Supplemental Information (SI)

SI Methods

Participants
Across all experiments, 1,294 total individuals participated (see **SI Appendix**, **Table S7** for demographic details). The research was approved by the Committee for Protection of Human Subjects at UC Berkeley. Participants provided written informed consent prior to participation.

For Study 1a, 304 individuals recruited through Amazon's Mechanical Turk (mTurk) participated in the Dictator Game, and for Study 1b, 252 individuals recruited through Amazon's Mechanical Turk provided independent ratings of the recipients. For Study 2, 193 undergraduates at the UC Berkeley participated in the standard version of the Dictator Game. For Study 3,228 individuals recruited through mTurk participated in a version of the Dictator Game in which payoffs were actually instantiated. For Study 4, 119 participants recruited through mTurk provided ratings for the full names used in the study measuring callback rates in the Canadian labor market (Oreopoulos, 2011). For Study 5, 199 participants recruited through mTurk provided ratings for the full names used in the study measuring response rates of professors to student mentoring requests (Milkman et al., 2015).

Overlap in participants across studies was minimal: Study 1b (independent ratings) included 9 individuals from Study 1a (DG hypothetical), 0 individuals from Study 2 (Berkeley undergraduates), and 12 individuals from Study 3 (DG real), making up less than 9% of the sample of Study 1b. Target sample size for each data collection was determined by calculating the number of participants needed to obtain approximately 50 observations per cell (e.g., 50 ratings of the lawyer's competence; 50 DG decisions toward the nurse at the 1:3 exchange rate).

See **Table S7** for detailed information about each sample, including demographics.

Behavioral Tasks
Dictator Game: Hypothetical Payment
In the dictator game with hypothetical payoffs (Studies 1a and 2), participants made 20 decisions about how to divide monetary resources between themselves and another person. On each trial, participants viewed the starting endowment (always "$10.00") along with a single piece of information about the recipient for that decision (e.g., "Occupation: Nurse") and multipliers on the amounts to be allocated to self and other (3:1, 1:1, or 1:3), which were included to manipulate the relative costs and benefits of giving. For example, under multipliers of "self: $ x 3, other: $ x 1" the amount kept for oneself is multiplied by 3 and the amount given to the counterpart is multiplied by 1. Twenty counterparts and exchange rates were chosen pseudo-randomly for each participant such that the possible counterpart-exchange rate combinations were distributed equally across participants. Trials were presented in random order. After completing all decisions, participants rated a subset of the counterparts' warmth and competence (12 randomly-selected targets per question per participant) in random order.

Dictator Game: Real Payment
The procedure of the dictator game with real payoffs to the participant (Study 3) was identical to that of Studies 1a and 2 except that participants were additionally instructed, prior to completing the DG, that one decision would be selected for actual implementation (for the participant only). Specifically, participants were informed that, following the experiment, the amount allocated to themselves on that decision would be divided by 10 and paid to them as a bonus.

Social Perception Ratings
Participants in Study 1b provided detailed ratings of the 20 targets on 31 attributes drawn from existing social perception frameworks (**Table S1**): warmth (sincere, tolerant, good-natured, trustworthy, friendly, helpful, moral, and understanding of others), competence (intelligent, efficient, skilled, confident, creative, capable, foresighted, and clever), experience (capacity for hunger, fear, pain, rage, desire, pleasure, pride, joy, and embarrassment), and agency (capacities for communication, emotion recognition, memory, telling right from wrong, planning, self-control).

For each attribute, each participant rated a randomly selected 4 counterparts, such that counterpart-attribute combinations were distributed equally across participants. Each participant also provided overall, summary ratings of counterparts' warmth, competence, agency, and experience, along with counterparts' wealth and likability (4 randomly-selected counterparts per question), before answering basic demographic questions. For attributes drawn from warmth and competence frameworks, participants were asked, "In your opinion, how [trait] is the typical person in each of these groups?" Participants made their ratings on 0-100 point scales, anchored by 0="not at all [trait]" and 100="extremely [trait]". For attributes drawn from the experience and agency frameworks, participants were asked, "In your opinion, how capable is the typical person in each of these groups of [attribute]?". Participants made their ratings on 0-100 point scales, anchored by 0="not at all" and 100="extremely".

Data Analysis
Factor Analysis of Social Perception Ratings
Principal components analysis (PCA) was performed on the ratings of the 31 attributes to isolate up to 10 factors followed by varimax rotation, using the "psych" package in R. This revealed that the top two factors corresponded to previously identified constructs of warmth (21% of variance; eigenvalue = 2.6; e.g., "friendly", "good-natured", "tolerant", "moral") and competence or agency (28% of variance; eigenvalue = 16.3; e.g., "confident", "skilled", "efficient", "intelligent"). The factor weights corresponding to the warmth and competence components are listed in **Table S1**. A plot of these components versus participants' overall ratings of recipients' warmth and competence shows that they are indeed highly correlated and supports our naming scheme (**Figure S6**). For use in computational modeling analyses, we calculated, for each recipient, an overall warmth and overall competence score, which consisted of the mean rating of the recipient on each of the 31 attributes, in each case multiplied by that attribute's loading on the relevant factor (warmth or competence). These scores were then normalized to have a mean of 0 and standard deviation of 1 and used throughout all models.

Computational Modeling: Dictator Game
Baseline Model: Choice behavior was captured using variants of the social preferences model from Charness & Rabin (2002). Decision makers are assumed to trade off between concern for own payoffs (π_s) and those of the counterpart (π_o). The relative weighting between these components is furthermore affected by whether the decision-maker is facing advantageous ($\pi_s > \pi_o$) or disadvantageous ($\pi_s < \pi_o$) inequity in relation to the counterpart. Choices under the baseline model are governed by the utility function:

$$U_{base}(\pi_s, \pi_o) = \begin{cases} \alpha \cdot \pi_o + (1-\alpha) \cdot \pi_s & if \pi_s \geq \pi_o \\ \beta \cdot \pi_o + (1-\beta) \cdot \pi_s & otherwise' \end{cases}$$

where α and β capture the weight on counterpart payoffs under advantageous and disadvantageous inequity, respectively.

Additive model: The additive-effect only model captures the situation where counterparts receive a constant bonus or penalty from their perceived warmth or competence. This is captured by allowing perceived warmth or competence to increase (decrease) the counterpart payoff π_o by an amount

proportional to warmth or competence. Choices under the additive model are governed by the utility function:

$$U_{add}(\pi_s, \pi_o, w_j, c_j) = \begin{cases} \alpha \cdot \pi_o^*(w_j, c_j) + (1-\alpha) \cdot \pi_s & if \pi_s \geq \pi_o^*(w_j, c_j) \\ \beta \cdot \pi_o^*(w_j, c_j) + (1-\beta) \cdot \pi_s & otherwise \end{cases},$$

where w_j and c_j denote counterpart j's perceived warmth and competence respectively. Thus $\pi_o^*(w_j, c_j) = \pi_o - \gamma_w \cdot w_j - \gamma_c \cdot c_j$ captures the warmth and competence adjusted counterpart payoff, with γ_w and γ_c parameters governing the magnitude of the additive effect.

Multiplicative model: The multiplicative-effect only model replaces the weights (α and β) participants place on counterpart payoffs as a linear function of warmth and competence. Choices under the multiplicative model are governed by the utility function:

$$U_{mult}(\pi_s, \pi_o, w_j, c_j) = \begin{cases} f(w_j, c_j) \cdot \pi_o + \left(1 - f(w_j, c_j)\right) \cdot \pi_s & if \pi_s \geq \pi_o \\ g(w_j, c_j) \cdot \pi_o + \left(1 - g(w_j, c_j)\right) \cdot \pi_s & otherwise \end{cases},$$

where $f(w_j, c_j) = \alpha_0 + \alpha_w \cdot w_j + \alpha_c \cdot c_j$ and $g(w_j, c_j) = \beta_o + \beta_w \cdot w_j + \beta_c \cdot c_j$, such that (α_w, β_w) are parameters governing the magnitude of the warmth effect under advantageous and disadvantageous inequity, respectively, (α_c, β_c) those for competence, and (α_o, β_0) the baseline advantageous and disadvantageous inequity parameters, respectively.

Full model: The full model combines the effects of both the additive and multiplicative models described above. Choices under the full model are governed by the utility function:

$$U_{multadd}(\pi_s, \pi_o, w_j, c_j) = \begin{cases} f(w_j, c_j) \cdot \pi_o^*(w_j, c_j) + \left(1 - f(w_j, c_j)\right) \cdot \pi_s & if \pi_s \geq \pi_o^*(w_j, c_j) \\ g(w_j, c_j) \cdot \pi_o^*(w_j, c_j) + \left(1 - g(w_j, c_j)\right) \cdot \pi_s & otherwise \end{cases},$$

where $f(w_j, c_j)$ and $g(w_j, c_j)$ are defined as in the multiplicative model above, and $\pi_o^*(w_j, c_j)$ is defined as in the additive model above.

Multiplicative interaction model: The multiplicative interaction model follows the multiplicative model above but adds a warmth-competence interaction term. Choices under the multiplicative interaction model are governed by the utility function:

$$U_{mult-int}(\pi_s, \pi_o, w_j, c_j) = \begin{cases} f(w_j, c_j) \cdot \pi_o + \left(1 - f(w_j, c_j)\right) \cdot \pi_s & if \pi_s \geq \pi_o \\ g(w_j, c_j) \cdot \pi_o + \left(1 - g(w_j, c_j)\right) \cdot \pi_s & otherwise \end{cases},$$

where $f(w_j, c_j) = \alpha_0 + \alpha_w \cdot w_j + \alpha_c \cdot c_j + \alpha_{wc} \cdot w_j \cdot c_j$ and $g(w_j, c_j) = \beta_o + \beta_w \cdot w_j + \beta_c \cdot c_j + \beta_{wc} \cdot w_j \cdot c_j$, such that $(\alpha_{wc}, \beta_{wc})$ are the parameters governing the magnitude of the warmth-competence interaction effect under advantageous and disadvantageous inequity, respectively. The remaining parameters are defined as in the multiplicative model described above.

Additive interaction model: The additive interaction model follows the additive model above but adds a warmth-competence interaction term. Choices under the additive interaction model are governed by the utility function:

$$U_{add-int}(\pi_s, \pi_o, w_j, c_j) = \begin{cases} \alpha \cdot \pi_o^*(w_j, c_j) + (1-\alpha) \cdot \pi_s & if \pi_s \geq \pi_o^*(w_j, c_j) \\ \beta \cdot \pi_o^*(w_j, c_j) + (1-\beta) \cdot \pi_s & otherwise \end{cases},$$

where $\pi_o^*(w_j, c_j) = \pi_o - \gamma_w \cdot w_j - \gamma_c \cdot c_j - \gamma_{wc} \cdot w_j \cdot c_j$ captures the warmth and competence adjusted counterpart payoff, with the γ_{wc} parameter governing the magnitude of the additive effect proportional to a warmth-competence interaction, and the remaining parameters defined as in the additive model described above.

Connecting utility to choices: Since the participants could only allocate a discrete number of tokens, we calibrated each of these subjective value functions to behavior using a softmax specification with inverse temperature parameter λ. That is, the probability of a participant choosing the dollar allocation (π_s, π_o) on a given trial is given by:

$$f(\pi_s, \pi_o) = \frac{exp(\lambda \cdot U(\pi_s, \pi_o))}{\sum_{k \in K} exp\left(\lambda \cdot U(\pi_s^k, \pi_o^k)\right)},$$

where (π_s^k, π_o^k) denotes the payoffs under the k-th feasible allocation given K tokens. We estimated the parameters using maximum likelihood estimation, by maximizing the log-likelihood of all the participant choices, for each model. In order to get at the global minimum, we used 100 random starting points for the optimization. Standard errors for the parameters were obtained from the inverse of the Fisher information matrix, which estimates the covariance matrix of the parameters.

Field Data Analysis

For both field datasets, we elicited perceptions of the warmth and competence of individuals with each name by asking raters on m Turk, averaging participants' responses for each dimension for each name. We performed multiple regression of response rates on elicited warmth and competence of each name as independent factors to predict the average resume callback rate or average email response rate for that name.

To validate our models, we held out some proportion of the targets, fit the model on the targets left, then used this fitted model to predict the outcome variable (resume callback rate, or email response rate) for the held out targets. For each study, we repeated this procedure 200 times, picking different names to hold out each time, for each proportion, in order to estimate the mean and variance of the out of sample R^2. As the samples of the out of sample R^2 are not independent, we use the variance of the samples as an upper bound on the estimate of the true variance of the mean.

SI RESULTS

Alternative Conceptualizations of Warmth and Competence

It is possible that warmth and competence are not the true drivers of behavior, but are instead correlated with other, more central variables. For example, it is possible that, instead of perceptions of "competence", participants may be relying on perceptions of the wealth of counterparts when making allocation decisions. Indeed, for our recipients, much of the variation in competence was explained by perceived wealth ($p < 10^{-7}$, r^2=0.82). This is consistent with the possibility that wealth could be a cue to competence, with counterparts generally perceived to be of higher competence often hailing from higher-paying occupations or from wealthier nations. However, we also found evidence that the effects of competence did not merely reduce to effects of wealth. Specifically, a model including warmth, wealth, and competence performed significantly better than a model including only warmth and wealth ($p < 10^{-6}$, likelihood-ratio test), suggesting a role for perceived competence in our findings over and above the role of perceived wealth. Ultimately, future studies that deliberately orthogonalize wealth and competence (as

well as other characteristics) are needed to better understand the particular contributions of the respective perceptions.

Controlling for participant demographics

We have shown that our model is robust to variations in recipient social group membership and in participant populations by predicting across recipients and across whole samples of participants (**Figure 4**). Because we observed modest associations between participant age and gender and our outcome measures (**Figure S10**), we also evaluate the robustness of our model *within* participant populations by controlling for demographic variables. In particular, although neither age nor gender was significantly correlated with warmth amongst the recipients that we investigated, there were significant associations with competence, such that older participants and female participants gave higher competence ratings as compared to younger and male participants (**Table S13**). Accordingly, we fit linear models to predict offer at different exchange rates based on social perception and controls for age and gender (**Table S10**). We find that, across all rates, there is no significant change in the estimated effects of perceived warmth and competence on the amount given when controlling for gender and age (differences fell within 1 standard error in all cases). Although we observed weak interactions between age and warmth perception on behavior at two of the three exchange rates, these effects were small, approximately 1/20th the size of the main effect of warmth.

Furthermore, we investigated the correlation between demographic variables and our outcome measures in field data. We found no association between demographic variables and perceived warmth or competence of targets from the Oreopoulous (2011) study, but we did detect significant associations for those from the Milkman et al. (2015) study (**Table S14**). Taken together, although these mixed findings offer some clues regarding the effects of individual identity on perception and behavior, they also underscore the fact that our recipients and participant sample criteria were not chosen with the goal of investigating participant identity effects, highlighting the need for future studies to address this important issue.

Evaluating the difference in effects of warmth and competence across advantageous and disadvantageous inequity

Our results suggest that participants integrate social perception into social valuation differently when considering choices under advantageous and disadvantageous inequity. That is, although the recipient's warmth might affect the weights participant place on their own and the other's payoffs when considering advantageous splits of ($7 self, $3 other) and ($6 self, $4 other), the recipient's warmth might affect those weights differently when considering a disadvantageous split of ($3 self, $7 other). Our primary analyses supported this reasoning by comparing the weights on the payoffs under advantageous and disadvantageous inequity as a function of warmth and competence (α_w vs β_w, as well as α_c vs β_c) in the SPW model, and finding that, in both comparisons, the weights are significantly different ($p < 0.01$ in both). To further test this divergence, we fit restricted models where $\alpha_w = \beta_w$ or $\alpha_c = \beta_c$ and evaluated them against the original multiplicative model (**Table S11**). We find that, for both warmth and competence, the model with separate weights under advantageous and disadvantageous inequity performs significantly better ($p < 10^{-6}$). This supports the conclusion that the effects of warmth and competence vary across different types of inequity.

SI Figures and Tables

Table S1. Factor loadings of each attribute on warmth and competence.

	Competence	Warmth
sincerity	-0.058	0.192
tolerance	-0.092	0.248
good-naturedness	-0.121	0.232
trustworthiness	-0.064	0.166
friendliness	-0.138	0.184
helpfulness	-0.000	0.145
morality	-0.100	0.293
understanding	0.032	0.146
intelligence	0.127	-0.084
efficiency	0.188	-0.054
skill	0.157	-0.007
confidence	0.216	-0.032
creativity	-0.068	0.012
capability	0.119	-0.017
foresightedness	0.131	-0.099
cleverness	0.172	-0.078
hunger	-0.034	-0.026
fear	-0.031	-0.047
pain	-0.039	-0.058
rage	0.034	0.053
desire	-0.031	-0.004
pleasure	0.009	-0.025
pride	-0.001	-0.124
embarrassment	-0.117	-0.055
joy	-0.100	0.010
communication	0.123	-0.153
knowing others' feelings	0.000	0.127
memory	0.119	-0.098
telling right from wrong	0.017	-0.014
planning	0.161	-0.108
self-control	0.122	0.031

Table S2: Model fits in Dictator Game with mTurk participants and hypothetical outcomes.

	parameter description	basic	additive	multiplicative	full	additive interaction	multiplicative interaction
α	baseline weight on counterpart payoff under advantageous inequity	-6.920	-5.919	-1.323	-1.325	-6.754	-1.165
		(1.057)	(0.892)	(0.740)	(0.782)	(0.988)	(0.700)
α_w	effect of warmth on α			2.027	2.020		1.889
				(0.725)	(0.766)		(0.699)
α_c	effect of competence on α			-0.396	-0.386		-0.364
				(0.181)	(0.187)		(0.173)
β	baseline weight on counterpart payoff under disadvantageous inequity	-19.582	-24.467	-5.300	-5.292	-30.133	-4.888
		(2.578)	(2.944)	(1.969)	(2.081)	(3.205)	(1.869)
β_w	effect of warmth on β			0.329	0.311		0.347
				(0.225)	(0.224)		(0.235)
β_c	effect of competence on β			-1.732	-1.733		-1.636
				(0.636)	(0.673)		(0.615)
δ_w	payoff shift of counterpart payoff due to warmth		7.839		0.000	8.752	
			(0.016)		(0.008)	(0.541)	
δ_c	payoff shift of counterpart payoff due to warmth		-11.695		-0.000	-8.045	
			(0.030)		(0.008)	(0.700)	
α_{wc}	effect of warmth-competence interaction on α						0.073
							(0.117)
β_{wc}	effect of warmth-competence interaction on β						0.096
							(0.177)
δ_{wc}	payoff shift of counterpart payoff due to warmth-competence interaction					-6.328	
						(0.712)	
λ	inverse temperature parameter for softmax decision function	0.005	0.004	0.019	0.019	0.004	0.020
		(0.001)	(0.001)	(0.007)	(0.007)	(0.000)	(0.007)
-LL	negative log-likelihood	17287	17146	17040	17040	17118	17040
AIC	Akaike information criterion	17293	17156	17054	17058	17130	17058
R^2	Variance explained	0.456	0.663	0.676	0.675	0.747	0.706
LRT vs basic	Likelihood ratio test of model vs basic		$\chi^2(2) = 282.33$	$\chi^2(4) = 492.97$	$\chi^2(6) = 492.98$	$\chi^2(3) = 338.13$	$\chi^2(6) = 494.15$
			$p < 10^{-61}$	$p < 10^{-104}$	$p < 10^{-102}$	$p < 10^{-72}$	$p < 10^{-102}$
LRT vs additive	Likelihood ratio test of model vs additive				$\chi^2(4) = 210.65$	$\chi^2(1) = 55.80$	
					$p < 10^{-43}$	$p < 10^{-13}$	
LRT vs multiplicative	Likelihood ratio test of model vs multiplicative				$\chi^2(2) = 0.02$		$\chi^2(2) = 1.18$
					$p = 0.992$		$p = 0.554$

Table S3: Model fits in Dictator Game with UC Berkeley undergraduate participants and hypothetical outcomes.

	parameter description	basic	additive	multiplicative	full	additive interaction	multiplicative interaction
α	baseline weight on counterpart payoff under advantageous inequity	-7.238	-8.462	-1.460	-1.409	0.177	-1.271
		(1.354)	(1.245)	(0.819)	(0.785)	(0.078)	(0.676)
α_w	effect of warmth on α			1.941	1.872		1.693
				(0.721)	(0.673)		(0.571)
α_c	effect of competence on α			-0.375	-0.376		-0.337
				(0.179)	(0.177)		(0.154)
β	baseline weight on counterpart payoff under disadvantageous inequity	-15.227	-26.426	-4.501	-4.292	-1.899	-4.022
		(2.551)	(2.880)	(1.743)	(1.598)	(0.335)	(1.422)
β_w	effect of warmth on β			0.884	0.755		0.776
				(0.366)	(0.284)		(0.319)
β_c	effect of competence on β			-2.026	-1.964		-1.802
				(0.763)	(0.721)		(0.624)
δ_w	payoff shift of counterpart payoff due to warmth		26.125		0.000	9.776	
			(1.876)		(0.010)	(0.012)	
δ_c	payoff shift of counterpart payoff due to warmth		-13.672		-0.001	-10.300	
			(1.200)		(0.012)	(0.018)	
α_{wc}	effect of warmth-competence interaction on α						-0.445
							(0.180)
β_{wc}	effect of warmth-competence interaction on β						-0.002
							(0.151)
δ_{wc}	payoff shift of counterpart payoff due to warmth-competence interaction					-8.575	
						(0.015)	
λ	inverse temperature parameter for softmax decision function	0.005	0.003	0.017	0.018	0.041	0.019
		(0.001)	(0.000)	(0.006)	(0.006)	(0.006)	(0.006)
-LL	negative log-likelihood	21443	21242	21112	21112	21184	21102
AIC	Akaike information criterion	21449	21252	21126	21130	21196	21120
R^2	Variance explained	0.476	0.693	0.716	0.711	0.743	0.761
LRT vs basic	Likelihood ratio test of model vs basic		$\chi^2(2) = 400.67$	$\chi^2(4) = 662.18$	$\chi^2(6) = 661.67$	$\chi^2(3) = 518.24$	$\chi^2(6) = 682.10$
			$p < 10^{-87}$	$p < 10^{-141}$	$p < 10^{-138}$	$p < 10^{-111}$	$p < 10^{-143}$
LRT vs additive	Likelihood ratio test of model vs additive				$\chi^2(4) = 261.00$	$\chi^2(1) = 117.57$	
					$p < 10^{-54}$	$p < 10^{-26}$	
LRT vs multiplicative	Likelihood ratio test of model vs multiplicative				$\chi^2(2) = -0.51$		$\chi^2(2) = 19.92$
					$p = 1.000$		$p < 10^{-4}$

Table S4: Model fits in Dictator Game with mTurk participants and real outcomes (for the participant).

	parameter description	basic	additive	multiplicative	full	additive interaction	multiplicative interaction
α	baseline weight on counterpart payoff under advantageous inequity	-21.890	-21.975	-19.938	-17.354	-16.832	-21.494
		(2.088)	(1.716)	(1.925)	(2.206)	(1.706)	(2.053)
α_w	effect of warmth on α			6.367	4.506		7.064
				(0.791)	(0.670)		(0.880)
α_c	effect of competence on α			-4.136	-1.620		-4.447
				(0.611)	(0.547)		(0.666)
β	baseline weight on counterpart payoff under disadvantageous inequity	-26.102	-45.247	-23.443	-21.315	-32.784	-24.484
		(2.566)	(3.461)	(2.346)	(3.346)	(2.849)	(2.347)
β_w	effect of warmth on β			0.494	6.006		1.778
				(0.999)	(2.112)		(1.297)
β_c	effect of competence on β			-5.102	-9.325		-4.806
				(0.956)	(1.998)		(1.070)
δ_w	payoff shift of counterpart payoff due to warmth		7.606		-2.452	9.391	
			(0.762)		(3.286)	(0.827)	
δ_c	payoff shift of counterpart payoff due to warmth		-10.695		-10.237	-8.143	
			(0.880)		(1.396)	(1.041)	
α_{wc}	effect of warmth-competence interaction on α						0.680
							(0.555)
β_{wc}	effect of warmth-competence interaction on β						1.579
							(1.107)
δ_{wc}	payoff shift of counterpart payoff due to warmth-competence interaction					-6.442	
						(1.308)	
λ	inverse temperature parameter for softmax decision function	0.005	0.004	0.006	0.006	0.005	0.006
		(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
-LL	negative log-likelihood	12103	11963	11924	11892	11959	11921
AIC	Akaike information criterion	12109	11973	11938	11910	11971	11939
R^2	Variance explained	0.407	0.646	0.666	0.741	0.653	0.668
LRT vs basic	Likelihood ratio test of model vs basic		$\chi^2(2) = 280.52$	$\chi^2(4) = 357.97$	$\chi^2(6) = 421.99$	$\chi^2(3) = 288.63$	$\chi^2(6) = 364.74$
			$p < 10^{-60}$	$p < 10^{-75}$	$p < 10^{-87}$	$p < 10^{-61}$	$p < 10^{-74}$
LRT vs additive	Likelihood ratio test of model vs additive				$\chi^2(4) = 141.47$	$\chi^2(1) = 8.11$	
					$p < 10^{-28}$	$p = 0.004$	
LRT vs multiplicative	Likelihood ratio test of model vs multiplicative				$\chi^2(2) = 64.03$		$\chi^2(2) = 6.78$
					$p < 10^{-13}$		$p = 0.034$

Table S5. Mean offer given to target and estimated effects of perceived warmth and competence in the Dictator Game across exchange rates.

			1:1 Exchange Rate[3]				1:3 Exchange Rate				3:1 Exchange Rate			
Target	**Perceived Warmth[1]**	**Perceived Comp.[2]**	**Amount Given**	**Warmth Effect**	**Comp. Effect**	**Combined Effect**	**Amount Given**	**Warmth Effect**	**Comp. Effect**	**Combined Effect**	**Amount Given**	**Warmth Effect**	**Comp. Effect**	**Combined Effect**
Lawyer	-1.90	1.44	1.70	-0.67	-0.29	-1.02	1.73	-0.47	-0.38	-0.97	1.92	-1.33	-0.17	-1.68
Addict	-1.12	-1.44	1.85	-0.45	0.38	-0.04	1.74	-0.45	0.74	0.39	2.25	-1.12	0.30	-0.69
Inmate	-2.44	-0.78	2.16	-0.96	0.18	-0.74	1.89	-0.87	0.29	-0.46	2.98	-1.92	0.09	-1.70
Surgeon	0.26	1.29	2.19	0.09	-0.32	-0.22	1.75	0.07	-0.48	-0.40	2.16	0.24	-0.34	-0.08
Arab	-1.07	0.30	2.40	-0.40	-0.07	-0.48	2.56	-0.32	-0.11	-0.45	3.55	-0.93	-0.05	-1.01
Accountant	-0.53	0.98	2.60	-0.19	-0.23	-0.44	2.17	-0.14	-0.35	-0.52	2.88	-0.47	-0.21	-0.72
Jewish	-0.17	0.68	2.72	-0.06	-0.17	-0.23	2.48	-0.05	-0.27	-0.32	3.81	-0.16	-0.17	-0.33
Athlete	-0.10	0.90	2.77	-0.03	-0.22	-0.26	2.17	-0.03	-0.34	-0.37	3.44	-0.09	-0.22	-0.32
Greek	0.44	0.13	2.87	0.16	-0.03	0.13	2.65	0.14	-0.06	0.08	3.53	0.44	-0.04	0.41
Japanese	0.14	0.61	2.97	0.05	-0.16	-0.11	2.34	0.04	-0.25	-0.21	3.70	0.13	-0.16	-0.03
Spanish	0.38	0.03	3.14	0.14	-0.01	0.14	2.49	0.12	-0.01	0.11	3.54	0.39	-0.01	0.38
British	0.19	0.33	3.16	0.07	-0.08	-0.01	2.70	0.06	-0.14	-0.08	3.52	0.19	-0.09	0.11
Irish	0.45	0.13	3.52	0.17	-0.03	0.13	2.34	0.14	-0.06	0.08	3.97	0.46	-0.04	0.42
Nurse	1.28	0.59	3.69	0.47	-0.16	0.32	3.12	0.37	-0.27	0.13	4.41	1.30	-0.18	1.15
Farmer	0.79	0.35	3.99	0.29	-0.09	0.20	3.31	0.24	-0.16	0.09	4.61	0.81	-0.11	0.72
Parent	1.16	-0.09	4.00	0.44	0.03	0.46	3.58	0.37	0.05	0.41	4.68	1.22	0.03	1.25
Welfare Recipient	-0.09	-1.24	4.08	-0.04	0.35	0.31	3.82	-0.04	0.69	0.66	3.80	-0.1	0.35	0.26
Mental Disability	1.11	-2.44	4.21	0.44	0.75	1.17	3.38	0.45	1.77	2.13	4.70	1.27	0.87	2.03
Elderly	1.08	-0.52	4.91	0.41	0.15	0.55	4.15	0.37	0.29	0.63	4.80	1.15	0.17	1.30
Homeless	0.15	-1.23	5.05	0.06	0.35	0.41	5.36	0.06	0.70	0.75	5.48	0.16	0.37	0.52

[1] Standardized scores of perceived warmth.
[2] Standardized scores of perceived competence.
[3] Self:other exchange rate

Table S6: Summary components obtained from PCA

Component	Eigenvalue	Proportion of variance explained
Competence	16.34	0.28
Warmth	2.57	0.21

Table S7: Summary of participant information for each study.

Study	N	Female (DNR[1])	Mean completion time (min)	Mean age ± s.d. (years)	% Native English Speakers
Study 1a: Dictator hypothetical payment (mTurk)	304	149 (1)	9.5	34.1 ± 11.9	99.7
Study 1b: Perception rating: Dictator game targets (mTurk)	251	110 (0)	14.3	35.1 ± 11.8	98.4
Study 2: Dictator hypothetical payment (UC Berkeley undergraduates)	193	94 (9)	26.3	22.2 ± 3.9	76.2
Study 3: Dictator real payment (mTurk)	228	92 (0)	9.1	34.0 ± 10.2	98.7
Study 4: Perception rating: names in Oreopoulos et al. (mTurk)	119	67 (0)	5.2	37.7 ± 12.1	98.3
Study 5: Perception rating: names in Milkman et al. (mTurk)	199	89 (1)	3.8	37.2 ± 12.5	97.5

[1] DNR: Did not report

Table S8: Logit regressions based on data from Oreopoulos. (1) Logit regression predicting whether company responded, with only warmth and competence as factors. (2) Logistic regression predicting whether company responded, with warmth, competence, and additional factors.

	(1)	(2)
Warmth	0.029***	0.026***
	(0.004)	(0.004)
Competence	-0.004	-0.007
	(0.006)	(0.006)
Fluency in French		0.086
		(0.069)
Experience from very large firm		0.089
		(0.065)
ONET writing skills		-0.014***
		(0.003)
ONET social and personal skills		-0.005
		(0.004)
ONET speaking skills		0.028***
		(0.005)
BA from top ranked school		0.036
		(0.062)
Resume collection period 1		-0.200**
		(0.078)
Resume collection period 2		0.224***
		(0.087)
Company in Toronto		-0.813***
		(0.101)
MA present		0.017
		(0.078)
Additional credential added due to employer requirement		0.512***
		(0.091)
Extracurricular skills listed		-0.013
		(0.061)
BA from foreign school		-0.168**
		(0.084)
Experience only at foreign firm		-0.504***
		(0.121)
Experience at both foreign and Canadian firms		-0.155
		(0.110)
Constant	-3.651***	-3.893***
	(0.360)	(0.465)
Observations	12,910	12,910
Log Likelihood	-4,150.146	-4,049.584
Akaike Inf. Crit.	8,306.291	8,135.168
Note:		*p<0.1; **p<0.05; ***p<0.01

Table S9: Logit regressions based on data from Milkman et al. (1) Logit regression predicting whether professor responded, with only warmth and competence as factors. (2) Logistic regression predicting whether professor responded, with warmth, competence, and additional factors.

	(1)	(2)
Warmth	0.029***	0.029***
	(0.005)	(0.005)
Competence	-0.010***	-0.011***
	(0.004)	(0.004)
Request to meet that day		0.076
		(0.052)
Associate professor		-0.290***
		(0.078)
Full professor		-0.235***
		(0.071)
Professor of other rank		-0.722***
		(0.128)
Chinese professor		0.169
		(0.264)
Hispanic professor		0.196
		(0.314)
Indian professor		0.196
		(0.276)
Caucasian professor		0.251
		(0.233)
Professor of other ethnicity		0.104
		(0.282)
Student and professor of same ethnicity		-0.040
		(0.103)
Constant	-0.319	-0.265
	(0.306)	(0.464)
Observations	6,548	6,548
Log Likelihood	-4,540.526	-4,520.481
Akaike Inf. Crit.	9,087.053	9,066.962
Note:	*p<0.1; **p<0.05; ***p<0.01	

Table S10: Regression of warmth and competence vs offer at different exchanges rates, controlling for age and gender.

	Offer 1:1 exchange rate				**Offer 1:3 exchange rate**				**Offer 3:1 exchange rate**			
	Demographic Only	Perception Only	Demographic & Perception	Demographic x Perception	Demographic Only	Perception Only	Demographic & Perception	Demographic x Perception	Demographic Only	Perception Only	Demographic & Perception	Demographic x Perception
Competence		-0.389***	-0.392***	-0.158		-0.416***	-0.415***	-0.300		-0.336***	-0.326***	-0.385
		(0.059)	(0.059)	(0.187)		(0.059)	(0.059)	(0.185)		(0.068)	(0.067)	(0.210)
Warmth		0.655***	0.653***	0.211		0.461***	0.460***	0.415*		0.600***	0.627***	0.185
		(0.059)	(0.059)	(0.183)		(0.059)	(0.059)	(0.189)		(0.068)	(0.067)	(0.213)
Female	0.375**		0.373**	0.369**	0.109		0.108	0.107	0.608***		0.638***	0.641***
	(0.120)		(0.115)	(0.115)	(0.119)		(0.116)	(0.116)	(0.135)		(0.132)	(0.132)
Age	0.005		0.005	0.005	-0.009		-0.008	-0.008	0.032***		0.034***	0.034***
	(0.005)		(0.005)	(0.005)	(0.005)		(0.005)	(0.005)	(0.006)		(0.006)	(0.006)
Competence:Female				-0.039				-0.222				-0.037
				(0.119)				(0.120)				(0.137)
Competence:Age				-0.006				-0.0002				0.002
				(0.005)				(0.005)				(0.006)
Warmth:Female				0.107				0.217				-0.098
				(0.119)				(0.120)				(0.137)
Warmth:Age				0.011*				-0.002				0.014*
				(0.005)				(0.005)				(0.006)
Constant	2.850***	3.201***	2.840***	2.840***	3.042***	2.794***	3.024***	3.009***	2.299***	3.688***	2.232***	2.228***
	(0.183)	(0.057)	(0.175)	(0.175)	(0.185)	(0.057)	(0.180)	(0.180)	(0.210)	(0.066)	(0.204)	(0.204)
Observations	1,990	1,990	1,990	1,990	1,998	1,998	1,998	1,998	2,007	2,007	2,007	2,007
R^2	0.006	0.086	0.092	0.096	0.002	0.058	0.060	0.063	0.029	0.053	0.085	0.087
Adjusted R^2	0.005	0.085	0.090	0.093	0.001	0.057	0.058	0.059	0.028	0.052	0.083	0.084
Model comparison versus demographic-only			F(2, 1985) = 94.4***	F(6, 1981) = 33.0***			F(2, 1993) = 61.3***	F(6, 1989) = 21.7***			F(2, 2002) = 60.8***	F(6, 1998) = 21.3***
Model comparison versus perception-only			F(2, 1985) = 6.61**	F(6, 1981) = 3.74**			F(2, 1993) = 1.67	F(6, 1989) = 1.82			F(2, 2002) = 34.7***	F(6, 1998) = 12.6***
Model comparison versus perception & demographics				F(4, 1981) = 2.31				F(4, 1989) = 1.90				F(4, 1998) = 1.49

Note: *p<0.05; **p<0.01; ***p<0.001

Table S11: Comparison of multiplicative model fits in Study 1a with various constraints on the parameters.

		Multiplicative $\alpha_w = \beta_w$ & $\alpha_c = \beta_c$	Multiplicative $\alpha_c = \beta_c$	Multiplicative $\alpha_w = \beta_w$	Multiplicative No constraints
α	baseline weight on counterpart payoff under advantageous inequity	-1.241	-1.329	-1.188	-1.323
		(0.679)	(0.710)	(0.724)	(0.740)
α_w	effect of warmth on α	1.434	1.968	1.417	2.027
		(0.491)	(0.682)	(0.528)	(0.725)
α_c	effect of competence on α	-0.861	-0.901	-0.431	-0.396
		(0.301)	(0.317)	(0.194)	(0.181)
β	baseline weight on counterpart payoff under disadvantageous inequity	-5.194	-5.040	-5.347	-5.300
		(1.843)	(1.800)	(2.080)	(1.969)
β_w	effect of warmth on β		0.400		0.329
			(0.232)		(0.225)
β_c	effect of competence on β			-1.556	-1.732
				(0.601)	(0.636)
λ	inverse temperature parameter for softmax decision function	0.019	0.019	0.019	0.019
		(0.007)	(0.006)	(0.007)	(0.007)
-LL	negative log-likelihood	17073	17057	17061	17040
AIC	Akaike information criterion	17083	17069	17073	17054
LRT vs $\alpha_w = \beta_w$ $\alpha_c = \beta_c$	Likelihood ratio test vs model with $\alpha_w = \beta_w$ & $\alpha_c = \beta_c$		$\chi^2(1) = 32.49$ $p < 10^{-7}$	$\chi^2(1) = 25.31$ $p < 10^{-6}$	$\chi^2(2) = 65.38$ $p < 10^{-14}$
LRT vs $\alpha_c = \beta_c$	Likelihood ratio test vs model with $\alpha_c = \beta_c$				$\chi^2(1) = 32.89$ $p < 10^{-8}$
LRT vs $\alpha_w = \beta_w$	Likelihood ratio test vs model with $\alpha_w = \beta_w$				$\chi^2(1) = 40.08$ $p < 10^{-9}$

Table S12: Glossary of key terms.

Literature	Term	Description
Social Psychology	Social perception	Cognitive processing having to do with forming impressions of others, including stereotyping. Can also refer to the field of scientific study that investigates these processes. Both are sometimes also referred to as person perception.
	Stereotyping	The act of making assumptions about another person's underlying traits, abilities, preferences, or habits based on cues to that person's social group membership
	Stereotype content	The specific assumptions made about others' underlying traits, abilities, preference, or habits based on cues to social group membership. This includes warmth and competence but can also include other content (e.g., likelihood of being a basketball player, proneness to allergies).
	Warmth	A dimension of stereotype content capturing how much another person or group is perceived to have good intentions toward other people – e.g., to be compassionate, caring, and thoughtful.
	Competence	A dimension of stereotype content capturing how much another person or group is perceived to be capable of acting on intentions – e.g., being agentic and intelligent and exerting self-control.
Economics	Social valuation	From behavioral economics, processes by which individuals place value on features of social outcomes that go beyond material self-interest, e.g., fairness.
	Inequity aversion	A preference to avoid unequal distributions of resources, typically across oneself and others.
	Advantageous inequity	An unequal distribution of resources favoring a person of reference, typically the self, i.e., having more than others
	Disadvantageous inequity	An unequal distribution of resources favoring the other; i.e., having less than others
	Advantageous inequity aversion	A preference to avoid unequal distributions of resources in which oneself has more than others. This can be referred to in degrees, e.g., stronger or weaker aversion to advantageous inequity.
	Disadvantageous inequity aversion	A preference to avoid unequal distributions of resources in which oneself has less than others. This can be referred to in degrees, e.g., stronger or weaker aversion to disadvantageous inequity.
Statistics	Out-of-sample prediction	A method used to evaluate whether a model is overfitting a dataset, wherein a model is estimated on a portion of a dataset (the rest is "held-out") and then evaluated for prediction accuracy on the rest.
	Cross-validation	A procedure in which one iterates over a dataset and performs an out-of-sample prediction for each point.

Table S13: Correlation of age and gender with social perception and behavior in the Dictator Game with Berkeley undergraduate participants and hypothetical outcomes.

		Age	**Male**
Perception	Warmth	0.073	-0.078
	Competence	0.070	-0.225**
Behavior (offer to recipient)	Overall	0.081	-0.113*
	1:1 exchange rate	0.056	-0.121*
	1:3 exchange rate	-0.046	-0.052
	3:1 exchange rate	0.181**	-0.131*

Note: *p<0.05; **p<0.01

Table S14: Correlation of age and gender with social perception of targets used in field experiments.

Study	Dimension	Age	Male
Oreopoulos (2011)	Warmth	-0.020	0.021
	Competence	0.071	-0.056
Milkman et al. (2015)	Warmth	0.160*	-0.125
	Competence	0.147*	-0.179*

Note: *p<0.05; **p<0.01

Figure S1: Comparison of (A) warmth and (B) competence ratings from Dictator Game sample (Study 1a) and Independent Rating sample (Study 1b). mentdis: Mental Disability.

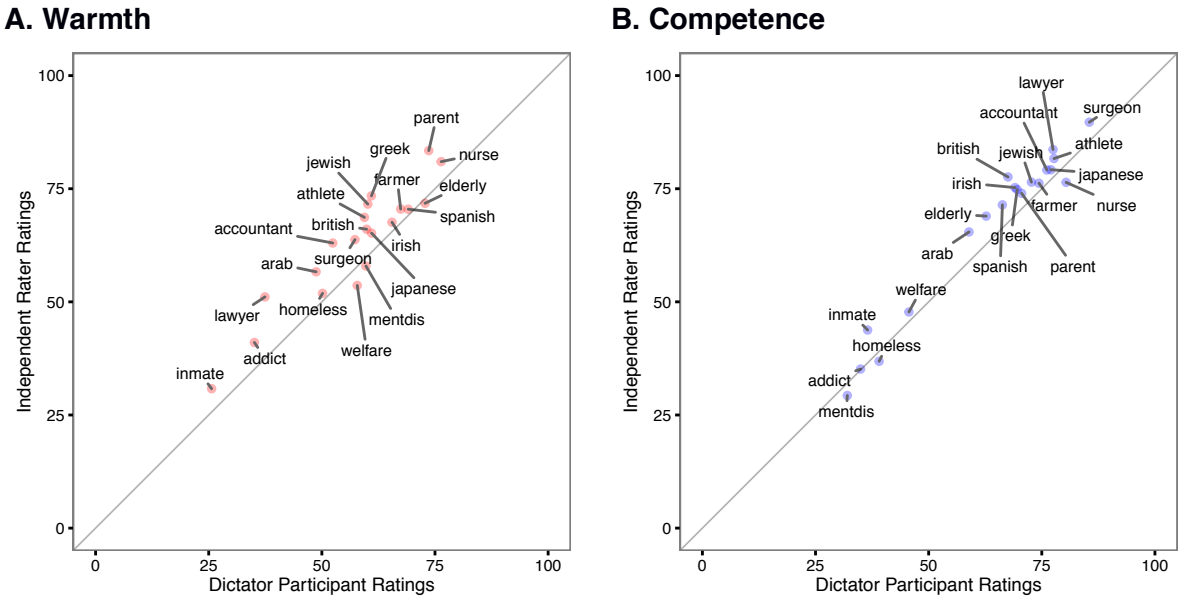

Figure S2: Calibrated utility function for all model variants.

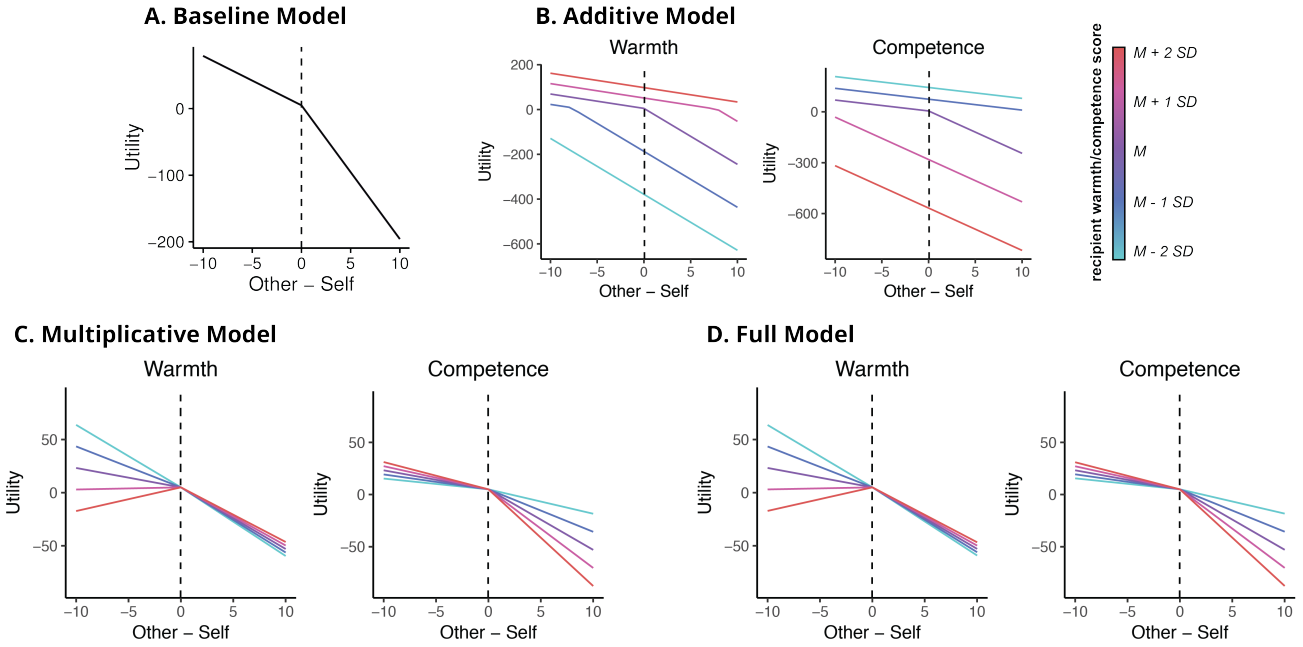

Figure S3: Predicted versus actual share given to counterparts in Dictator Game. Each point represents one recipient at one exchange rate.

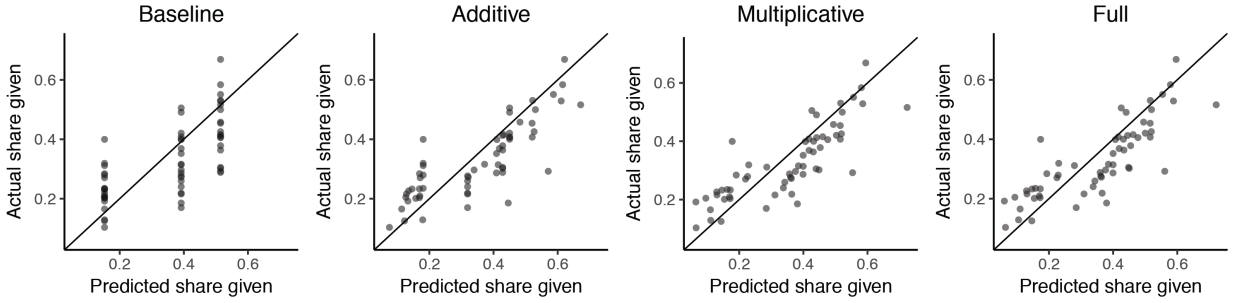

Figure S4: Comparison of Dictator Game behavior across populations. Each point represents one recipient at one exchange rate.

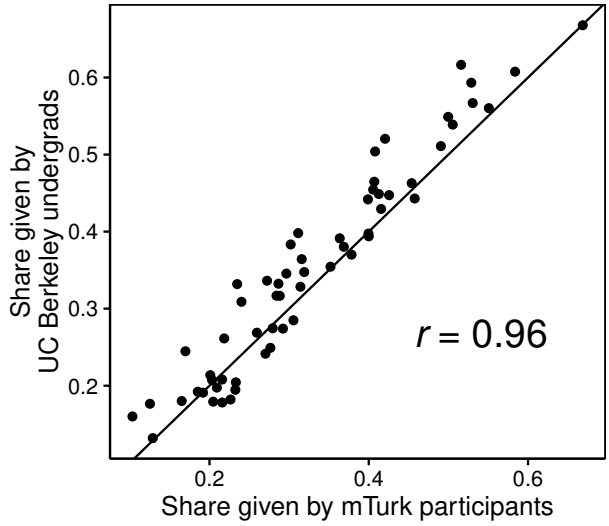

Figure S5: Comparison of DG offers with real versus hypothetical outcomes. Each point represents one recipient at one exchange rate.

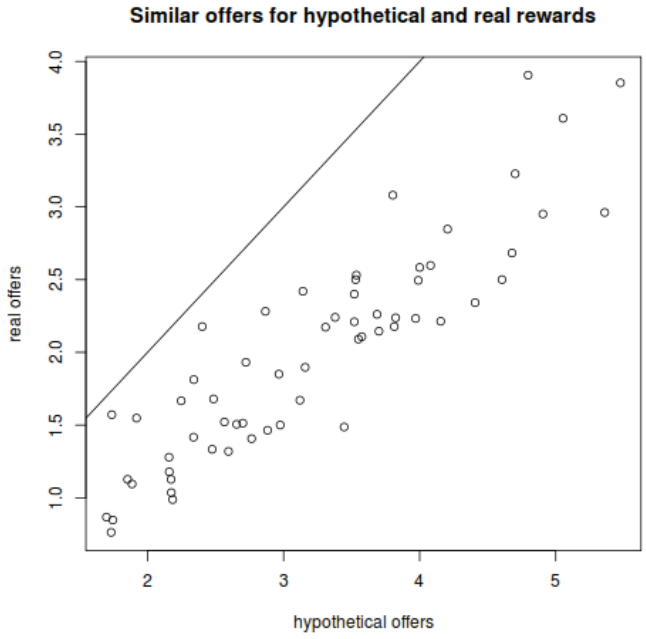

Figure S6: Comparison of components obtained from factor analysis with ratings of summary ratings of warmth and competence. The "warmth" component was highly correlated with summary ratings of warmth ($p < 10^{-4}$, R^2=0.67), and the "competence" component was highly correlated with summary ratings of competence ($p < 10^{-9}$, R^2=0.89). Each point represents a recipient.

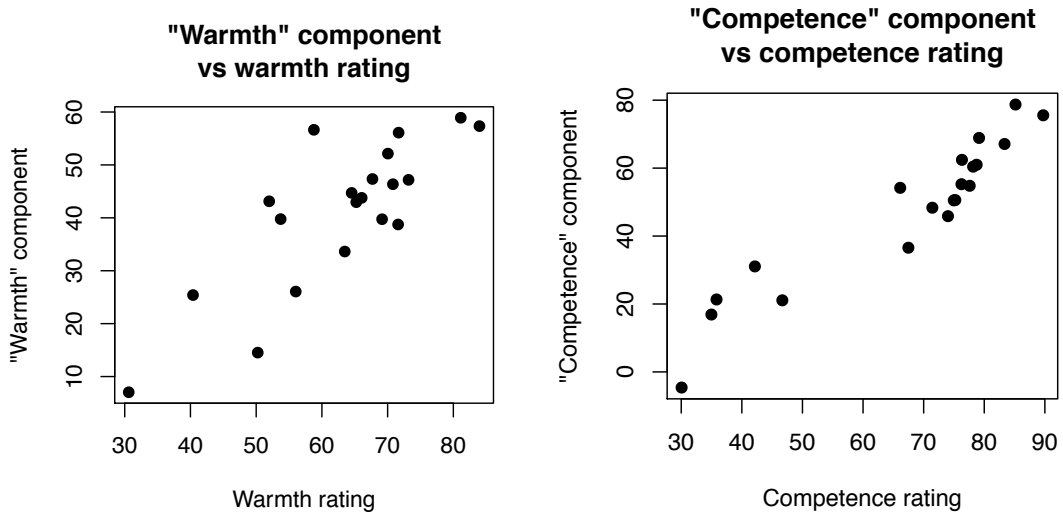

Figure S7. Predicting unequal treatment in higher education field data. (A) Response rate variation in Milkman et al. (2015). (B) Social perception ratings of names in (A) by an independent sample of participants. (C) Identity-based model predicted variation in holdout sample counterparts at rates significantly greater than chance using training samples of various sizes. Error bands indicate SEM. (D) Leave-one-out (LOO) predictions.