evaluation of American high schools

Study 1: Evaluation mode × Racial Stereotype (N = 988)

Study 2: Evaluation mode × Sector Stereotype (N = 804)

Purpose of study 1 and 2: replicate the process of stereotyping and examine the rule of evaluation mode in performance perception.

Study 3: Evaluation mode × (Racial + Sector Stereotype + Performance) (N = 1502)

Purpose of study 3: test the SE-JE in multi-dimensional information environment.

All studies shared the same DVs.

[DV1: Perceived performance] How well do you think this school is doing? 0 = Very bad 100 = Very good (Please move the slide between 0 and 100)

[DV2: Behavioral intention] Imagining that all school expenses are covered by government money (e.g., voucher), to what extent would you consider sending your kid to this school? 0 = Impossible 100 = Very possible (Please move the slide between 0 and 100)

Study 1: JE against long-term stereotype

School A

Race majority of students: White

Students' average SAT scores: Evidence based Reading and Writing: 615; Math: 530

SE Group 1

School A

Race majority of students: Black

Students' average SAT scores: Evidence based Reading and Writing: 615; Math: 530

SE Group 2

	School A	**School B**
Race majority of students	White	Black
Students' average SAT evidence-based reading and writing	615	615
Students' average SAT math	530	530

JE Group

Study 1: JE against long-term stereotype

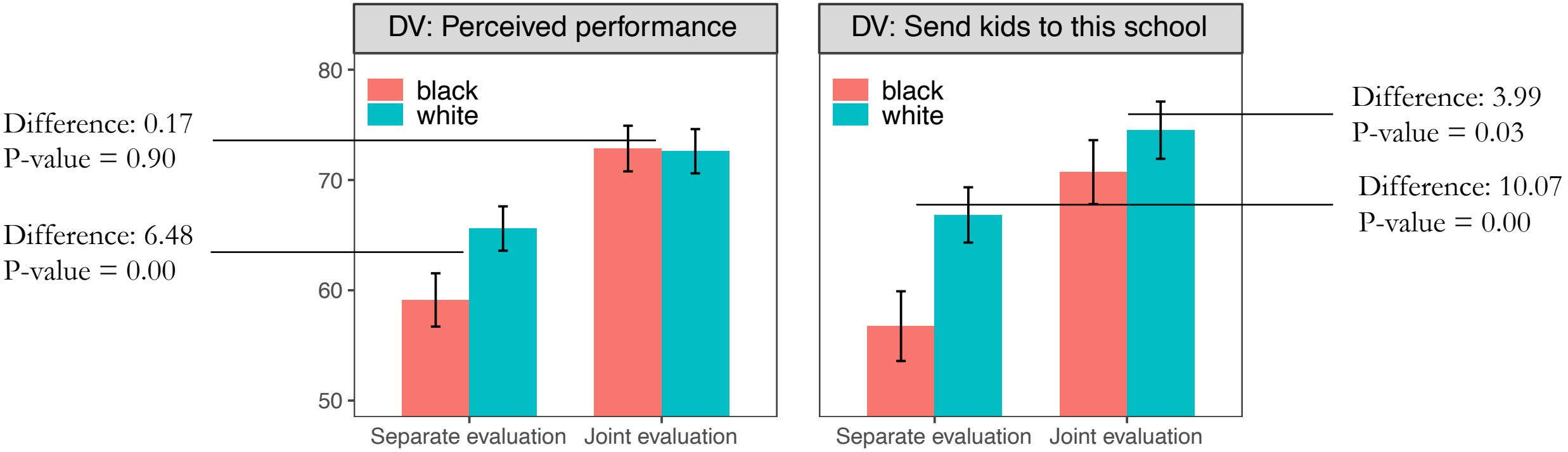


Figure 1: **Racial Stereotype in SE and JE**

Note: Bars are 95% confidence intervals.

Study 2: JE against short-term stereotype

*Before subjects reading the following school information, we used information from advocacy reports to prime them into a **pro-private believe**.

School A School ownership: Public Students' average SAT scores: Evidence based Reading and Writing: 615; Math: 530

SE Group 1

School A School ownership: Private Students' average SAT scores: Evidence based Reading and Writing: 615; Math: 530

SE Group 2

	School A	**School B**
School ownership:	Public	Private
Students' average SAT evidence-based reading and writing	615	615
Students' average SAT math	530	530

JE Group

Study 2: JE against short-term stereotype

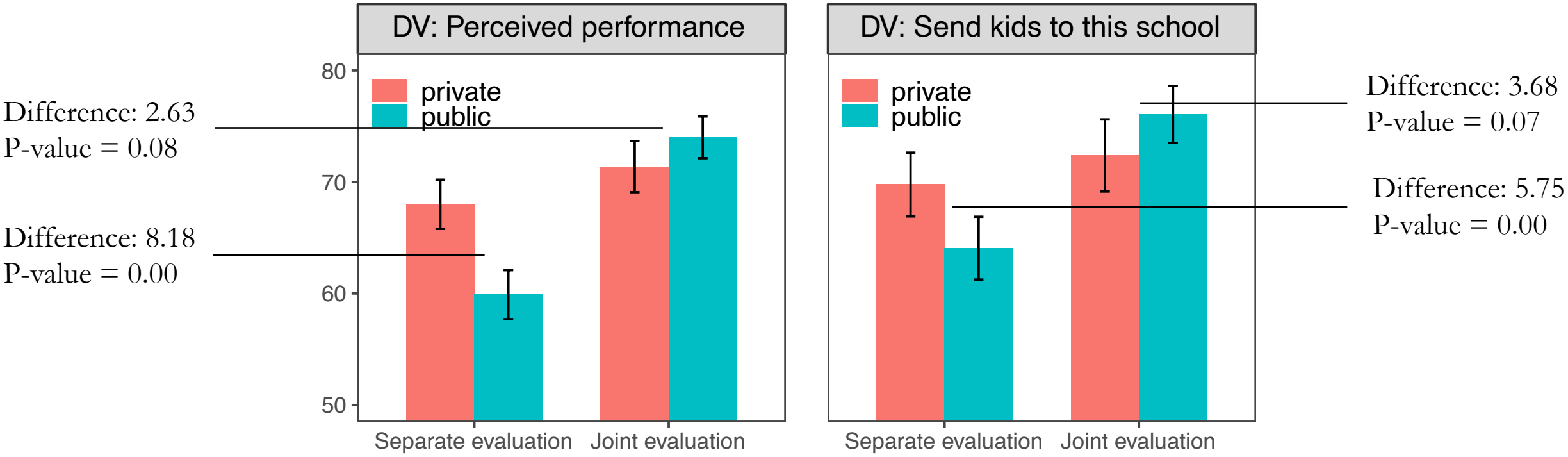


Figure 2: **Sector Stereotype in SE and JE**

Note: Bars are 95% confidence intervals.

Study 3: let's come closer to reality

Table 3: Attributes for school profile in conjoint task

Attributes	Values
Stereotype attribute	
Race majority of students	(1) Black (2) White
Ownership	(1) Public (2) Private
Performance information	
Students' average SAT score	(1) 1280 (2) 1200
% of students feel supported to meet high expectations in learning	(1) 80% (2) 70%

Study 3

The following table presents the information from the 2019 annual report of the High School A, including school ownership, students' race majority, students' average SAT scores, and students' perceived learning environment from a survey.

School Attributes	School A
% of students feel supported to meet high expectations in learning	70%
Ownership	Public
Race majority of students	White
Students' average SAT score	1280

How well do you think this school is doing?

Very bad 0 10 20 30 40 50 60 70 80 90 100 Very good

Imagining that all school expenses are covered by government money (e.g., voucher), to what extent would you consider sending your kid to this school?

Impossible 0 10 20 30 40 50 60 70 80 90 100 Very possible

Randomization:

Single conjoint

The following table presents the information from the 2019 annual report of the High School A and B, including school ownership, students' race majority, and students' average SAT scores, and students' perceived learning environment from a survey.

School Attributes	School A	School B
Race majority of students	Black	Black
% of students feel supported to meet high expectations in learning	80%	70%
Ownership	Public	Public
Students' average SAT score	1200	1280

How well do you think this school is doing?

Very bad 0 10 20 30 40 50 60 70 80 90 100 Very good

School A

School B

Imagining that all school expenses are covered by government money (e.g., voucher), to what extent would you consider sending your kid to this school?

Impossible 0 10 20 30 40 50 60 70 80 90 100 Very possible

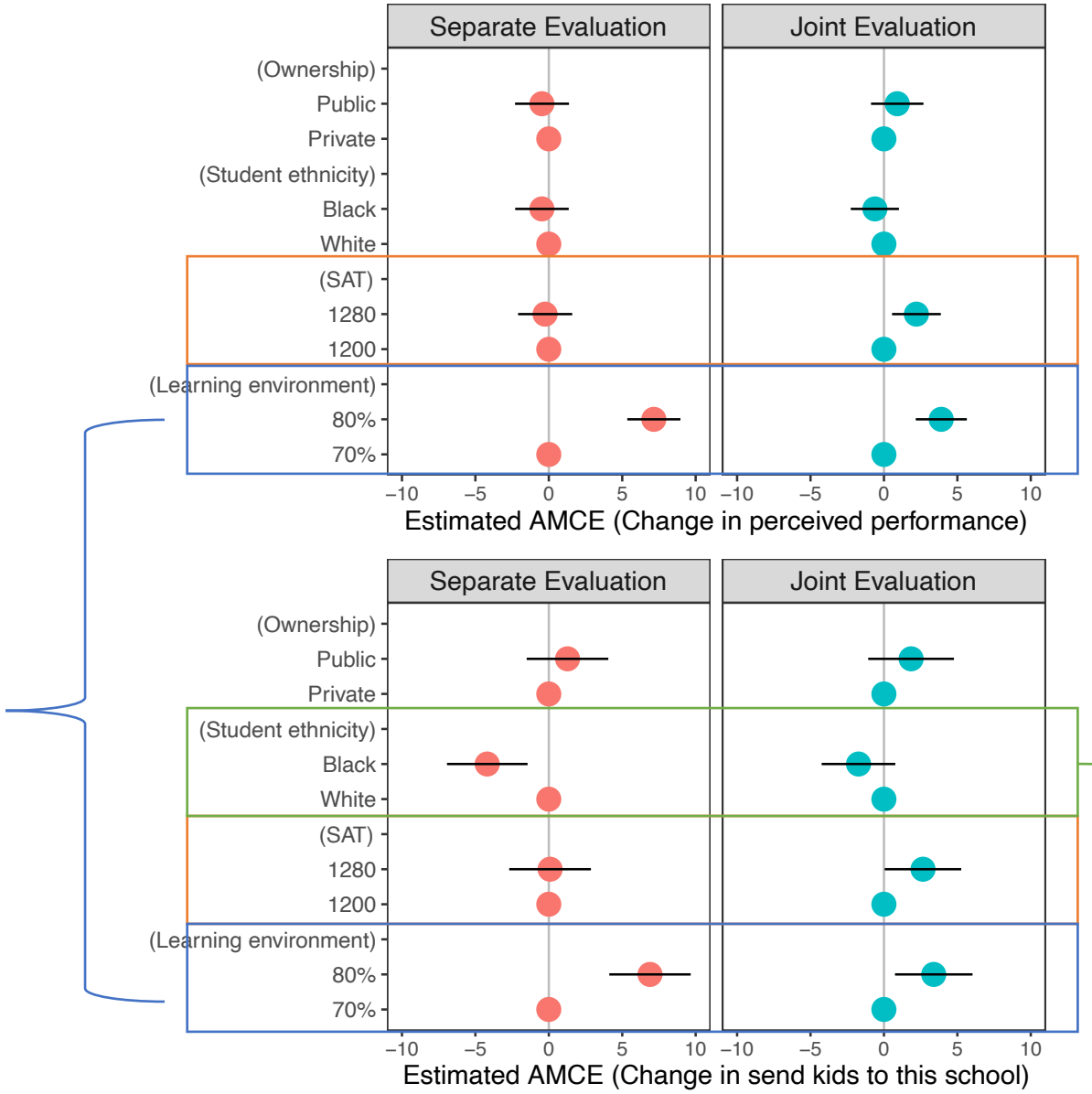
School A

School B

Pair conjoint

Study 3

Perceived learning environment stands out by the magic number "80%"



SAT performance has been amplified in JE mode

Racial stereotype has been reduced in JE mode

Figure 3: **SE and JE in Conjoint Environments**

Note: Bars are 95% confidence intervals.

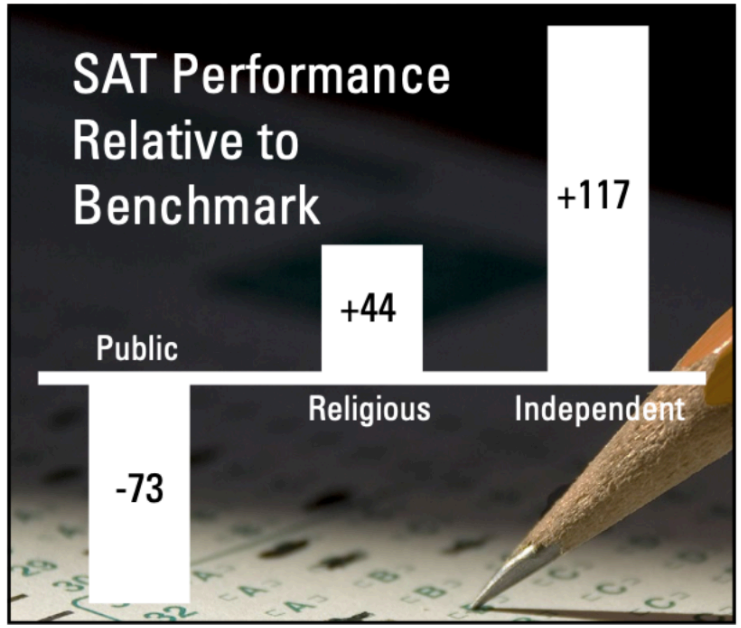
Discussion

- We theorize the mechanism of stereotyping in performance evaluation.
- We provide a tool to reduce stereotyping in performance management.
- JE may contribute further implication in other topics to study bureaucratic behaviors, such as their performance information use, reduce their biases in service delivery, and decrease unequal treatment in public personal management.
- Methodological contribution: future study should carefully decide to use which evaluation mode in conjoint analysis. Single or pair conjoint can output very different results.

Study 2 Priming information

Private School Students Surpass SAT Benchmark

Source: https://www.capenet.org/pdf/Outlook378.pdf



Cato Institute Center for Educational Freedom provides more convincing evidences: In more than 150 statistical comparisons covering eight different educational outcomes, the private sector outperforms the public sector in the overwhelming majority of cases.

Source: https://www.cato.org/sites/cato.org/files/articles/10.1.1.175.6495.pdf

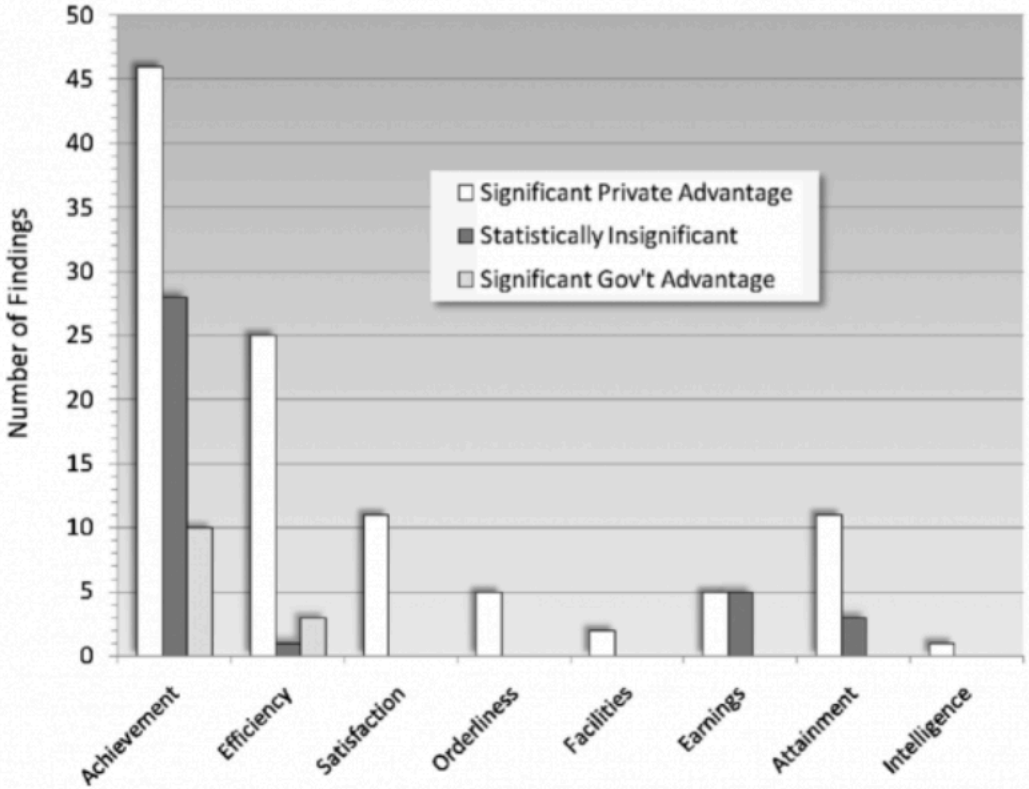
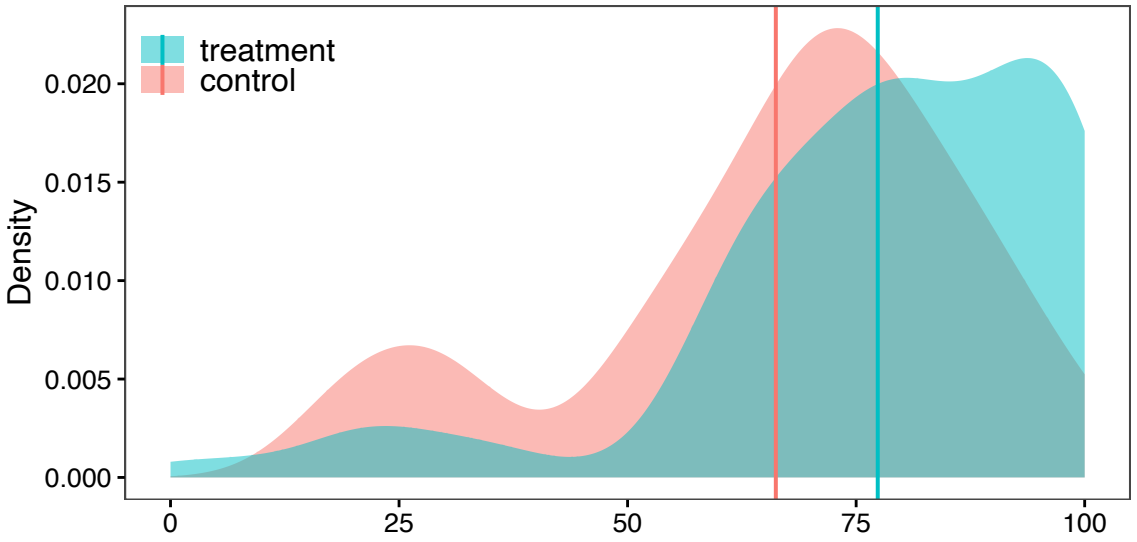
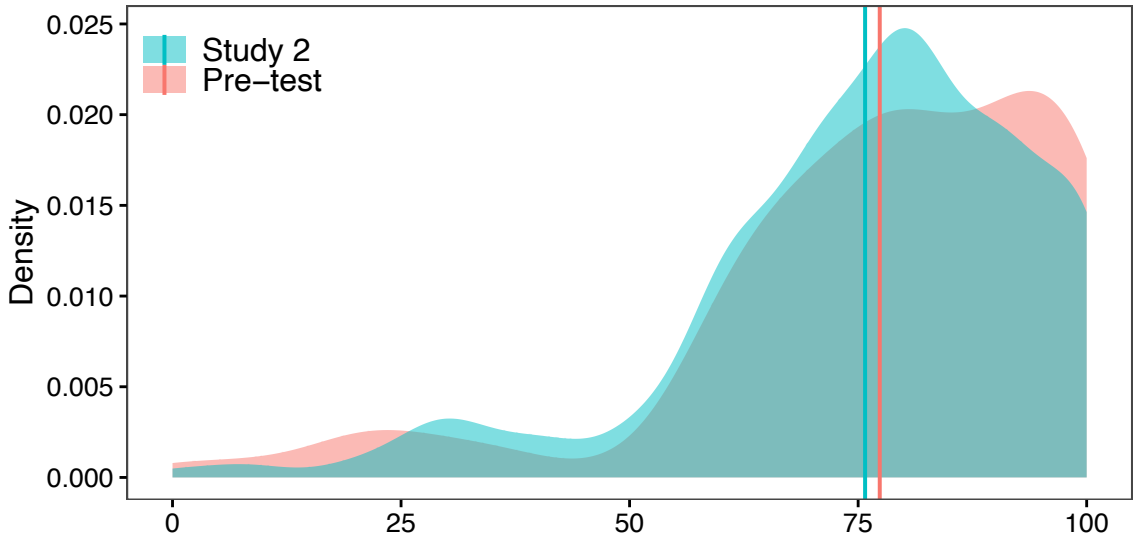


FIGURE 1 Private school versus government school outcomes, number of significant and insignificant findings, worldwide

Priming effect



Pre-test



Pre-test vs Study 2

Study 1: regression

Table 1: **Racial Stereotype in SE and JE**

	Perceived performance		Send kids to this school	
	(1)	(2)	(3)	(4)
JE×Black	6.719***	7.391***	6.285**	6.566**
	(1.711)	(1.775)	(2.398)	(2.471)
Mode: JE	7.011***	6.917*	7.682***	4.987
	(1.444)	(2.827)	(1.834)	(3.785)
Students' major Race: Black	−6.477***	−7.149***	−10.087***	−10.367***
	(1.598)	(1.656)	(2.051)	(2.114)
Constant	65.599***	64.266***	66.833***	71.392***
	(1.022)	(8.057)	(1.274)	(8.981)
Covariates	No	Yes	No	Yes
State FE	No	Yes	No	Yes
Observation	1,230	1,230	1,230	1,230
Adjusted R^2	0.079	0.097	0.063	0.084

Note: OLS estimates. *Mode* (baseline: *SE*) and *Students' major race* (baseline: *White*) are dummies. Clustered standard errors are in brackets. *p < .05; **p < .01; ***p < .001

Study 2: regression

Table 2: **Sector Stereotype in SE and JE**

	Perceived performance		Send kids to this school	
	(1)	(2)	(3)	(4)
JE×Public	10.739***	10.124***	9.394***	9.244**
	(1.853)	(1.904)	(2.797)	(2.914)
Mode: JE	3.376*	4.230**	2.607	3.302
	(1.617)	(1.626)	(2.192)	(2.267)
Sector: Public	−8.111***	−7.497***	−5.709**	−5.559**
	(1.582)	(1.638)	(2.039)	(2.121)
Constant	68.000***	68.917***	69.772***	70.037***
	(1.120)	(5.773)	(1.452)	(7.320)
Covariates	No	Yes	No	Yes
State FE	No	Yes	No	Yes
Observation	1,062	1,062	1,062	1,062
Adjusted R^2	0.081	0.112	0.030	0.018

Note: OLS estimates. *Mode* (baseline: *SE*) and *Sector* (baseline: *Private*) are dummies. Clustered standard errors are in brackets. *p < .05; **p < .01; ***p < .001

Study 3: regression

Table D.2: **Conjoint Conditions (DV: Perceived performance)**

	Single Conjoint (SE)		Pair Conjoint (JE)	
	(1)	(2)	(3)	(4)
Ownership: Public	−0.463	−0.741	0.906	1.198
	(0.939)	(0.981)	(0.911)	(0.876)
Students' major race: Black	−0.467	−0.942	−0.619	−0.905
	(0.931)	(0.958)	(0.838)	(0.834)
Higher SAT	−0.250	−0.161	2.213**	2.460**
	(0.941)	(0.983)	(0.847)	(0.823)
Better learning environment	7.153***	7.036***	3.907***	4.291***
	(0.925)	(0.939)	(0.888)	(0.839)
Constant	72.843***	68.303***	74.051***	76.860***
	(1.164)	(4.555)	(1.029)	(7.665)
Covariates	No	Yes	No	Yes
State FE	No	Yes	No	Yes
Observation	960	957	1,082	1,072
Adjusted R^2	0.055	0.080	0.024	0.082

Note: OLS estimates. *Ownership* (baseline: *Private*), *Students' major race* (baseline: *White*), *Higher SAT* (baseline: *1200*), and *Better learning environment* (baseline: *70%*) are dummies. Covariates include gender, ethnicity, age, parenthood, income, education, ideology, and response duration. Standard errors are in brackets (clustered by individuals). *p < .05; **p < .01; ***p < .001

Study 3: regression

Table D.3: **Conjoint Conditions (DV: Send kids to this school)**

	Single Conjoint (SE)		Pair Conjoint (JE)	
	(1)	(2)	(3)	(4)
Ownership: Public	1.271	1.633	1.849	2.560
	(1.420)	(1.504)	(1.491)	(1.481)
Students' major race: Black	−4.189**	−4.561**	−1.734	−1.985
	(1.402)	(1.470)	(1.281)	(1.308)
Higher SAT	0.085	0.351	2.656*	2.619*
	(1.422)	(1.502)	(1.331)	(1.322)
Better learning environment	6.891***	7.159***	3.391*	4.106**
	(1.416)	(1.428)	(1.348)	(1.335)
Constant	72.198***	87.986***	73.157***	77.833***
	(1.639)	(5.779)	(1.581)	(11.205)
Covariates	No	Yes	No	Yes
State FE	No	Yes	No	Yes
Observation	960	957	1,082	1,072
Adjusted R^2	0.032	0.056	0.009	0.062

Note: OLS estimates. *Ownership* (baseline: *Private*), *Students' major race* (baseline: *White*), *Higher SAT* (baseline: *1200*), and *Better learning environment* (baseline: *70%*) are dummies. Covariates include gender, ethnicity, age, parenthood, income, education, ideology, and response duration. Standard errors are in brackets (clustered by individuals). *p < .05; **p < .01; ***p < .001

Study 3: SE-JE effect

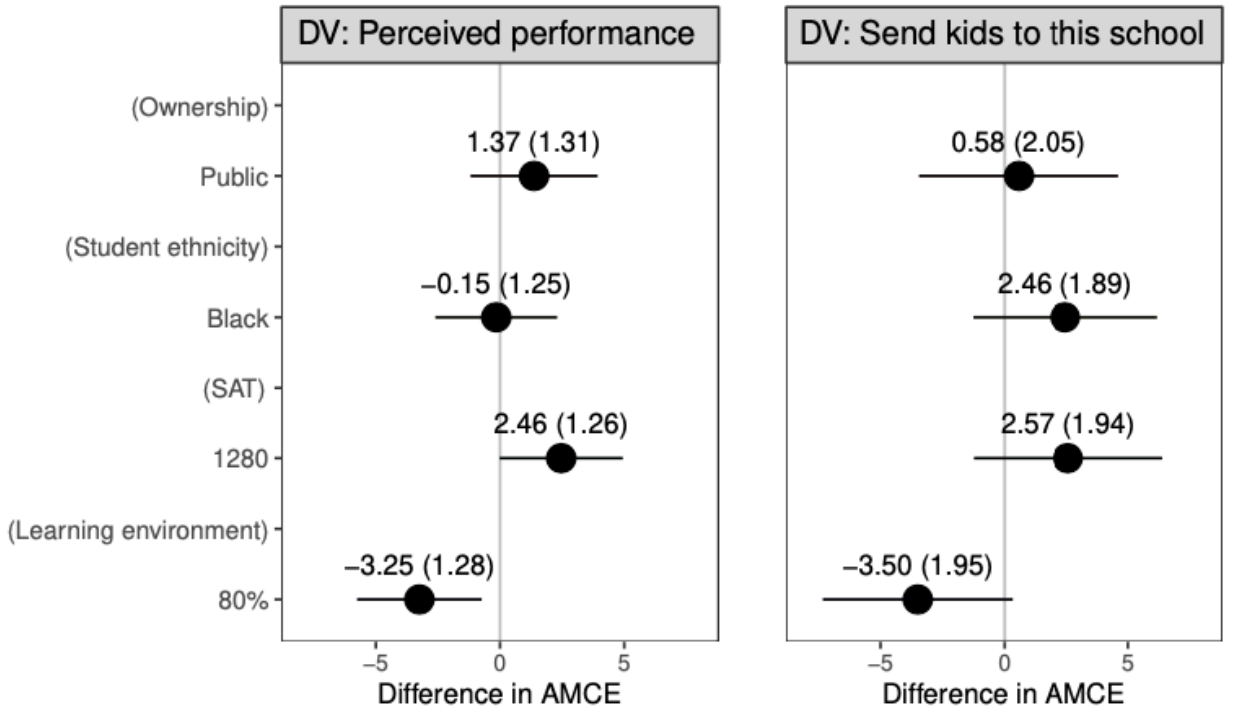


Figure 4: **JE-SE Treatment Effects in Conjoint Environments**

Note: Clustered standard errors are in brackets. Bars are 95% confidence intervals.