Why do we Discriminate? – The Role of Motivated Reasoning

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Background

Distinguishing between different forms and sources of discrimination has important implications for policy, welfare analyses and discrimination dynamics.

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Previous literature finds that discrimination can be based on:

- taste: animus towards members of a particular group

  (Becker, 1957)
- statistics: *correctly* perceived group differences

  (Phelps, 1972; Arrow, 1973)
- inaccurate beliefs: *incorrectly* perceived group differences

  (e.g. Fershtman and Gneezy, 2001; Bohren et al., 2019)

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...analyzes a potential link between these source of discrimination:

Discrimination based on motivated belief formation

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Motivated belief-based discriminators:

- have a motive for their beliefs
- need "wiggle room" for upholding their beliefs when confronted with new information

Why do we care?

Conceptually...

- ...this (sub)form of discrimination only shows subtle differences from known forms of (taste-based/statistical) discrimination.

Practically...

- ...these nuanced differences translate into important behavioral changes as well as different discrimination dynamics and policy responses.

What are these changes?

Beliefs are driven by motives

- Individuals systematically acquire and process information in line with their motives

Discriminatory action is driven by beliefs

- The updated beliefs based on this systematic information search and processing drive discrimination
- Information can still be an effective tool to change discriminatory behavior if it is designed in a way that limits individuals' wiggle room for interpretation

Setting

Consider an employer who...

- ...decides between two (unknown) applicants from two equally productive groups
- ...is familiar with the two equal group-level distributions of productivity
- ... holds a motive to believe that one group is better than the other.

Predictions

- The employer systematically acquires and processes information in line with their motives
- The employer discriminates based on these motivated beliefs
- The employer discriminates less when information limits their wiggle room for motivated belief formation

Background

Experimental Design

Results
- Beliefs
- Hiring under wiggle room

Debiasing – Reducing Information Ambiguity

Experimental Design

- Pre-registered survey and series of online experiments (Prolific)
- Artificial hiring situation

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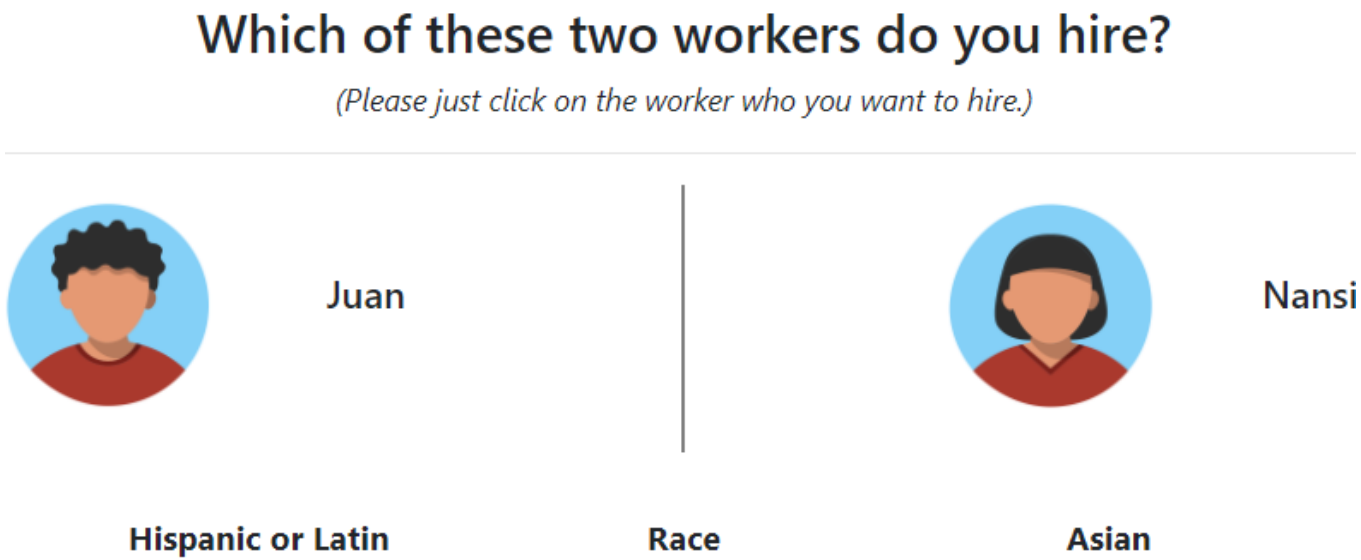
- Survey: Constructed pool of American "workers"
  - Assessment test: Matrices, dictator game, real effort task

- Experiments: Pool of American "employers"
  - Treatments: "Race" & "Neutral" labels
  - Belief stage: Alignment of beliefs on group statistics
    priors posteriors
  - Hiring stage: Binary incentivized hiring decisions
  - Variation across experiments: individual-level information

Experiment 1: Hiring stage - race



Experiment 1: Hiring stage - neutral

Which of these two workers do you hire?

(Please just click on the shape of the worker who you want to hire.)

- worker

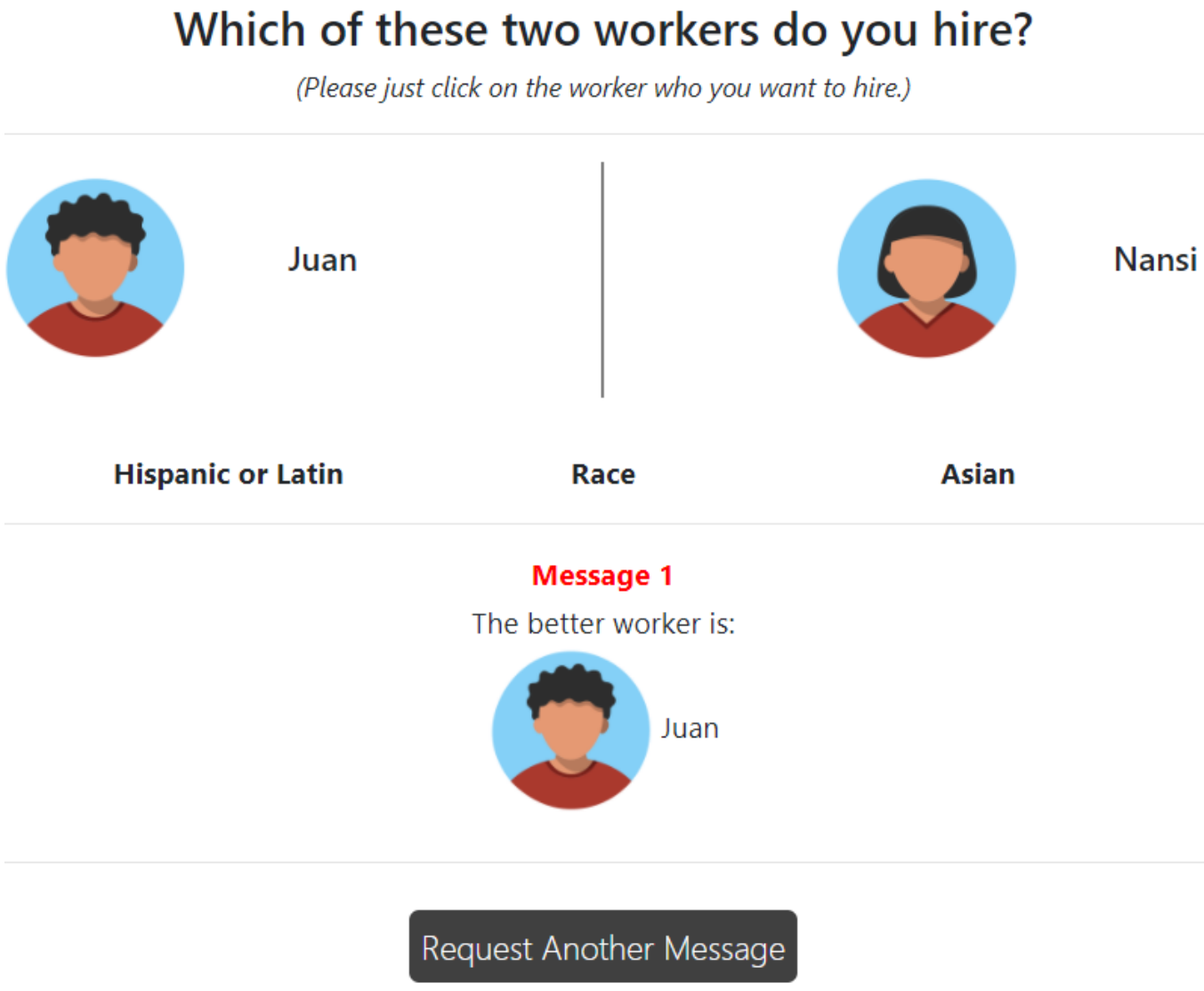
Diamond

Group

- worker

Triangular

Experiment 2: Hiring stage - race



Experiment 2: Hiring stage - neutral

Which of these two workers do you hire?

(Please just click on the shape of the worker who you want to hire.)

- worker

- worker

Diamond **Group** **Triangular**

Message 1

The better worker is:

- worker

Request Another Message

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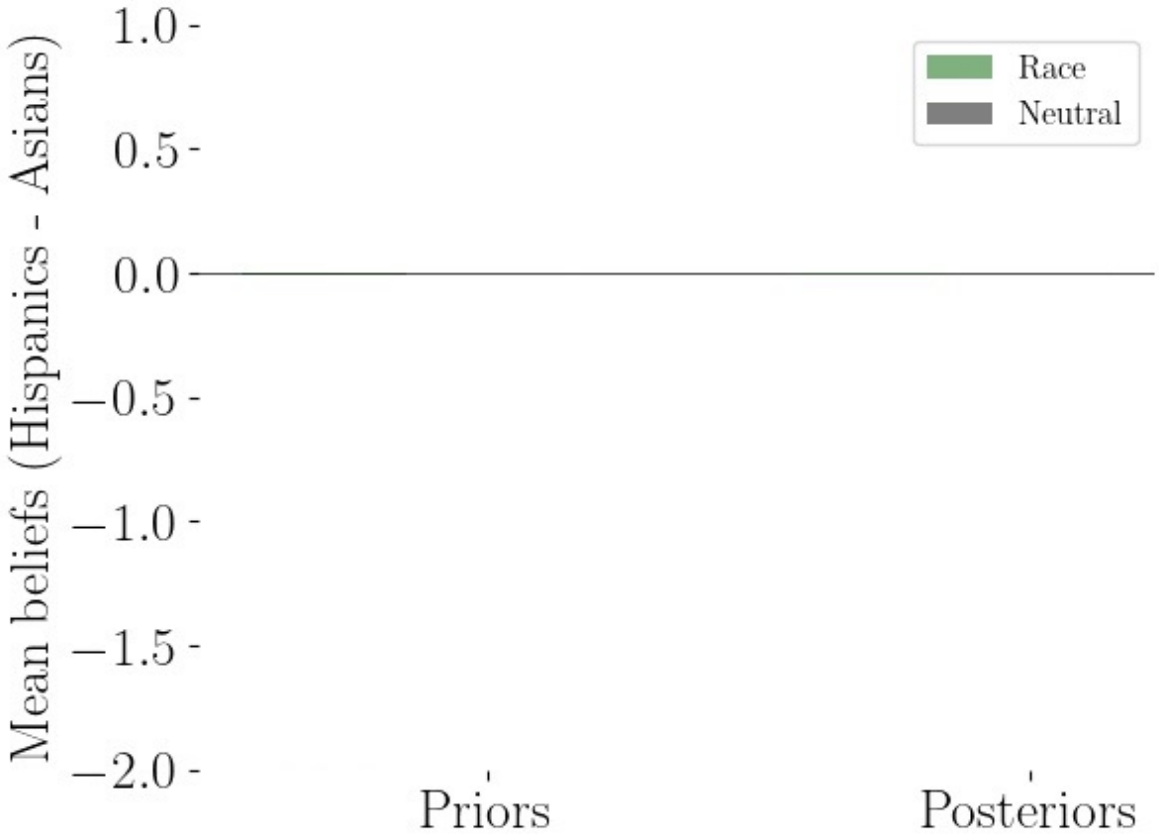
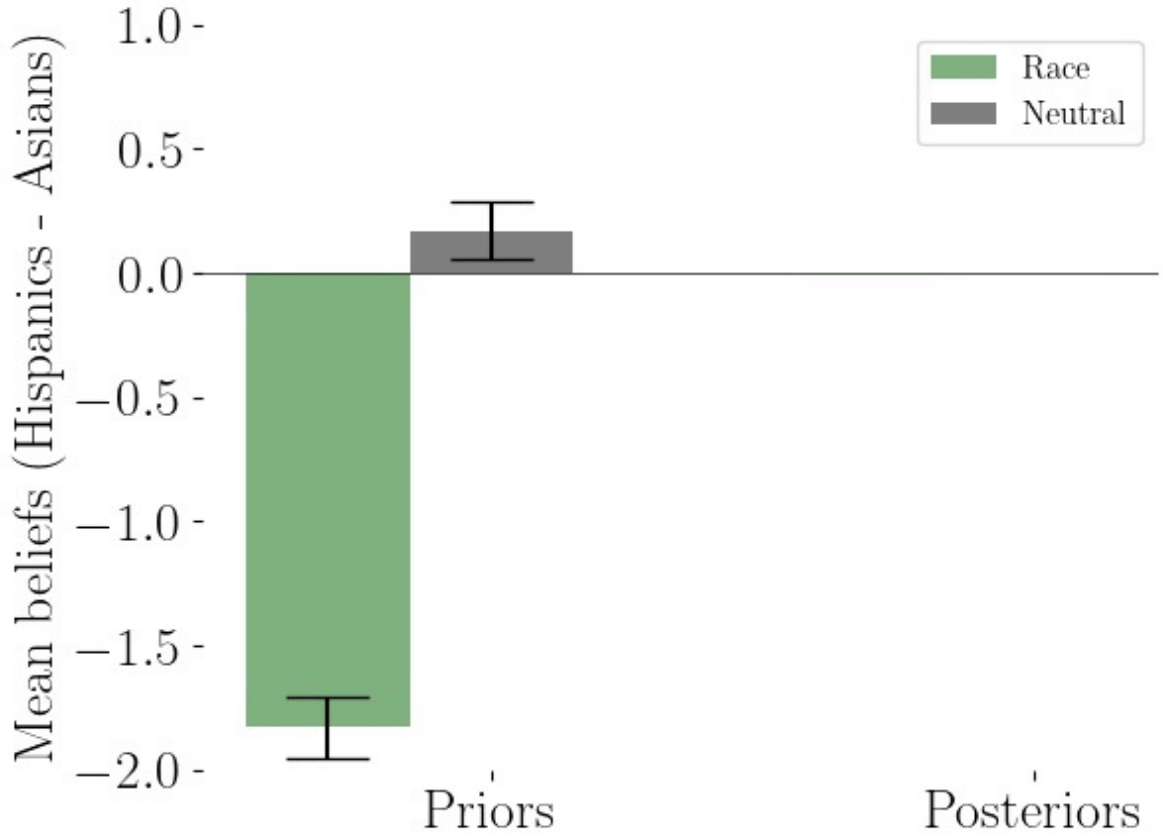
Debiasing – Reducing Information Ambiguity

Beliefs - Overview



▸ distributions (priors) ▸ distributions (posteriors)

Beliefs - Overview



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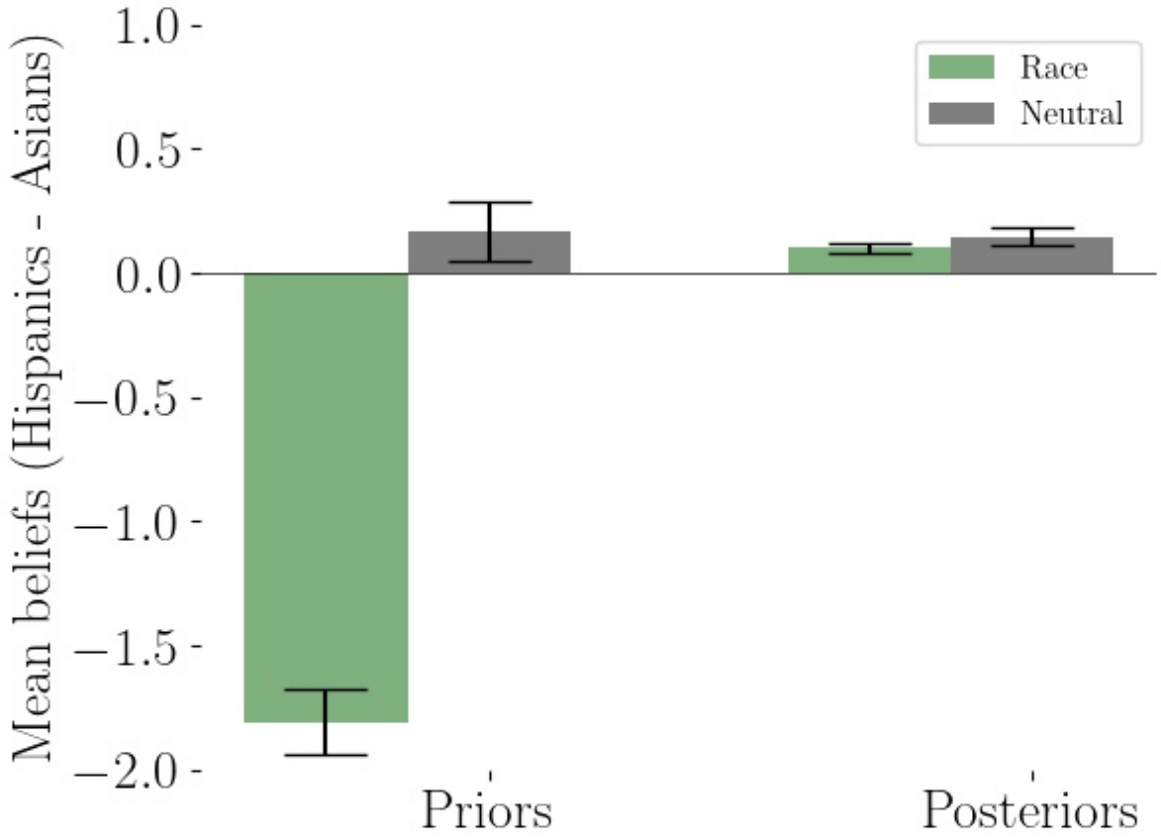
Beliefs - Overview



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Experimental Design

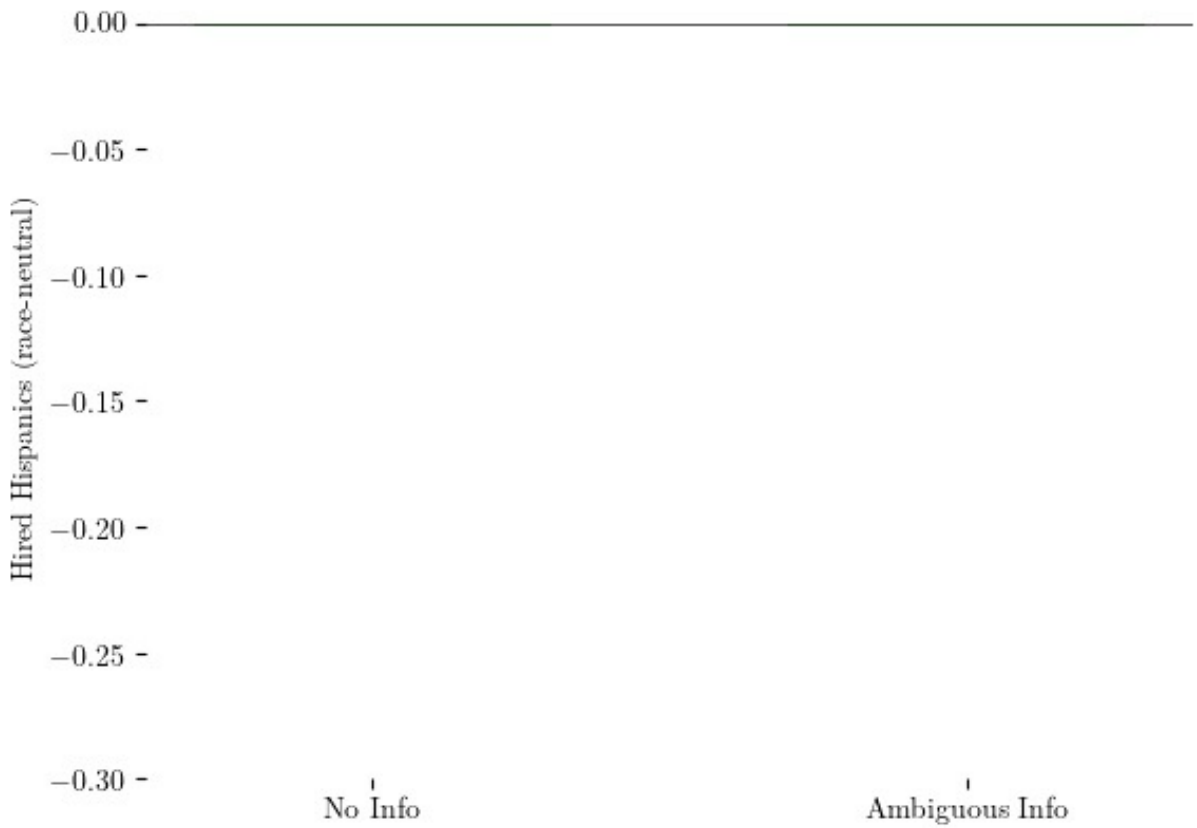
Results

Beliefs

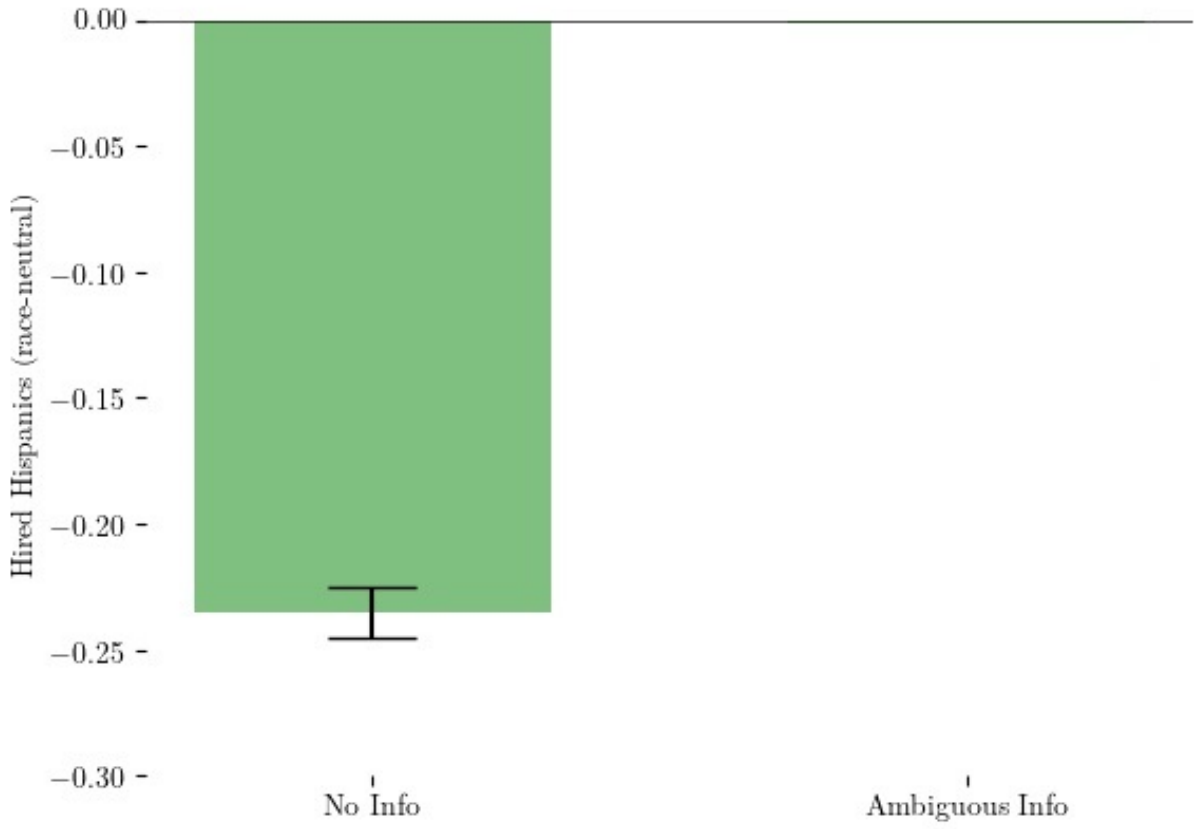
Hiring under wiggle room

Debiasing – Reducing Information Ambiguity

Hiring – Discrimination under Wiggle Room



Hiring – Discrimination under Wiggle Room



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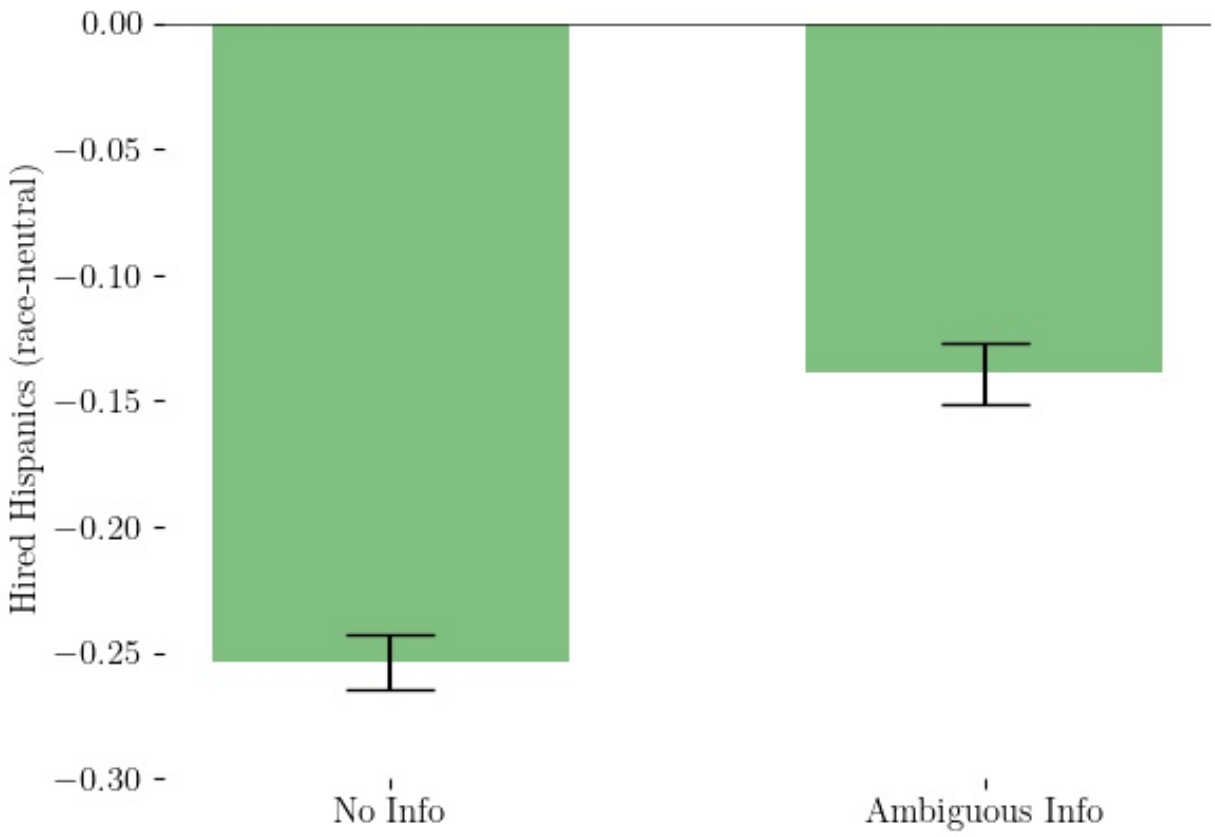


▸ regression table

Hiring – Information Behavior under Wiggle Room

	(1) 2nd signal	(2) number of signals	(3) follow signals
race * hispanic	0.1046^{***}	0.5161^{**}	-0.1881^{***}
	(*0.0361*)	(*0.2345*)	(*0.0403*)
race	-0.0667	-0.3422	0.0596^{***}
	(*0.0427*)	(*0.2804*)	(*0.0201*)
hispanic	-0.0390	-0.2801	-0.0695^{***}
	(*0.0255*)	(*0.1705*)	(*0.0268*)
Observations	3290	3290	3290
Baseline mean dep. var.	0.5483	3.6246	0.8676

Notes: In all models employers receive ambiguous information signals. In column (1) the dependent variable is a dummy equal to 1 if a second signal was acquired and 0 otherwise. In column (2) the dependent variable is the number of requested signals. In column (3) the dependent variable is a dummy equal to 1 if a decision was in line with the majority of acquired signals in that decision and 0 otherwise. 'race' is the treatment dummy and equal to 1 if the decision was made in treatment group race (showing the respective races) and 0 otherwise. 'Hispanic' is a dummy equal to 1 if the initial signal (model 1 & 2) or the majority of all considered signals in a decision (model 3) suggests to hire the Hispanic worker and 0 if it suggests to hire the Asian worker. Standard errors are clustered at the individual level and displayed in parentheses. *p< 0.1, **p< 0.05, ***p< 0.01.

What do we know at this point? What to we expect?

We know:

- Employers discriminate against Hispanics when they receive group-level or ambiguous individual-level information
- Employers systematically search for and process provided information

We expect:

- Decreasing the wiggle room to process information will debias motivated discriminators and...
  - ...reduce systematic information processing.
  - ...reduce discrimination.

Background

Experimental Design

Results
- Beliefs
- Hiring under wiggle room

Debiasing – Reducing Information Ambiguity

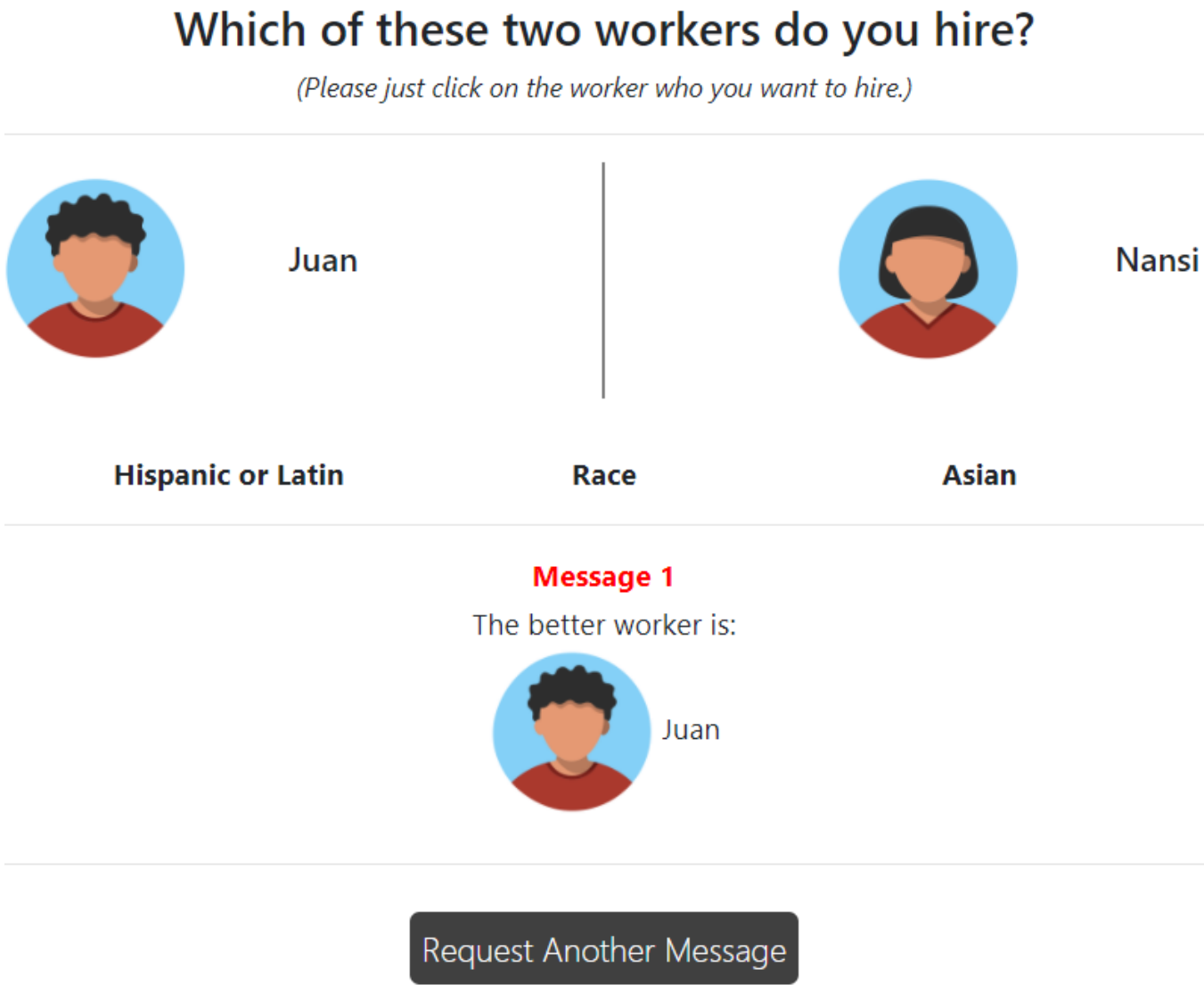
Debiasing Idea

Reducing ambiguity of information reduces "wiggle room" of employers to interpret information.

Two approaches:

- Approach 1: 60% True News vs. 40% False News
  (uncertain information)
- Approach 2: Past performance information (GPA, grades, skills, ...)
  (tangible information)

Experiment 3: Hiring stage - race



Experiment 3: Hiring stage - neutral

Which of these two workers do you hire?

(Please just click on the shape of the worker who you want to hire.)

- worker

- worker

Diamond **Group** **Triangular**

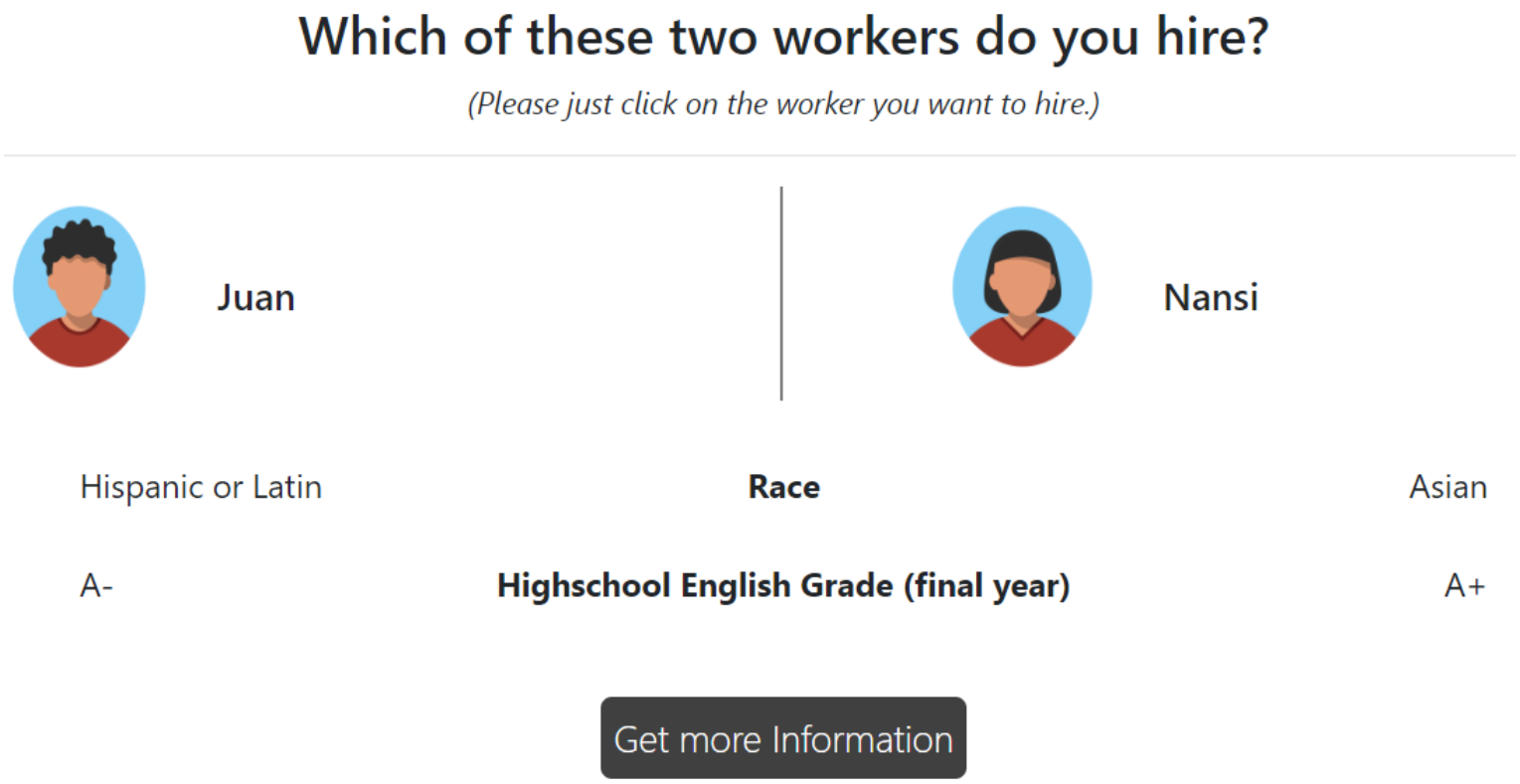
Message 1

The better worker is:

- worker

Request Another Message

Experiment 4: Hiring stage - race



Experiment 4: Hiring stage - neutral

Which of these two workers do you hire?

(Please just click on the shape of the worker you want to hire.)

- worker

- worker

Diamond	**Group**	Triangular
A-	**Highschool English Grade (final year)**	A+

Get more Information

Debiasing – Belief Formation under Uncertain Information

	Uncertain Information			Uncertain - Ambiguous
	(1) 2nd signals	(2) number of signals	(3) follow signals	(4) follow signals
race * hispanic	0.0898	0.6035	−0.0608	0.1274**
	(*0.0614*)	(*0.5416*)	(*0.0494*)	(*0.0638*)
race	0.0083	0.2919	0.0456*	
	(*0.0800*)	(*0.7498*)	(*0.0261*)	
hispanic	−0.0141	0.1543	−0.0292	
	(*0.0462*)	(*0.3632*)	(*0.0320*)	
Observations	756	756	756	
Baseline mean dep. var.	0.7313	5.4478	0.9292	

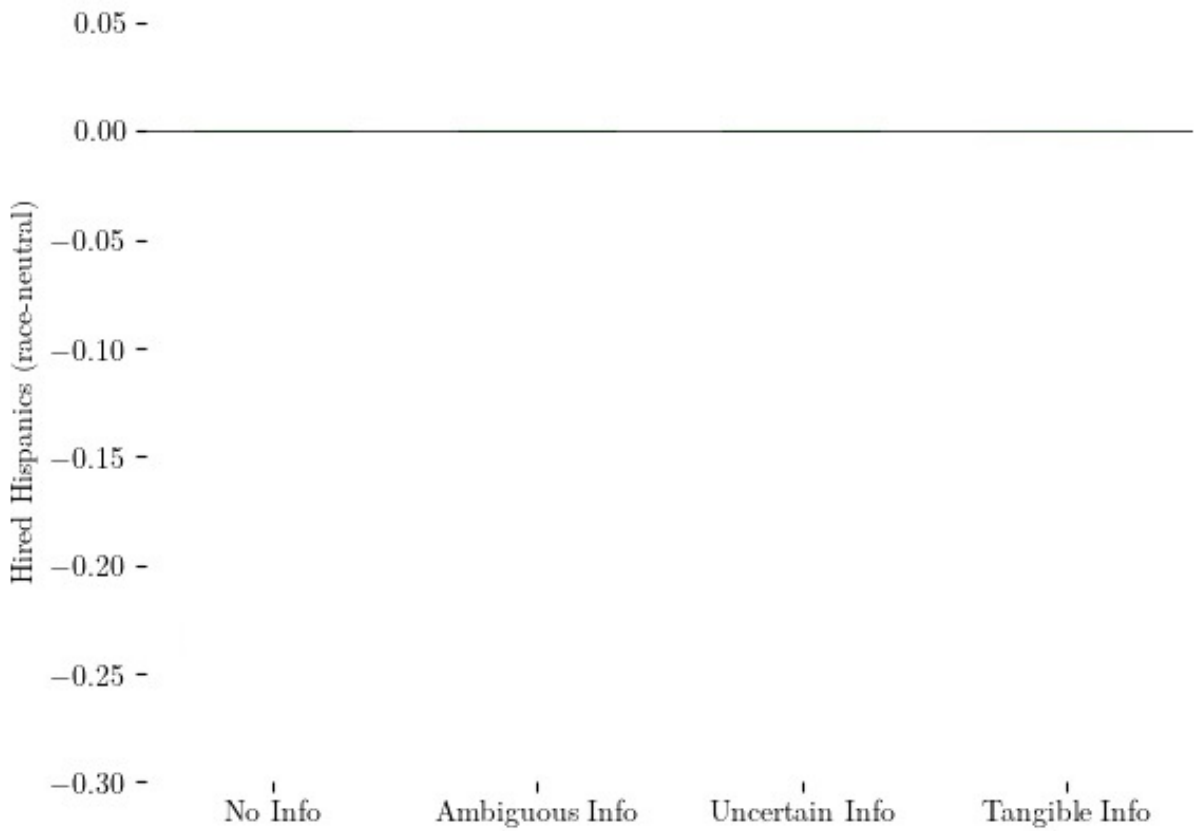
Notes: In all models employers receive uncertain information signals. *2nd signal*, is a dummy equal to 1 if an employer requested a second signal. *number of signals*, counts the number of requested signals. *follow signals*, is a dummy equal to 1 if an employer's hiring decision followed the majority of considered signals. The first row (in grey) repeats the results from the 'Ambiguous Information' experiment to provide a comparison. *difference* refers to the differences in coefficients for *follow signals*. *race* is the treatment dummy equal to 1 if the decision was made in treatment group race. *hispanic* is a dummy equal to 1 if the initial signal (columns 1 and 2) or the majority of all considered signals (column 3) suggests to hire the Hispanic worker. Units of observation are decision specific. Standard errors are clustered at the individual level and displayed in parentheses. *p< 0.1, **p< 0.05, ***p< 0.01.

Debiasing – Belief Formation under Tangible Information

	Tangible Information			Tangible - Ambiguous
	(1) 2nd signals	(2) number of signals	(3) follow signals	(4) follow signals
race * hispanic	0.0260	0.5709	−0.0206	0.1675***
	(*0.0318*)	(*0.3937*)	(*0.0492*)	(*0.0620*)
race	0.0381	0.8460	−0.0328	
	(*0.0374*)	(*0.5347*)	(*0.0287*)	
hispanic	0.0051	0.1056	−0.0860**	
	(*0.0235*)	(*0.3137*)	(*0.0365*)	
Observations	742	742	742	
Baseline mean dep. var.	0.9135	5.5240	0.8894	

Notes: In all models employers receive tangible information signals. *2nd signal*, is a dummy equal to 1 if an employer requested a second signal. *number of signals*, counts the number of requested signals. *follow signals*, is a dummy equal to 1 if an employer's hiring decision followed the majority of considered signals. The first row (in grey) repeats the results from the 'Ambiguous Information' experiment to provide a comparison. *difference* refers to the differences in coefficients for *follow signals*. *race* is the treatment dummy equal to 1 if the decision was made in treatment group race. *hispanic* is a dummy equal to 1 if the initial signal (columns 1 and 2) or the majority of all considered signals (column 3) suggests to hire the Hispanic worker. Units of observation are decision specific. Standard errors are clustered at the individual level and displayed in parentheses. *p< 0.1, **p< 0.05, ***p< 0.01.

Discrimination Overview



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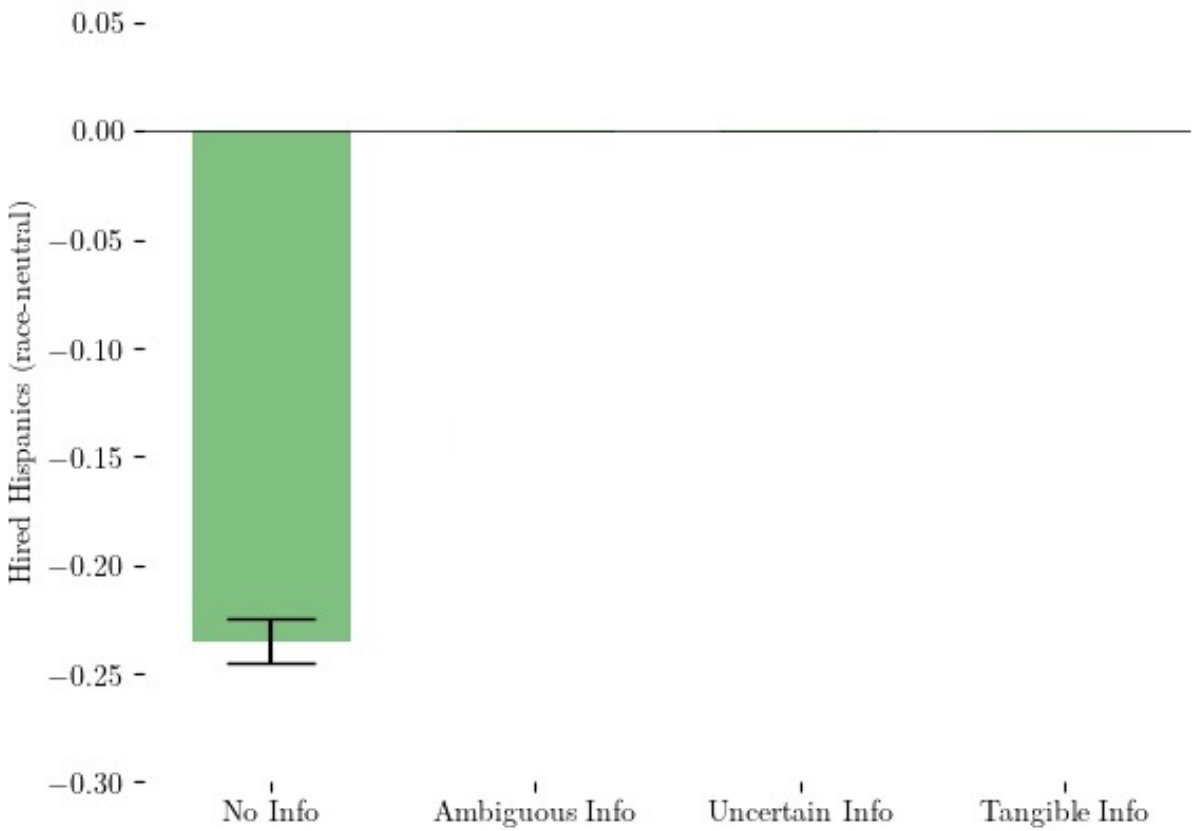

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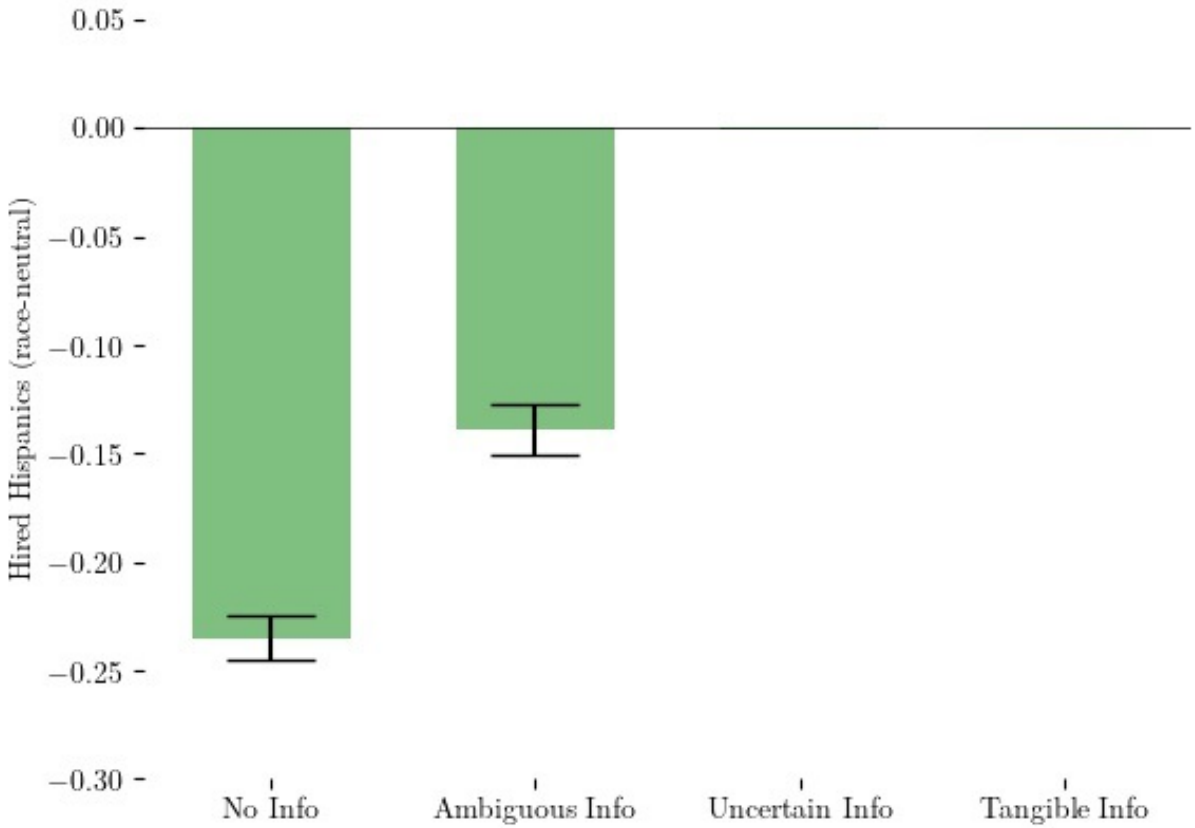

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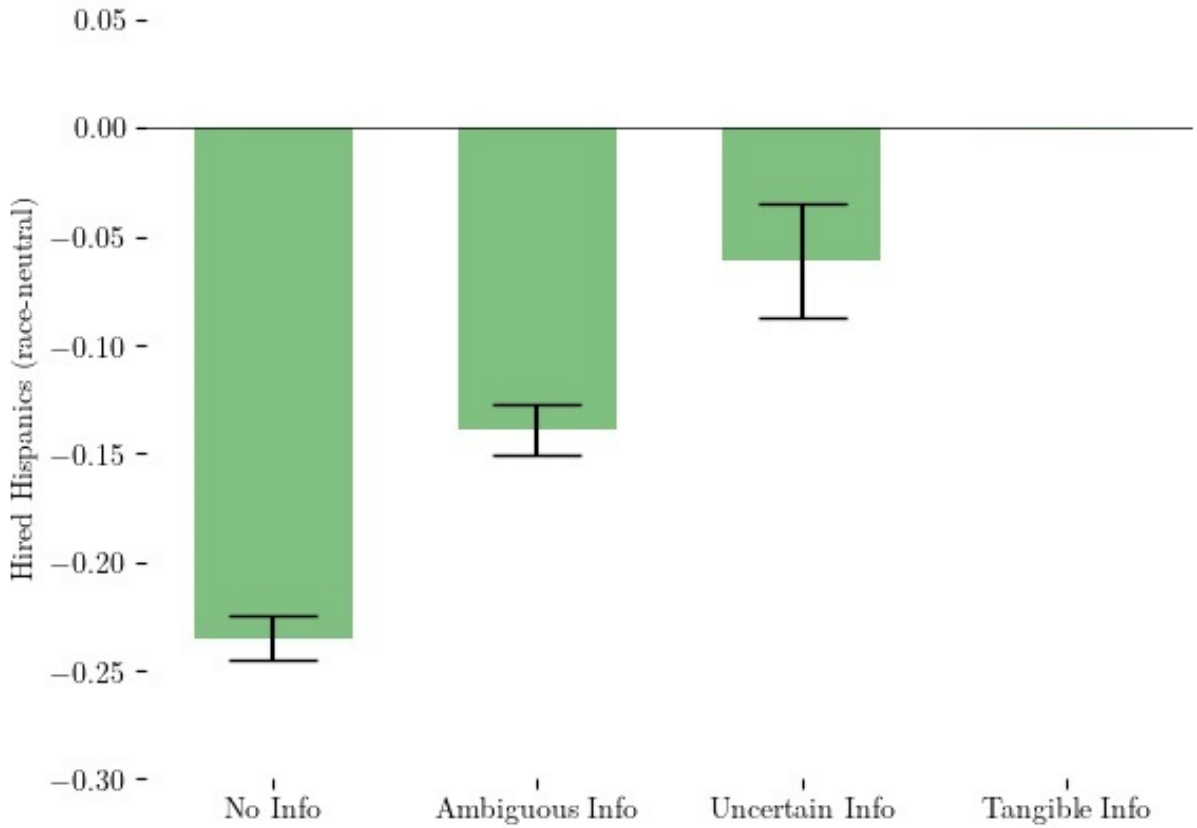

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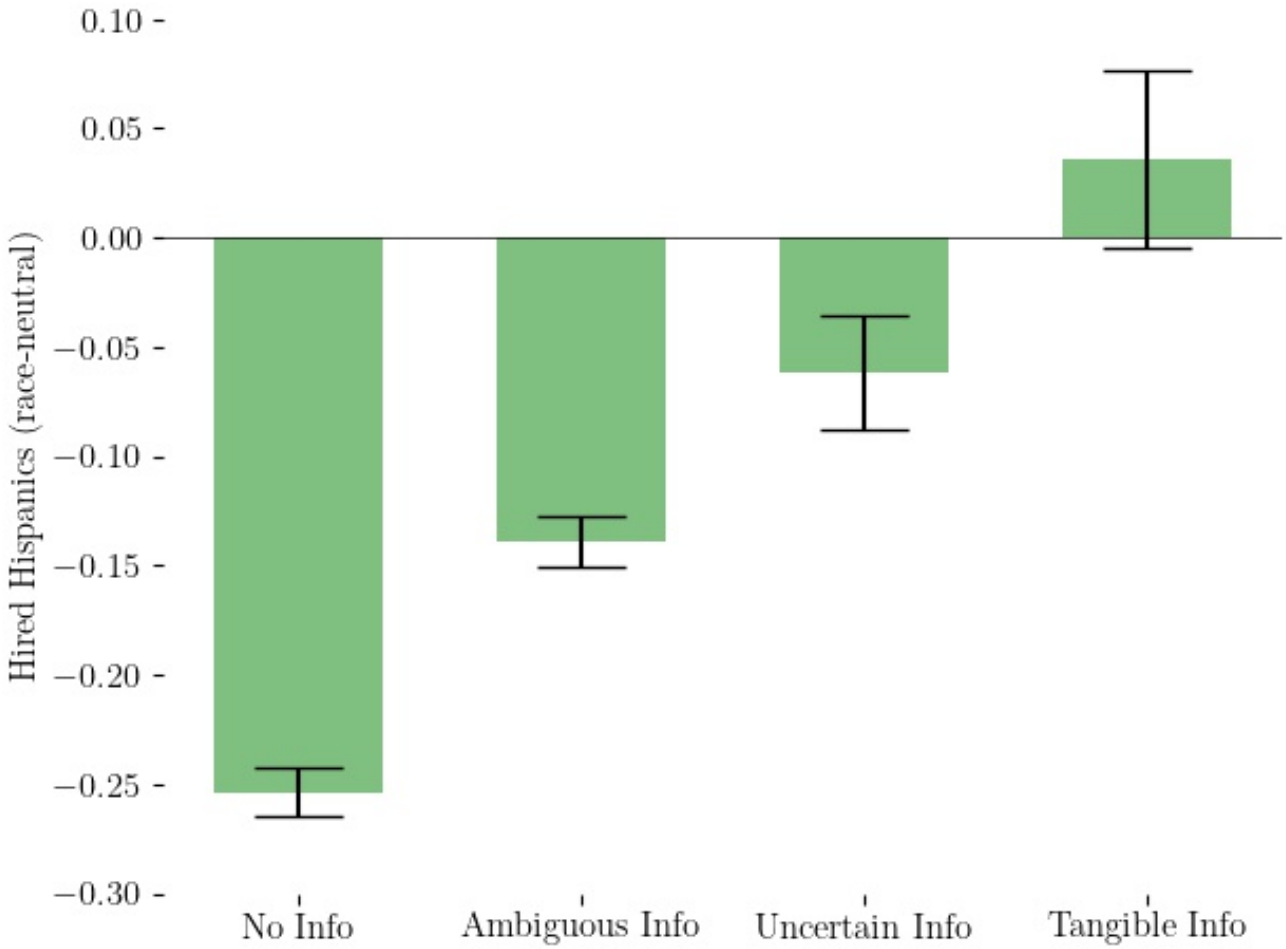


▸ regression table discrimination comparison

Conclusion

- What looks like taste-based discrimination might be discrimination based on motivated reasoning
- Motivated discriminators use wiggle room to process information in line with their motive
- Updating beliefs with group-level information leaves too much wiggle room to fight discrimination
- Decreasing wiggle room with individual-level information can decrease discrimination

References

Arrow, K. J. (1973). "Innovation and Intellectual Property Rights". Discrimination in Labor Markets. Ed. by O. Ashenfelter and A. Rees. Princeton NJ: Princeton University Press.

Becker, G. S. (1957). The economics of discrimination. Oregon State monographs: Studies in economics, University Press.

Bohren, J. A., K. Haggag, A. Imas, and D. G. Pope (2019). Inaccurate statistical discrimination. Tech. rep. National Bureau of Economic Research.

Fershtman, C. and U. Gneezy (2001). "Discrimination in a segmented society: An experimental approach". The Quarterly Journal of Economics 116.1, pp. 351–377.

Phelps, E. S. (1972). "The statistical theory of racism and sexism". American economic review 62.4, pp. 659–661.

Backup

Belief elicitation:

- elicitation of prior beliefs
- elicitation of posterior beliefs

Belief distributions:

- prior belief distributions
- posterior belief distributions

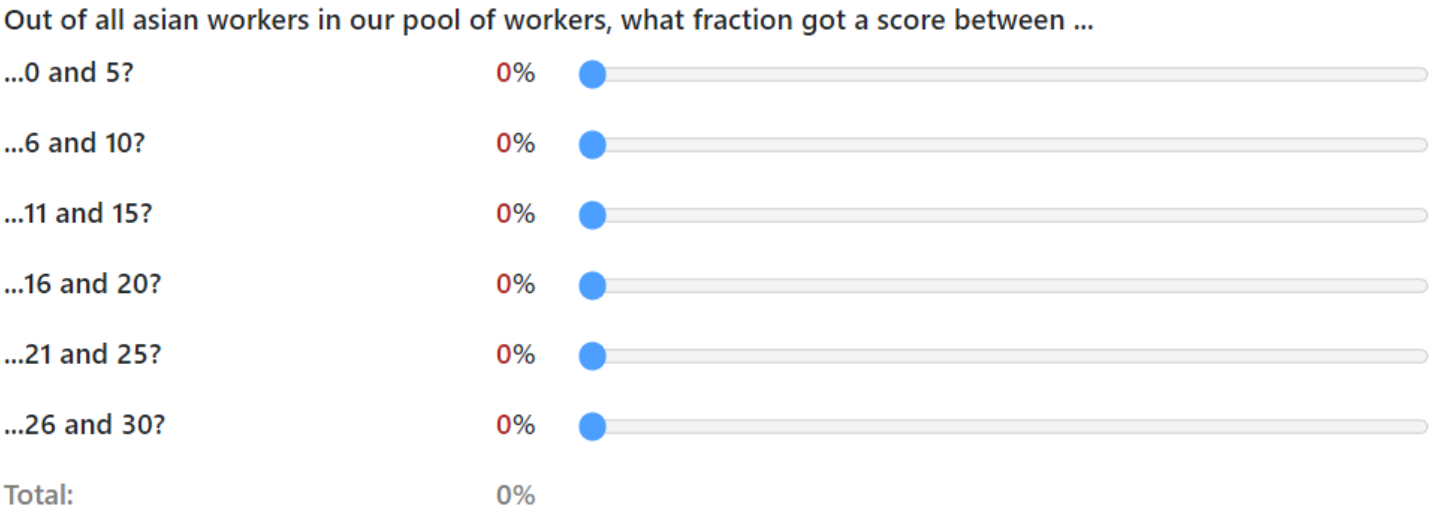
Regression table on discrimination in experiments 1 & 2:

- regression table discrimination under wiggle room

Regression table on discrimination in all experiments:

- regression table discrimination comparison

Belief stage - Priors race



▸ back to design ▸ back to master

Belief stage - Priors neutral

Out of all ▲-workers in our pool of workers, what fraction got a score between ...

...0 and 5?	0%	
...6 and 10?	0%	
...11 and 15?	0%	
...16 and 20?	0%	
...21 and 25?	0%	
...26 and 30?	0%	
Total:	0%	

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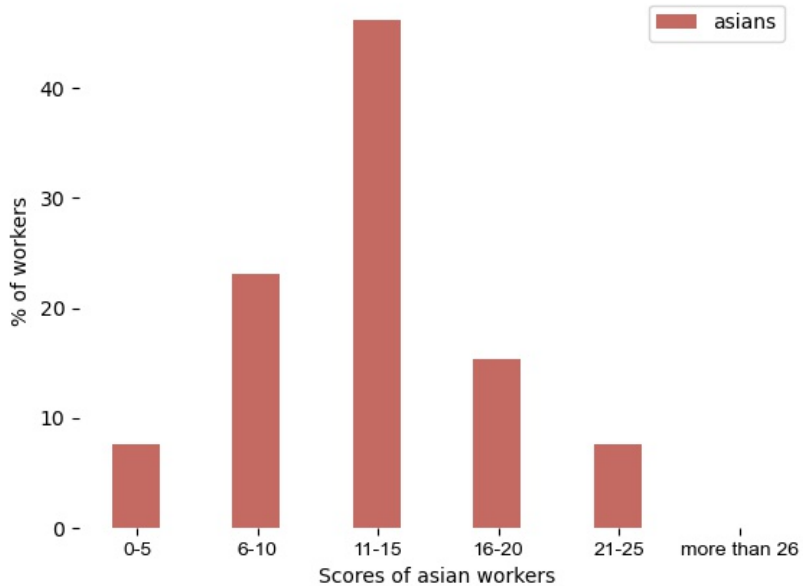
Belief stage - Posteriors race

This graph shows the scores of all asian workers in our sample.



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...26 and 30?	0%
Total:	0%

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Belief stage - Posteriors neutral

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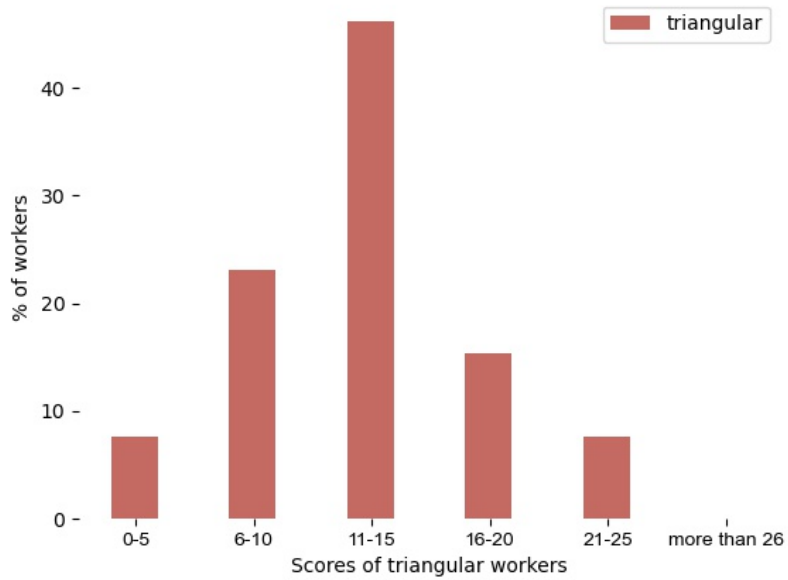

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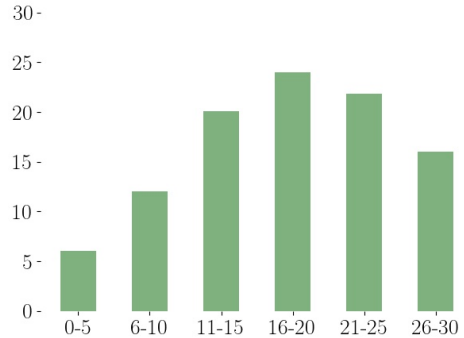
...26 and 30?	0%
Total:	0%

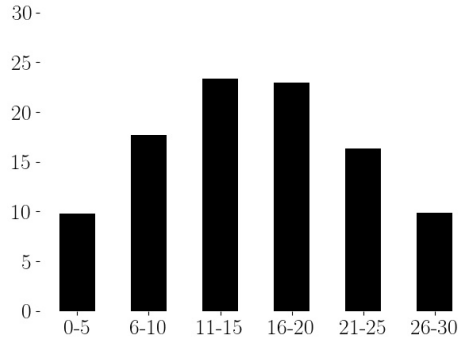
▸ back to design ▸ back to master

Beliefs – Prior distributions

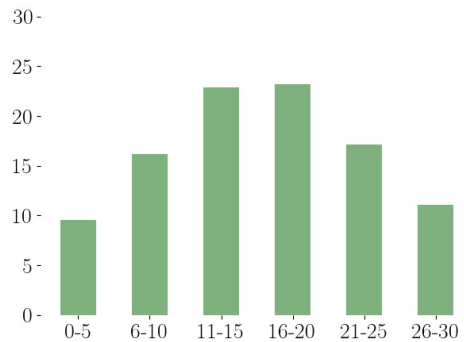
(a) Asian (Race)



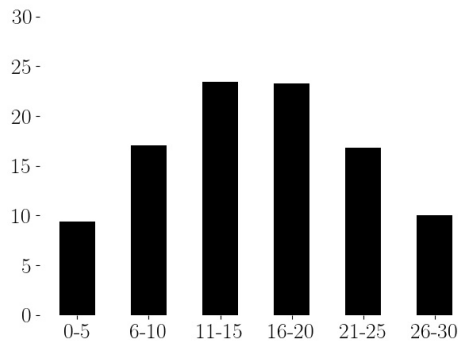
(b) Asian (Neutral)



(c) Hispanic (Race)



(d) Hispanic (Neutral)

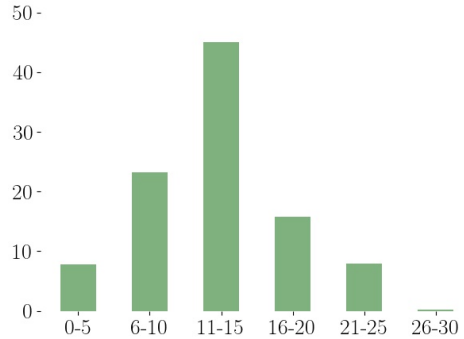


Notes: Figures (a) and (b) show the employers' belief distributions about the productivities of Asian workers before the group-level information update in group Race and group Neutral, respectively, figures (c) and (d) show the employers' belief distributions about the productivities of Hispanic workers after the group-level information update in group Race and group Neutral, respectively.

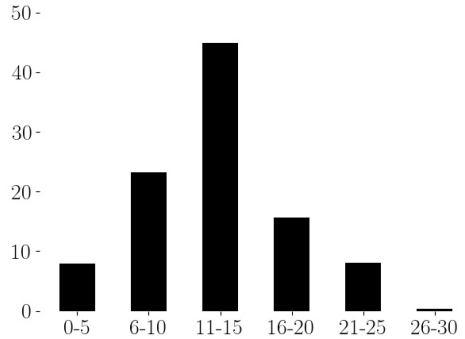
▸ back to beliefs ▸ back to master

Beliefs – Posterior distributions

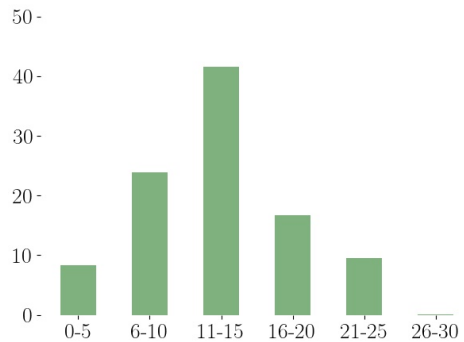
(a) Asian (Race)



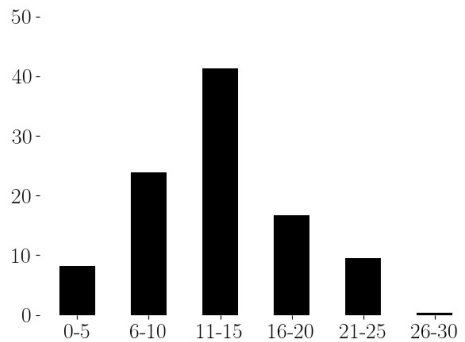
(b) Asian (Neutral)



(c) Hispanic (Race)



(d) Hispanic (Neutral)



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▸ back to beliefs ▸ back to master

Results – Discrimination under Wiggle Room

Dependent variable	hired Hispanic	
	no info	ambiguous info
race	-0.2353^{***}	-0.1392^{***}
	(*0.0285*)	(*0.0229*)
Observations	3633	3290
Baseline mean dep. var.	0.5064	0.4994

Notes: In column (1) employers did not receive any individual-level information regarding the two workers, in column (2) they received ambiguous information. The dependent variable in both models is a dummy equal to 1 if the Hispanic worker was hired and 0 if the Asian worker was hired. 'race' is the treatment dummy and equal to 1 if the decision was made in treatment group race (showing the respective races) and 0 otherwise. Standard errors are clustered at the individual level and displayed in parentheses. *p< 0.1, **p< 0.05, ***p< 0.01.

▸ back to figure ▸ back to master

Discrimination Overview

	Dep. var: hired hispanic			
	(1) no info	(2) ambiguous info	(3) uncertain info	(4) tangible info
race	-0.2536^{***}	-0.1392^{***}	-0.0614	0.0281
	(*0.0301*)	(*0.0229*)	(*0.0408*)	(*0.0302*)
Observations	3178	3290	756	742
Baseline mean dep. var.	0.5022	0.4994	0.5230	0.4606

Notes: In column (1) employers did not receive any individual-level information regarding the two workers, in column (2) they received ambiguous information, in column (3) uncertain information, and in column (4) tangible information. The dependent variable in both models is a dummy equal to 1 if the Hispanic worker was hired and 0 if the Asian worker was hired. 'race' is the treatment dummy and equal to 1 if the decision was made in treatment group race (showing the respective races) and 0 otherwise. Standard errors are clustered at the individual level and displayed in parentheses. *p< 0.1, **p< 0.05, ***p< 0.01.

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