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Can signaling assimilation mitigate hiring discrimination? Evidence from a survey experiment

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Supplementary material

Experimental Protocol

Table S1: Experimental protocol

Contact

Email	Survey link and request to participate sent to the central organization on 23 June 2016
Email sent out by the regional sections	Region Zurich sent the link on 26 June 2016 and a reminder on 26 July 2016 Region Bern sent the link on 30 June 2016 Region Geneva sent the link on 27 June 2016 Region Basel sent the link on 30 September 2016 Region Vaud sent the link on 28 September 2016

Online survey presentation

First screen	Description of the 1 st job and tasks (see Table A3)
Second screen	Presentation of 1 st vignette for the 1 st job (see Table A4)
Third screen	Presentation of 2 nd vignette for the 1 st job
Fourth screen	Presentation of the 3 rd vignette for the 1 st job
Fifth screen	Presentation of the 4 th vignette for the 1 st job

This procedure was repeated for the other two jobs. The order of the jobs and – within each job – the order of the vignette was randomized.

Table S2: Presentation of the vacancy

Occupation	Description of tasks for the different occupations
Accountant	
German	Stellen Sie sich vor, Sie haben in Ihrem Unternehmen eine freie Stelle als Buchhalter/in zu besetzen. Die Aufgaben umfassen folgende Bereiche: Führen der laufenden Geschäfte der Betriebs- und Finanzbuchhaltung, Erstellen von Monats- und Quartalsberichten sowie Erfolgs- und Jahresrechnungen, Ermitteln und Visualisieren von Kennzahlen. Sie sind in den Rekrutierungsprozess involviert und werden gebeten, die nachfolgend beschriebenen Kandidaten zu evaluieren. Alle Kandidaten haben die obligatorische Schulzeit in der Deutschschweiz abgeschlossen, sind zurzeit seit 6 Monaten arbeitslos und haben ihre frühere Stelle aufgrund der Schliessung des Betriebes verloren.
French	Imaginez que vous avez dans votre entreprise une place vacante pour un/une comptable à pourvoir. Le cahier des charges est le suivant: Assurer la gestion courante des finances et de la comptabilité, Etablir des rapports mensuels et trimestriels ainsi que les bilans et les comptes annuels de profits et pertes, établir et analyser des indicateurs. Vous êtes impliqué dans le processus de recrutement et êtes invité à évaluer les candidats décrits ci-dessous. Tous les candidats ont terminé leur scolarité obligatoire en Suisse romande, sont actuellement au chômage depuis 6 mois et ont perdu leur ancien poste suite à la fermeture (cessation d'activité) de leur entreprise.
Translation	Imagine you have an open position for an accountant in the company where you work. The job tasks are the following: direct the affairs of factory and financial accounting, deliver monthly and quarterly reports and income and annual financial statements, and calculate and visualize key performance indicators. You are involved in the hiring process and are asked to evaluate the subsequently described candidates. All candidates have completed their education in the <i>German/French-speaking (depends on language in which survey was conducted)</i> part of Switzerland, have been unemployed for a period of six months and lost their previous positions due to the closure of the firms where they previously worked.
HR assistant	
German	Stellen Sie sich bitte vor, Sie haben in Ihrem Unternehmen eine freie Stelle als HR-Assistenten / HR-Assistentin zu besetzen. Die Aufgaben umfassen folgende Bereiche: administrative Aufgaben im Bereich Human Resources, Erteilen von Auskünften an Bewerbende, Vorselektion der Dossier, Abklären von Salärstufen und Sozialleistungen, Ausarbeiten der Arbeitsverträge. Sie sind in den Rekrutierungsprozess involviert und werden gebeten, die nachfolgend beschriebenen Kandidaten zu evaluieren. Alle Kandidaten haben die obligatorische Schulzeit in der Deutschschweiz abgeschlossen, sind zurzeit seit 6 Monaten arbeitslos und haben ihre frühere Stelle aufgrund der Schliessung des Betriebes verloren.
French	Imaginez que vous avez dans votre entreprise une place vacante d'un-e assistant-e RH à pourvoir. Le cahier des charges est le suivant: tâches administratives dans le domaine des ressources humaines, fournir des informations aux candidats, pré-sélection des candidats, clarifier le niveau de salaire et les avantages sociaux, établissement des contrats de travail. Vous êtes impliqué dans le processus de recrutement et êtes invité à évaluer les candidats décrits ci-dessous. Tous les candidats ont terminé leur scolarité obligatoire en Suisse romande, sont actuellement au chômage depuis 6 mois et ont perdu leur ancien poste suite à la fermeture (cessation d'activité) de leur entreprise.
Translation	Imagine you have an open position for an HR assistant in the company where you work. The job tasks are the following: administrative tasks in human resources, furnish particulars to job applicants, preselection of job applications, settle wage and social contributions, and draft working contracts. You are involved in the hiring process and are asked to evaluate the subsequently described candidates. All candidates have completed their education in the <i>German/French-speaking (depends on language in which survey was conducted)</i> part of Switzerland, have been unemployed for a period of six months and lost their previous positions due to the closure of the firms where they previously worked.
Caretaker	
German	Stellen Sie sich bitte vor, Sie haben in Ihrem Unternehmen eine freie Stelle als Hauswart/in zu besetzen. Die Aufgaben umfassen folgende Bereiche: Reinigung des Treppenhauses (inkl. Fenster, Rahmen, Geländer), kleinere Reparaturen (Glühbirnen auswechseln etc.), leichte Gartenarbeiten (Rasen mähen, Hecke schneiden, Unkraut jäten). Sie sind in den Rekrutierungsprozess involviert und werden gebeten, die nachfolgend beschriebenen Kandidaten zu evaluieren. Alle Kandidaten haben die obligatorische Schulzeit in der Deutschschweiz abgeschlossen, sind zurzeit seit 6 Monaten arbeitslos und haben ihre frühere Stelle aufgrund der Schliessung des Betriebes verloren.
French	Imaginez que vous avez dans votre entreprise une place vacante d'un-e concierge à pourvoir. Le cahier des charges est le suivant: nettoyer la cage d'escalier (y compris les fenêtres, les cadres, la rampe), petites réparations (remplacement des ampoules, etc.), travaux faciles de jardinage (tonte des pelouses, coupe des haies, désherbage). Vous êtes impliqué dans le processus de recrutement et êtes invité à évaluer les candidats décrits ci-dessous. Tous les candidats ont terminé leur scolarité obligatoire en Suisse Romande, sont actuellement au chômage depuis 6 mois et ont perdu leur ancien poste suite à la fermeture (cessation d'activité) de leur entreprise.
Translation	Imagine you have an open position for a building caretaker in the company where you work. The job tasks are the following: clean the stairway, do small repair work (change light bulbs, etc.), and garden (cut the grass, clip hedges, and clear weeds). You are involved in the hiring process and are asked to evaluate the subsequently described candidates. All candidates have completed their education in the <i>German/French-speaking (depends on language in which survey was conducted)</i> part of Switzerland, have been unemployed for a period of six months and lost their previous positions due to the closure of the firms where they previously worked.

Bitte geben Sie für diesen Kandidaten die Wahrscheinlichkeit an, dass Sie diesen zu einem Vorstellungsgespräch einladen würden (0=sehr unwahrscheinlich, 10=sehr wahrscheinlich), sowie den Lohn, welchen Sie für angemessen halten.

Kandidat/in Hauswartung:

- Bewerbungsvorgang:* Herr Pedro Martinez wird Ihnen vom RAV empfohlen.
Persönliche Angaben: Er ist 45 Jahre alt, hat keine Kinder und ist verheiratet.
Ausbildung: Er verfügt über eine Berufslehre (EFZ) als Fachmann Betriebsunterhalt.
Arbeitserfahrung: Er hat unter anderem 8 Jahre Erfahrung als Hauswart in der Privatwirtschaft.
Sprachkenntnisse: Herr Martinez spricht Deutsch.
Hobby: Er engagiert sich in seiner Freizeit beim Rotkreuz-Fahrdienst.
Weitere Angaben: Parallel zu seiner Arbeitssuche hat er eine Teilzeitstelle als Aushilfe an der Kasse eines Detailhandelsgeschäfts angenommen.

	Einladen											monatlicher Lohn
	0	1	2	3	4	5	6	7	8	9	10	Bruttolohn, 100%
Einschätzung	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="text"/>



Figure S1: Vignette example (implementation in Qualtrics)

Table S3: Presentation of the candidate

Translation of the vignette:

Please indicate the probability that you would invite this candidate for a job interview (0=very unlikely, 10=very likely) as well as the salary that you believe is appropriate.

Candidate: Building Caretaker

Channel of application Mister Pedro Martinez is recommended to you by PES
Personal information He is 45 years old, has no kids and is married
Education He has a vocational training degree as a building maintenance specialist
Experience He has 8 years of experience as caretaker in the private sector
Language Mister Martinez speaks German
Hobby In his leisure time, he volunteers as a driver for the Swiss Red Cross
Additional information While looking for a job, he is working part-time as a cashier at a supermarket.

Invitation											Monthly gross salary, 100%
0	1	2	3	4	5	6	7	8	9	10	_____
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Experimental robustness

Table S4: Experimental Robustness - Correlation between vignette dimensions

Since the whole vignette universe consists of 307,200 combinations, a D-efficient sub-sample (D-efficiency = 90.07) of 720 vignettes was drawn from the total vignette universe. A d-efficient design maximizes the orthogonality of the profiles and specifies which parameters you want to be able to identify, as some dimensions will be confounded when choosing only a sub-sample of vignettes (Auspurg and Hinz 2015). Our design allows us to estimate all two-way interactions and two three-way interactions. The 720 vignettes were blocked into 180 blocks of 4 vignettes each for each job. These blocks were then randomly distributed to the survey participants. Every participant rated 3 blocks (one for each job) of 4 vignettes, for 12 vignettes. Since we draw a sub-sample of vignettes, the vignettes dimensions are correlated with each other.

Vignette dimensions

	1	2	3	4	5	6	7	8	9	10	11
1 ALMP	1										
2 Channel	0.020	1									
3 Gender	0.014	0.009	1								
4 Age	0.019	0.012	0.011	1							
5 Children	0.012	0.011	0.026	0.015	1						
6 Civil Status	0.021	0.008	0.014	0.029	0.009	1					
7 Civic engagement	0.015	0.015	0.011	0.019	0.011	0.006	1				
8 Education	0.013	0.016	-0.000	0.019	0.006	0.014	0.015	1			
9 Nationality	0.014	0.012	0.008	0.012	0.019	0.012	0.024	0.006	1		
10 Experience	0.006	0.021	0.000	0.010	0.013	0.008	0.006	-0.006	0.013	1	
11 Language	0.020	0.009	0.000	0.019	0.010	0.004	0.020	0.000	0.015	-0.011	1

Note: All variables are categorical, Cramer's V is reported, all correlations are not statistically significant.

Table S5: Descriptive statistics of the respondents

Characteristics	Categories	Percentage (%)
Gender	Female:	62.79
	Male:	37.21
Age	Mean and standard deviation	45.83 (9.54)
Nationality	Swiss	87.16
	Italian	1.38
	German	2.75
	French	3.67
	Portuguese	0.69
	Spanish	0.46
	Serbia	0.23
	Others	3.67
Education	Apprenticeship	2.97
	Upper Secondary II vocational track	1.14
	Upper Secondary II general track	0.68
	Federal diploma	39.50
	Applied University	25.11
	University	29.00
Size of firm	Small (0-9 employees)	9.72
	Small to medium (10-49 employees)	6.90
	Medium to large (50-249 employees)	31.19
	Large (>249 employee)	52.19
Sector of firm	Gastronomy	1.07
	Baking and Insurance	10.81
	Construction	2.44
	Real Estate and Consulting	11.42
	Health	6.54
	Retail	5.94
	Chemistry and Synthetic	0.91
	Education	5.18
	Metal, Machine, Vehicles	7.61
	Electronics and Watches	3.20
	Public Administration	13.85
	Transportation	2.13
	Leather and Wood	0.46
	Other	28.46

Table S6: Experimental robustness

S6.A. Randomization					
Respondent characteristics	(1) Gender	(2) Year of birth	(3) Swiss citizenship	(4) Firm size	(5) Tertiary education
Spain [ref: Swiss]	0.02	-0.36	-0.01	0.01	0.02
Polish	-0.00	0.06	-0.01	0.04	0.04
Turkish	-0.02	-0.02	0.01	-0.12	0.02
Swiss-related activity [ref: none]	0.00	0.13	-0.01	0.11	-0.03
Migration-related activity	0.02	0.41	-0.03	0.08	-0.03
Native CH and other [ref: native]	-0.01	-0.52*	0.01	0.01	-0.00
Female [ref: male]	0.01	0.22	-0.01	-0.03	-0.01
Age 40 [ref: 35]	0.01	-0.24	-0.02	-0.13	0.01
Age 45	-0.01	-0.13	-0.00	0.17	-0.00
Age 50	0.02	-0.14	-0.00	-0.05	0.02
Age 55	0.01	-0.25	-0.01	0.06	0.01
Divorced [ref: married]	-0.02	0.33	0.02	-0.10	0.01
Single	-0.01	0.17	0.00	0.01	0.00
1 child [ref: no children]	-0.01	-0.06	0.01	-0.08	-0.02
2 children	0.02	-0.10	0.01	-0.08	0.00
3 children	0.01	-0.41	0.01	-0.14	0.01
General [ref: vocational]	-0.00	0.03	-0.01	0.04	-0.01
Private [ref: public]	0.01	0.09	-0.01	-0.02	0.01
Training [ref: no ALMP]	0.01	0.33	-0.04	0.00	-0.01
Subsidy	0.00	0.16	-0.03	-0.02	0.01
Adapted occupation	0.01	0.18	-0.04*	0.04	0.01
Non-adapted occupation	0.00	-0.10	-0.03	0.04	-0.00
Job	-0.03	1.12*	-0.01	0.08	0.01
Referral Employee [ref: advert]	-0.03	0.54	0.01	0.03	0.01
Unsolicited	-0.03	0.17	0.01	-0.04	0.02
Referral PES	-0.02	0.32	0.01	-0.03	0.03
HR [ref: accountant]	0.00	0.00	0.02	0.03	0.01
CG	0.00	0.01	0.02	0.02	0.01
Constant	0.38***	1969.76***	0.26***	5.60***	0.50***
Observations	5256	5232	6060	5948	6060

S6.B. Carryover effects	
	Rating ¹
Vignette number (1 to 12)	-0.04 (0.03)
Observations	5674

¹ covariate adjusted

* p<0.05 ** p<0.01 *** p<0.001

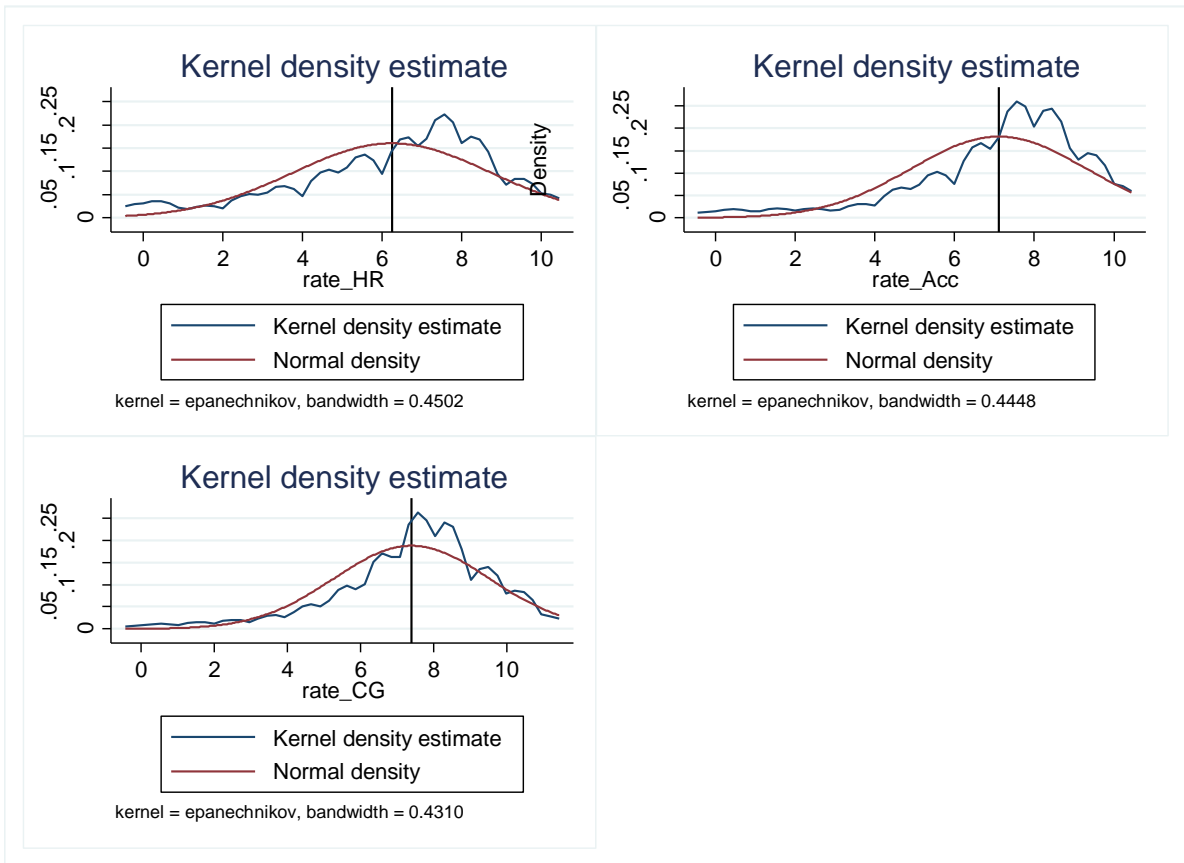


Figure S2: Distribution of the dependent variable rating

Results - Robustness

Table S7: Effect of vignette variables on probability to be invited for a job interview (0-10)

	(1)		(2)		(3)		(4)	
	Basic	se	Interaction occupation	se	Interaction gender	se	Interaction on age	Se
Nationality (Ref. Swiss)								
Spanish sounding name	-0.016	(0.064)	-0.023	(0.110)	-0.004	(0.089)	0.115	(0.144)
Polish sounding name	-0.189**	(0.064)	-0.197 ⁺	(0.111)	-0.149 ⁺	(0.089)	0.004	(0.143)
Turkish sounding name	-0.273***	(0.063)	-0.268*	(0.109)	-0.267**	(0.088)	-0.162	(0.140)
Hobby (Ref. no)								
Swiss hobby	0.165**	(0.055)	0.164**	(0.055)	0.164**	(0.055)	0.163**	(0.055)
Cultural hobby	0.017	(0.064)	0.018	(0.064)	0.017	(0.064)	0.011	(0.064)
2nd language (Ref. no)								
2 nd language	-0.006	(0.045)	-0.006	(0.045)	-0.007	(0.045)	-0.004	(0.045)
Education (Ref. general)								
Specific education	0.104*	(0.045)	0.103*	(0.045)	0.104*	(0.045)	0.101*	(0.045)
Experience (Ref. public)								
Private experience	0.023	(0.045)	0.025	(0.045)	0.023	(0.045)	0.024	(0.045)
ALMP (Ref. no)								
Training	0.262***	(0.077)	0.265***	(0.077)	0.261***	(0.077)	0.267***	(0.077)
Wage	0.177*	(0.078)	0.179*	(0.078)	0.176*	(0.078)	0.183*	(0.078)
Fitting occupational	0.047	(0.077)	0.049	(0.077)	0.048	(0.077)	0.058	(0.077)
Non-fitting occupational	-0.232**	(0.078)	-0.231**	(0.078)	-0.232**	(0.078)	-0.224**	(0.078)
Temporary job	-0.017	(0.077)	-0.018	(0.077)	-0.017	(0.077)	-0.013	(0.077)
Application (Ref. written)								
Referred social contact	0.335***	(0.064)	0.334***	(0.064)	0.337***	(0.064)	0.338***	(0.064)
Referred PES	0.178**	(0.063)	0.179**	(0.063)	0.178**	(0.063)	0.181**	(0.063)
Unsolicited application	0.188**	(0.063)	0.189**	(0.063)	0.189**	(0.063)	0.191**	(0.063)
Gender (Ref. Male)	0.023	(0.045)	0.023	(0.045)	0.052	(0.089)	0.024	(0.045)
Age (Ref. 35 years old)								
40 years old	-0.007	(0.071)	-0.007	(0.071)	-0.007	(0.071)	0.306*	(0.143)
45 years old	-0.038	(0.070)	-0.039	(0.070)	-0.038	(0.070)	-0.092	(0.140)
50 years old	-0.163*	(0.071)	-0.163*	(0.071)	-0.163*	(0.071)	-0.061	(0.142)
55 years old	-0.556***	(0.070)	-0.557***	(0.070)	-0.555***	(0.070)	-0.370**	(0.141)
Children (Ref. none)								
1 child	-0.025	(0.064)	-0.026	(0.064)	-0.026	(0.064)	-0.030	(0.064)
2 children	-0.093	(0.063)	-0.092	(0.063)	-0.093	(0.063)	-0.090	(0.064)
3 children	-0.127*	(0.064)	-0.127*	(0.064)	-0.126*	(0.064)	-0.131*	(0.064)
Civil Status (Ref. single)								
Married	0.017	(0.055)	0.017	(0.055)	0.016	(0.055)	0.008	(0.055)
Divorced	-0.201***	(0.055)	-0.201***	(0.055)	-0.201***	(0.055)	-	(0.055)
							0.204***	
Occupation (Ref. Accountant)								
HR	-0.856***	(0.053)	-0.810***	(0.108)	-0.856***	(0.053)	-	(0.053)
							0.854***	
Caretaker	0.246***	(0.054)	0.194 ⁺	(0.108)	0.246***	(0.054)	0.247***	(0.054)
Interaction terms								
Occupation (Ref. Swiss#Accountant)								
Spanish#HR			0.006	(0.155)				
Spanish#Caretaker			0.012	(0.156)				
Polish#HR			-0.017	(0.155)				
Polish#Caretaker			0.042	(0.156)				
Turkish#HR			-0.166	(0.153)				
Turkish#Caretaker			0.153	(0.153)				
Gender (Male#Swiss)								
Spanish#female					-0.025	(0.128)		
Polish#female					-0.080	(0.127)		
Turkish#female					-0.012	(0.125)		
Age (Ref. 35#Swiss)								

Spanish#40							-0.319	(0.205)
Spanish #45							0.122	(0.201)
Spanish #50							-0.128	(0.201)
Spanish #55							-0.339 ⁺	(0.203)
Polish#40							-0.501 [*]	(0.202)
Polish #45							-0.032	(0.201)
Polish #50							-0.189	(0.202)
Polish #55							-0.242	(0.199)
Turkish#40							-0.426 [*]	(0.198)
Turkish #45							0.116	(0.194)
Turkish #50							-0.094	(0.201)
Turkish #55							-0.174	(0.199)
Constant	7.068 ^{***}	(0.139)	7.069 ^{***}	(0.149)	7.054 ^{***}	(0.144)	6.959 ^{***}	(0.161)
lns1_1_1								
_cons	0.442 ^{***}	(0.034)	0.442 ^{***}	(0.034)	0.442 ^{***}	(0.034)	0.442 ^{***}	(0.034)
lnsig_e								
_cons	0.478 ^{***}	(0.010)	0.477 ^{***}	(0.010)	0.478 ^{***}	(0.010)	0.476 ^{***}	(0.010)
ll	-11385.714		-11382.76		-11385.480		-	
							11378.3	
aic	22833.427		22839.53		22838.961		22842.7	
			5				82	
Observations vignette	5674		5674		5674		5674	
Observation respondents								

Standard errors in parentheses

⁺ $p < 0.10$, ^{*} $p < 0.05$, ^{**} $p < 0.01$, ^{***} $p < 0.001$