Pride and prejudice: Different responses to migrant information among different identity groups

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ABSTRACT

Previous studies have examined how information intervention affects intergroup prejudice and conflict. On that basis, this study introduced psychological adjustment cost into a behavioral model for identity and individual attitude change. The model predicts that changes in attitude are related to an individual's initial identity, and the same information can either change or reinforce initial attitudes. Then, we used a survey to explore whether information about migration could change the attitudes of Shanghai residents toward interregional migrants to their city. We found that after reading neutrally described information about the benefits of internal migration, the attitudes of non-native interviewees toward immigrants became more positive while those of native Shanghai residents became more negative. We also found that young, well-educated people developed more positive attitudes about immigrants after reading the information.

1. Introduction

We live in an era of large-scale population migration, both internally and internationally; at the same time, we have witnessed a resurgence of anti-migration sentiment and social conflict. According to the International Migration Report 2015 (United Nations, 2016), the number of international migrants has continued to grow, reaching a record high of 244 million in 2015, up from 222 million in 2010 and 173 million in 2000. About half of international migrants live in 10 highly urbanized, high-income countries, including Australia, Canada, the US, and certain European countries (United Nations Department of Economic and Social Affairs, 2013). In cities such as Sydney, London, and New York, immigrants comprise more than one-third of the total population; in Brussels and Dubai, immigrants account for more than half the total population (International Organization of Migration, 2015). Along with this massive growth of immigration, voices against immigration continue to be raised. In Europe and the United States, for example, immigration policy has again become a core issue in social disputes and political debates.

Many studies have examined the integration of immigrants into the host society, with discrimination against immigrants as a main focus. Discrimination is a process whereby members of a particular social group are treated differently (negatively) because they belong to that group (Krieger, 2001). In various political and economic contexts, both immigrants and local citizens may experience discrimination (Krieger et al., 2006). Discrimination against immigrants often arises because local residents believe that newcomers take jobs from local workers, disrupt the social order, and undermine traditional values. These residents regard immigrants as foreigners who do not deserve equal treatment and should not have the same political and social rights as locals (Brubaker, 1989; Givens, 2007;

Koopmans, 2005).

Regarding the impact of immigration, studies have found that, for most people, the long-term advantages of immigration tend to outweigh the disadvantages. For example, examining 2002–2010 data from OECD countries, Betz and Simpson (2013) found that the entry of international immigrants significantly improved the overall well-being of residents of the host country—a finding that is very different from public perceptions. Might it be possible, then, to change people's attitudes through information intervention, thereby altering the cognitive basis of discrimination?

Perceptions of international immigrants involve complex political, cultural, and religious factors that are difficult to quantify compared to internal migration. China is a large country that has experienced considerable internal migration, which is less affected by political, religious, and cultural issues. Therefore, research on interregional migration in China can focus more on perceptions of its economic impact—an aspect of population movement that is generally considered more beneficial and less controversial.

In recent decades, China has undergone rapid urbanization. According to the 2020 China Statistical Yearbook (Bureau, China Statistical, 2020), the number of rural-to-urban migrants had reached 291 million, which was greater than the number of international immigrants worldwide. As China's largest city, Shanghai ranks with some European countries in terms of population. At the end of 2019, Shanghai had a population of more than 24.18 million, among which nearly 10 million came from other provinces (Bureau, China Statistical, 2020). In Shanghai, as elsewhere, people generally fail to recognize the benefits of migration. Rather, they often believe intuitively that congestion, pollution, public service shortages, and other issues are a direct result of the large number of migrants.

Discrimination against and hostility toward immigrants hinder social integration within a city. The economic benefits of migration for a city experiencing population growth can be said to be self-evident, especially in a city such as Shanghai, where the aging-population problem is particularly severe. Migrants complement the labor supply and fulfill the need for consumer services that local residents are often unwilling to undertake. That being the case, is it possible to change perceptions of immigrants through information intervention, thereby promoting social integration?

This study introduced psychological adjustment cost into a behavioral model of identity and individual attitude change. The model predicts that changes in attitude are related to an individual's initial identity, and the same information can either change or reinforce initial attitudes. To test the theory, we conducted a survey and measured the attitudes of local Shanghai residents toward interregional migrants by randomly inserting two key subjective questions among eight irrelevant questions. Then, we presented at random one of six pieces of neutrally written news about the benefits of migration. As the last step, we asked the two key questions again. We found that after receiving the same information about the benefits of migration, local people belonging to different groups had significantly different responses. The change in attitude toward migrants was positive among non-native Shanghai residents but negative among native residents. This work contributes to the literature by investigating how people with different identities respond to similar information.

The rest of this paper is organized as follows. Section 2 reviews the literature on discrimination and attitudes while section 3 presents the theoretical model of attitude change. Section 4 describes the data, section 5 reports the results of data analysis, and section 6 presents the robustness test. Finally, section 7 concludes our findings.

2. Literature review

Discrimination against immigrants/migrants is ubiquitous. It can be divided into three categories: institutional discrimination, statistical discrimination, and preference discrimination (i.e., prejudice). First, immigrants suffer from extensive institutional discrimination. In general, immigration policies are designed to give preference to certain groups. In the US, for example, immigration laws give priority to individuals whose family members already reside there. Canada has established a scoring system that favors individuals whose skills and characteristics reflect the demands of the labor market. Although there is freedom of movement within the EU for people who are citizens of member countries, laws differ across EU countries in terms of the entry requirements for citizens of non-member countries (Bauer et al., 2000).

As a result of China's large geographic size and history of rapid economic growth, migration from rural to urban areas and across cities within the country has been extensive. Institutional discrimination against internal migrants based on the household registration (*hukou*) system has been in place since the 1950s. All Chinese residents have a household registration status, usually inherited from their parents. Though migrants can change their household registration through a job change or marriage, it is very difficult to do so. Especially in first-tier cities, migrants who want to convert their household registration face a very high threshold for qualification. In the labor market, non-local workers have lower incomes and are treated unfairly in various aspects, such as social security, compulsory education, public services, and the protection of rights (to cite a few, Chan and Zhang, 1999; Lu et al., 2013; Chen and Lu, 2015).

In addition to institutional discrimination, migrants are generally subject to statistical discrimination. Arrow (1973), Phelps (1972), and Aigner and Cain (1977) analyzed statistical discrimination from various perspectives. In statistical discrimination, stereotypes are based on the average behavior or skills of the targeted group. For example, in developed countries and metropolitan cities, local workers have higher skills on average than immigrant/migrant workers. However, the information is incomplete because low-skilled workers are complementary to high-skilled workers, leading to the absorption of low-skilled immigrants/migrants into the workforce. Nonetheless, discriminatory judgments may be based on information that overlooks skill complementarities, and inequality may persist between social groups, even when economic agents are rational and non-prejudiced. If the incompleteness of information intensifies, discrimination may be exacerbated. Even if the amount of faulty information is alleviated over time, the inefficient updating and dissemination of new information, along with the intergenerational transmission of discriminatory effects, may lead to the long-term persistence of statistical discrimination.

Preference discrimination is based entirely on an individual's perceptions, independent of considerations of other factors; preference

discrimination is therefore subject to change based on new information. In this regard, we can relate preferential attitudes to the term *prejudice*, which is often used as a synonym for *discrimination*. The following three mechanisms are used to explain prejudice. (1) The stereotype effect refers to the formation of incorrect personal stereotypes based on ambiguities in personal behavior and limited opportunities for contact. In addition, changes in groups, interests, and values, along with a lack of reference standards, may lead to prejudice. (2) Habitual thinking may lead to dividing society into "insiders" (us) and "outsiders" (them); such division can provide an important point of view for the interpretation of behavior. Tajfel and Turner (2004) developed a theory of social identity that proposes that individuals seek the recognition of specific social groups to enhance their own self-esteem. According to this theory, only individuals who feel safe and secure in their cultural identity will tolerate other groups and cultures; otherwise, they will have a negative bias toward other groups. (3) The just-world hypothesis (Montada and Lerner, 1998) refers to the assumption that a person's actions are inherently inclined toward bringing about morally fair and fitting consequences for that person. People might therefore justify prejudice and stereotypes on the basis that its existence is "reasonable".To measure the scale of preference discrimination, Becker (2010) introduced the taste for discrimination, which is the income someone is willing to forfeit when discrimination occurs. He introduced the taste for discrimination into both the utility function of the employer and the utility function of the employee. Using this method, he tried to match the competitive labor market model with the observed fact—the wage difference between white and black workers. He demonstrates that discrimination in the market place by any group reduces their own real incomes as well as those of the minority.

Incomplete information plays a role in each of the three types of discrimination described above. Theoretically, when more knowledge about immigrant groups emerges, discrimination should be reduced to some extent. A question remains: Can attitudes be changed through the introduction of new information? Prior research on attitude is divided in that it proposes that attitudes are either stable entities stored in memory or are temporary judgments constructed on the spot from the information at hand (Gawronski, 2007). Under the first view, a change in attitude reflects a change in the depth of memory; under the second, a change in attitude is the result of the acquisition of new information. Integrating these two perspectives, we can argue that the process of attitude change includes the extraction of past memories along with the reassessment of current information (Bohner and Dickel, 2011).

We propose that intervention through the addition of information can change the extent of prejudice. In experiments related to prejudice intervention in Rwanda, Paluck (2009) found that a radio drama changed the social norms and behavior of a local audience compared to the control group but did little to change their personal beliefs. Van Laar et al. (2005), meanwhile, conducted five panel studies to examine the effect on the bias, affirmation, cognition, and behavior of college students living with roommates who were white, Asian American, Latin American, or African American. They found that the random assignment of roommates and voluntary exposure reduced bias, especially for black and Latin American students. In addition, the extended-contact hypothesis proposes that direct contact between individuals is not necessary to eliminate prejudice among groups (Pettigrew, 1997). Once an individual knows that someone in his or her group has established a good relationship with one or more members of another group, that knowledge will have the effect of eliminating prejudice.

Gaertner et al. (1993) proposed the common in-group identity model, which suggests that when individuals in different groups regard themselves as members of a single social entity, with increased active contact, the prejudice between groups is reduced. Such contact does not necessarily need to be deep (e.g., contact that increases friendship or enhances understanding); it can be mere exposure with no meaningful implication. Häfner and Stapel (2009) found that familiarity can either enhance or weaken stereotypes; they showed that familiarity increases the usability of available information. When this information consists of a stereotype or categorical information, stereotyping increases; in the absence of such categorical information, stereotyping decreases.

In some cases, it can be difficult for prejudice interventions to achieve the expected result, sometimes even producing contrary outcomes. The present study focused on two mechanisms found in the existing literature. The first is the "hostile media effect." In discussions of social controversy, audiences sometimes have limited trust and acceptance of media information. Vallone et al. (1985) found that, after exposure to the same news sample regarding a Beirut massacre reported by major radio and television stations, pro-Israeli and pro-Arab partisans both considered the program biased toward the other. Similarly, Gunther et al. (2001), proposing the theory of projection, found that people on both sides of an issue believed the news was biased relative to their judgment of the other's view—a phenomenon that in turn affects public opinion.

The second mechanism is the effect of "belief perseverance." Lord et al. (1979) conducted a two-phase laboratory study of 48 undergraduates who either supported or opposed the death penalty. The results showed that both sides regarded information that confirmed their own beliefs as providing more convincing arguments. (Lord et al., 1979) also reported the corresponding changes in each subject's opinion. The net effect was that individual attitudes were further strengthened in their own direction. Various studies have suggested that those who hold strong opinions about social issues may treat evidence in a biased manner. Moreover, people are more receptive to evidence that is consistent with their own evaluations when critically assessing opposing evidence. Thus, providing opposing evidence in a social dispute problem might not narrow differences but actually increase bias.

In summary, prior studies have investigated how information intervention changes intergroup prejudice and conflict. However, the reasons why the same information can affect different people differently require further theoretical and empirical study, which is what our work contributes to the literature. In particular, this paper is a new exercise linking identity and discrimination concerning migration in an information intervention experiment.

3. Model

For this research, we developed a model of individual attitude change. Based on Akerlof and Kranton (2000), we propose a new model by introducing psychological adjustment cost. If an individual experiences a substantial change in attitude, he or she will have negative utility by paying the cost.

In our model, the utility function for the individual is divided into three parts as follows:

$$U^i = V^i\left(X_2^i; \overline{X_1}; \frac{X_2^i + \sum_{-i} E\left(X_2^{-i}\right)}{N}\right) - \frac{1}{2}a\left(X_2^i - E\left(\overline{X_2}\right)\right)^2 - \frac{1}{2}c\left(X_2^i - X_1^i\right)^2 \tag{1}$$

where U_i represents the total utility function for individual i. Following Akerlof and Kranton (2000), utility function includes individual utility and social utility; to this we added psychological adjustment cost.

V^i is i's individual utility, which depends on his or her own attitudes and the attitudes of his or her peers. We extend Akerlof and Kranton (2000) to a two-period model: one before encountering new information (period 1) and one after encountering new information (period 2). In (1), X_2^i represents individual i's attitude in the second period, which is positively related to the exogenous information he or she receives. $\overline{X_1}$ represents the average of the attitudes of the group as a whole in period 1, and $\sum_{-i} E(X_2^{-i})$ expresses the sum of the expected attitudes of others in period 2, except for individual i. The total number of people is N. Therefore, $\frac{X_2^i + \sum_{-i} E(X_2^{-i})}{N}$ represents the average of social attitudes for the second period (i.e., after reading new information). The average of social attitudes shows that a change in individual attitude can only bring about a slight change in overall social attitudes.[1]

For the social utility function, individual attitudes are influenced by average social expectation, and these attitudes tend to converge. When there is a difference between the individual mindset and the average social attitude, the individual will have negative utility. a is assumed as a constant, and $a > 0$.

A change in individual attitudes may lead to psychological cost (or even economic cost more generally). We can assume that the greater the difference between initial attitudes during the first period and attitudes during the second period, the higher the adjustment cost. Here, c is a constant, and $c > 0$.

Given the attitude in the first period, we attempted to find the optimal attitude level in the second period. In the context of migration, everyone's identity, either local or not local, is established. Therefore, we can ignore any potential complications regarding the choice of identity and solve the two-period optimal attitude function directly by finding the first-order condition of X_2^i. Note that V_x and V_z are the partial derivatives of the function V for the first and third variables, respectively:

$$\frac{\partial U^i}{\partial X_2^i} = V_x + \frac{1}{N}V_z - a\left(X_2^i - E\left(\overline{X_2}\right)\right) - c\left(X_2^i - X_2^i\right) = 0 \tag{2}$$

Rearranging the equation, the attitude change is given by:

$$X_2^i = \frac{V_x + \frac{1}{N}V_z + aE\left(\overline{X_2}\right) + cX_1^i}{a + c}$$

$$\Delta X^i = X_2^i - X_1^i = \frac{V_x + \frac{1}{N}V_z}{a + c} + \frac{a\left[E\left(\overline{X_2}\right) - X_1^i\right]}{a + c} \tag{3}$$

The first part of Eq. (3) is affected by group size, and V_z is the expected marginal utility of social attitudes during the second period. When N is large, $\frac{1}{N}V_z$ has little effect on the result because of great social externality. In other words, individuals cannot fully enjoy the positive effects of attitude change. Consequently, the effect of the first part is determined by the sign of V_x, where V_x is the marginal utility of attitude during the second period, and its sign is uncertain.

For the purposes of this study, we divided Shanghai residents into three groups. For local Shanghai people, an inherent sense of discrimination toward migrants means the sign of V_x is negative. By contrast, new Shanghai residents who have Shanghai hukou but were not born in Shanghai can be regarded as half migrants, so they are psychologically sympathetic to the migrants. Therefore, their V_x may have a small positive number or might be close to 0. For migrants, the sign for V_x should be positive to reflect that they are friendly toward themselves.

In the second part, $E(\overline{X_2}) - X_1^i$ represents the difference between the expected average of the social attitude in period 2 and the individual's attitude in period 1. When the attitude of the first period is less than the expected value of the social attitude of the second period, the second part has a positive effect but has a negative effect when the value is greater than expected. Since there is an adjustment cost, there is a multiplier of $\frac{a}{a+c}$, so that the change in attitude is less than the change $E(\overline{X_2}) - X_1^i$ when there is no adjustment cost. Further, when c is large enough relative to a (i.e., the adjustment cost factor is much larger than the social utility factor), the second part is close to 0, and the attitude change is determined almost entirely by the sign of V_x.

As mentioned in the literature review, research has shown that providing more adequate and authentic information can lead to less discrimination. If the information itself (B) has a positive effect on attitudes, $\frac{\partial X^i}{\partial B} > 0$, then the ultimate change in attitudes will be directly influenced by information and indirectly affected by considering individual utility, social utility, and psychological adjustment costs. The direct change in attitude brought about by the information and the indirect change in utility function maximization may have a

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[1] There is one thing to clarify. What we solve in the model is the optimal attitude level in the second period, given the attitude in the first period. Thus, whether the attitude in the first period enters the individual utility function does not affect the analysis.

similar effect or an opposite effect, depending primarily on the sign of V_x.

It can be seen from the above that a change in attitude brought by information is related to the specific form of the individual's own utility function, the total number of people involved, and the expected average social attitude. This explains why on a small scale (as in a neighborhood), contact may change one's attitude. In that setting, N is small and externality is limited. However, at the greater societal level, the change in attitude depends heavily on the sign of V_x because N is large. In our study, V_x is closely related to the individual's identity. Thus, we expected that local Shanghai residents' attitudes would grow significantly worse, and the change in attitude on the part of new Shanghai people would not be significant, while the attitudes of migrants would improve significantly. Although information itself may have a direct positive effect on attitude, when we consider the utility function of social factors and adjustment cost, the effect of information on changes in individual attitude depends largely on each individual's inherent mindset as defined by his or her identity.

4. Survey design and statistical description

We conducted a survey-based experiment in July 2016. The design of the survey is described in the following section. The method of data collection is described in Section 4.2.

4.1. Experiment design and data collection

We conducted the survey in Shanghai, a provincial-level region in China. The proportion of migrants in Shanghai is as high as above 40%. We employed proportional sampling according to the distribution of the resident population in each district. Our survey covered nine representative districts of Shanghai: Huangpu, Jing'an, Xuhui, Changning, Putuo, Yangpu, Hongkou, Minhang, and Pudong New Area. The districts we surveyed covered seven major downtown areas and two representative suburban areas (see Fig. 1 for the locations of our sampled districts, which are underlined), representing 62% of the total population of Shanghai in 2014 (Table 1). To make the sample representative, the proportion of questionnaires in each district was almost same as the proportion of the resident population in

Fig. 1. Shanghai districts covered in the study.

Table 1
Shanghai resident distribution.

Proportion	*Shanghai Statistical Yearbook* (2014)	Our survey
Yangpu	8.80%	9.36%
Putuo	8.62%	8.94%
Zhabei	5.64%	5.74%
Jing'an	1.65%	2.13%
Xuhui	7.38%	8.72%
Changning	4.65%	5.11%
Hongkou	5.57%	6.38%
Huangpu	4.54%	4.26%
Pudong New Area	36.25%	34.89%
Minhang	16.89%	14.47%
Total	100.00%	100.00%

each district.

Source: authors' calculations based on the 2014 *Shanghai Statistical Yearbook* (Bureau, China Statistical, 2015), and our own data.

A total of 553 questionnaires were sent out for this study. Among these, 527 valid questionnaires were returned (response rate: 95.3%). Shanghai residents (participants who lived in Shanghai for more than six months per year) accounted for 470 of the responses. To guarantee that our findings can be duplicated, we repeated our work with a one-year interval. The results will be reported as a robustness check.

In the survey, first, we asked each interviewee two questions that assess the individual's attitude toward migrants. To reduce the possibility that the interviewees might guess our intention, the questionnaire also included eight irrelevant questions. Next, we showed each participant a paragraph of approximately 200 words that conveyed information about migrants. The information was presented in the form of news, and it was printed in bold and underlined in a style intended to attract attention. One of six different pieces of news was randomly shown to the interviewees. Finally, interviewees were asked to complete another questionnaire that included the same two questions concerning their attitude toward migration, along with two irrelevant questions. In this way, we could see how the responses to the same questions changed after reading the news.

More specifically, the questionnaire consisted of three parts. The first part covered individual information, including social and economic background. Interviewees were asked their age, gender, birthplace, education level, monthly income, and occupation; whether they were Shanghai residents; their hukou status and marital status; and whether their spouse was born in Shanghai.

The second part of the questionnaire consisted of 10 questions, two of which were designed to measure attitudes toward migrants. The subjects were asked to score each of the 10 questions on a scale from 1 (lowest) to 9 (highest). The two key questions were as follows:

1. What is your overall impression of migrants?
2. Do you agree with the policy of restricting migrants from working in Shanghai?

The remaining eight irrelevant questions were added to conceal our intention and allow us to randomly change the order of the 10 questions in different questionnaires. Examples of irrelevant questions are as follows:

1. How do you feel about the climate in Shanghai?
2. Does Shanghai Disneyland appeal to you?

In the third part, we asked participants to read an approximately 200-word news item about migrants. After the participants read the news, we gave them the same two questions regarding the evaluation of migrants, along with another two irrelevant questions about the writing quality of the article and the participants' reading habits.

To avoid potential endogeneity caused by a correlation between the information content and the interviewees' personal characteristics, we wrote six different "news" items and distributed them randomly among different questionnaires. The six messages discussed migrants in a favorable way and covered migrants in relation to urban prosperity, Shanghai's labor shortage, Shanghai's aging problem, elderly who live alone, urban quality of life, and the problem of left-behind children.[2] The contents of those news are presented in the appendix. In addition, we specified three different sources of information: The National Center for Urban Reform and Development (on behalf of the government), a professor from a top university (representing scholarly work), and an unnamed source (identified only as "according to the relevant research"). These three sources were presented randomly in the questionnaires to eliminate any effect the information source might have on the participant.[3]

Differences between the scores for the third and second part of the survey could be used to measure changes in attitude. A positive

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[2] "Left-behind children" refers to children who remain in their hometowns when their parents leave to work in the cities. In China, about 63% of migrant families leave their children behind because of the cost of urban living and the discrimination they would face if they attempted to send their children to public schools in the cities where they work (All-China Women's Federation, 2013).

[3] We studied whether different information sources affected changes in attitude, but we did not find significant differences.

difference represents an increase in the evaluation of migrants—that is an improvement in the individual's overall impression of migrants or opposition to the policy of restricting migrants from working in Shanghai. A negative difference means the attitude worsened.

4.2. Statistical description

Based on the changes in the two scores for the "impression" and "policy" questions, we created two figures (Fig. 2) illustrating the statistical distributions. For each question, the number of samples that showed no change was about half of the total. The remaining samples were almost symmetrically distributed on either side of zero changes. Up to this point, information seems to have had no effect on attitude change.

To determine why the information presented was statistically "useless" and to analyze the differences between the different identity groups, we divided the interviewees according to their birthplaces and whether they had a Shanghai hukou, as shown by Table 2:

In Table 2, we can see that the almost-normal distribution no longer holds. Whether the interviewees were native Shanghai residents had a significant effect on attitude change. There was a significant difference in the score change for the "impression" question between groups with regard to whether the subjects had Shanghai hukou and/or were born in Shanghai. In particular, when birthplace was distinguished, the two groups showed the same level of change for the "impression" question in terms of absolute value, but the direction of the signs was reversed. In the analysis of attitude change regarding "policy," participants with Shanghai hukou had less of an attitude change, but the difference was not statistically significant. After distinguishing birthplace, the attitudes of people born in Shanghai changed slightly by 0.02, but there was no statistically significant difference. Hukou and birthplace differences partly explained why the attitude changes were distributed symmetrically on the two sides of zero in Fig. 2.

5. Empirical results

5.1. Regression equations

Regression analyses were conducted to show heterogeneous changes in attitude more accurately. The regression equation was derived using the two basic equations below:

$$y_1 = \beta X + c + \varepsilon \tag{4}$$

$$y_2 = \theta y_1 + \beta' X + \gamma T + \alpha TX + c' + \varepsilon' \tag{5}$$

where y_1, y_2 are, respectively, the scores before and after reading the "news" information. X is a set of individual characteristics; T is a dummy variable of information; β, β', γ, and α are coefficients; c and c' are constant terms; and ε and ε' represent error terms. We can obtain the score change by subtracting (4) from (5):

$$y_2 - y_1 = \theta y_1 + (\beta' - \beta)X + \gamma T + \alpha TX + (c' - c) + \varepsilon' - \varepsilon \tag{6}$$

In the short term, we can assume that the effect of individual characteristics and constant terms remains unchanged, so that $\beta = \beta'$, $c = c'$. The new error term $\varepsilon' - \varepsilon$ follows a normal distribution and is independent of X. Defining μ as the new error term, we can obtain
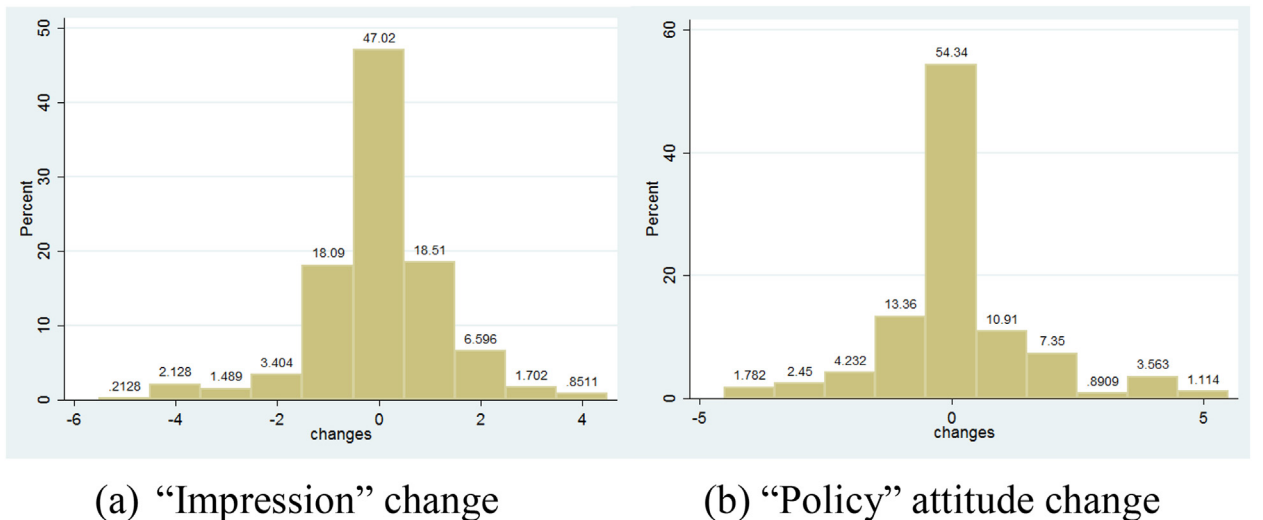

(a) "Impression" change   (b) "Policy" attitude change

Fig. 2. Distribution of attitude change.

Table 2

Comparison of attitude changes among different people.

	"Impression" change overall		"Policy" attitude change overall	
Sample size	470		470	
Mean	0.0128		0.0574	
	No hukou	Have hukou	No hukou	Have hukou
Sample size	149	321	149	321
Mean	0.255	−0.0997	0.141	0.0187
SE	0.124		0.198	
p-value	0.0022		0.269	
t-value	2.863		0.617	
	Have hukou		Have hukou	
	Not born in Shanghai	Born in Shanghai	Not born in Shanghai	Born in Shanghai
Sample size	106	215	106	215
Mean	0.123	−0.204	0.00	0.0278
SE	0.141		0.224	
p-value	0.0098		0.550	
t-value	2.35		−0.125	

Table 3

Influence of hukou and birthplace on attitude change.

	"Impression" change			"Policy" change		
	(1)	(2)	(3)	(4)	(5)	(6)
Hukou	−0.555***	−0.483***	−0.251	−0.496*	−0.378	−0.00574
	(0.125)	(0.130)	(0.156)	(0.196)	(0.202)	(0.240)
Spouse born in Shanghai		−0.257	−0.110		−0.484*	−0.273
		(0.133)	(0.142)		(0.209)	(0.221)
Born in Shanghai			−0.468**			−0.664**
			(0.160)			(0.249)
Born in rural area			−0.218			0.0960
			(0.187)			(0.286)
Age	−0.00440	0.000224	−0.00459	−0.0213*	−0.0122	−0.0185
	(0.00588)	(0.00634)	(0.00652)	(0.00905)	(0.00983)	(0.0100)
Gender	0.196	0.177	0.177	0.165	0.131	0.0978
	(0.113)	(0.113)	(0.113)	(0.173)	(0.173)	(0.174)
Education	0.0572*	0.0544*	0.0355	−0.0298	−0.0312	−0.0488
	(0.0228)	(0.0278)	(0.0235)	(0.0363)	(0.0361)	(0.0369)
"Impression" before reading information	−0.260***	−0.266***	−0.277***			
	(0.0335)	(0.0336)	(0.0339)			
"Policy" before reading information				−0.301***	−0.317***	−0.335***
				(0.0319)	(0.0324)	(0.0329)
Constant	0.965*	0.945	1.50**	3.27***	3.19***	3.78***
	(0.487)	(0.485)	(0.517)	(0.690)	(0.687)	(0.734)
R-squared	0.140	0.147	0.163	0.185	0.195	0.208
Observations	469	469	469	469	469	469

Note: Standard errors are listed in parentheses. *, **, and *** indicate significance at 5%, 1%, and 0.1%, respectively.

$$\Delta y = y_2 - y_1 = \theta y_1 + \gamma T + \alpha TX + \mu \tag{7}$$

When the effect of all information is indifferent, we can set *T* equal to 1, so we can simplify (7) as

$$\Delta y = \gamma + \theta y_1 + \alpha X + \mu \tag{8}$$

Equation (8) is the baseline regression model used in this study. In addition, we used equation (7) to test whether different information had a different effect on attitude change.

5.2. Hukou, birthplace, and attitude change

Here, we test how different individual characteristics and identities affected changes in attitudes toward migrants. To control for individual characteristics, we measured education using years of schooling, and we assigned the gender variable a value of 1 for males and 0 for females. As before, the dependent variable was the difference between the scores before and after reading the information. A positive number represents improvement while negative indicates a worsened attitude.

In Table 3, columns 1 and 4 show that having a Shanghai hukou had a negative effect (about 0.5) on change in the scores. To further

consider the effect of spouses on participants' responses, in columns 2 and 5 we added a dummy variable, "spouse born in Shanghai." The results showed that the negative effect of Shanghai hukou still existed,[4] and the variable "spouse" also had a significant negative effect.

In columns 3 and 6, we controlled for the birthplace of the interviewee. We set the group "born in other cities" as the base group, which accounted for 43% of the total sample and 27% of those with Shanghai hukou. We found that Shanghai hukou still had a negative effect, but the effect was no longer significant. It is noteworthy that people born in Shanghai had a lower score compared to those born in other cities, but there was no significant difference in the scores between people born in rural areas and those born in other cities. We can see that when controlling the variable "born in Shanghai", the variable "hukou" actually referred to people who had Shanghai hukou but were not born locally, thus indicating that people whose attitudes about migrants became more negative were mostly born in Shanghai.

By contrast, columns 1, 2, and 3 show that an increase in the number of years of schooling had a significant positive effect on the scores for the "impression change" question. Columns 4, 5, and 6 show that age increases had a significant negative effect on scores for the "policy attitudes" question. These findings are consistent with the idea that better-educated and younger people tend to be more receptive to new ideas.

6. Robustness checks

6.1. Different information

In the regression analysis above, we assumed that all information was indifferent. However, as mentioned, to avoid potential endogeneity caused by correlations between the information content and interviewees' personal characteristics, we wrote six different "news" paragraphs and distributed them randomly among the questionnaires. Given that the information paragraph in each questionnaire was selected at random from among these six different information samples, we think it is possible that the relevance of the information could have affected the scores. If all of the information is regarded as homogeneous, there may have been bias in the regression results.

Considering the content of the six news pieces, we selected the fourth, which was about elderly people who live alone, as the most irrelevant one since the other five emphasized the relationship between migrants and local residents. Therefore, to test the effect of information heterogeneity on the results, we designated Information 4 as irrelevant information while the rest were considered relevant. Then, once again, we examined the effects of Shanghai hukou and birthplace; Table 4 reports the results. Columns 1 and 2 include the core variables and columns 3 and 4 the control variables. Comparing the average values and significance levels of the six variables for relevant and irrelevant information, we can see that participants who received relevant messages were 2.5 years older by chance, but there were no significant differences in the other variables. Therefore, we believe there were no significant differences among people who received different information, and the information was completely randomly assigned.

$$\Delta y = y_2 - y_1 = \theta y_1 + \gamma T + \alpha TX + \mu \tag{7}$$

aimed to further explore whether relevant information might have had different treatment effects compared to irrelevant information. Review equation (7) mentioned above.

When the information is different, the value of T is different. Take $T = 0$ when the information is irrelevant and $T = 1$ when the information is relevant, so that the regression is equivalent to a random information intervention experiment. At the same time, if we take interviewees who received irrelevant information as the control group, the equation above is actually a difference-in-differences (DID) analysis. Table 5 shows the results, which are similar to the findings when the information is considered homogeneous. Columns 1 and 4 show that having a Shanghai hukou had a very significant negative effect on change in attitude. When controlling for the factor "spouse" in columns 2 and 5, we found that "local spouse" also had a significantly negative effect. In columns 3 and 6, we added a control for birthplace, with people born in other cities as the reference group. Local hukou and "local spouse" still had a negative influence, but there was no statistical significance. Compared to the attitudes of those born in other cities, the attitudes of interviewees born in Shanghai showed a significantly negative change. There was no significant difference in attitude change between people born in rural areas and those born in other cities.

6.2. Different questionnaire design

Adding irrelevant questions and shuffling the order of the questions can, of course, conceal the intention of the research. However, this technique also increases the length and complexity of the survey. Interviewees bear time and psychological costs, which can lead to measurement errors to some extent. To make the conclusions more robust, we carried out a similar study without irrelevant questions, which greatly reduced the complexity of the questionnaire. A total of 834 questionnaires were distributed, and 778 valid ones were collected, covering five districts of Shanghai. Table 6 shows the results obtained by repeating the regressions shown in Table 3. Our main conclusions remained almost unchanged, although the significances and the magnitudes of the coefficients are not exactly the same. The difference between Tables 3 and 6 is mainly because Table 6 did not allow us to control individual characteristics as Table 3 did. Different sampling of the two rounds of surveys may also explain part of the difference.

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[4] The effect of hukou lost significance in column 5 (p-value 0.061).

Table 4
Statistics for different information.

	Relevant information	Irrelevant information	Relevant information	Irrelevant information
	(1)	(2)	(3)	(4)
Sample size	394	76	394	76
	Have hukou		Age	
Mean	0.690	0.645	34.518	31.974
SE	0.0584		1.238	
p-value	0.218		0.0202	
t-value	−0.781		−2.055	
	Spouse born in Shanghai		Gender	
Mean	0.398	0.316	0.596	0.539
SE	0.0610		0.0618	
p-value	0.0879		0.178	
t-value	−1.36		−0.923	
	Born in Shanghai		Education	
Mean	0.459	0.461	16.216	16.026
SE	0.0626		0.309	
p-value	0.507		0.269	
t-value	0.0181		−0.616	

Table 5
Influence of Hukou and birthplace on attitude change with relevant information.

	"Impression" change			"Policy" change		
	(1)	(2)	(3)	(4)	(5)	(6)
Relevant information	1.48***	1.60***	1.72***	1.93***	2.15***	2.23***
	(0.298)	(0.299)	(0.302)	(0.357)	(0.361)	(0.370)
Hukou·information	−0.448***	−0.313*	−0.119	−0.489*	−0.259	−0.0322
	(0.136)	(0.145)	(0.167)	(0.208)	(0.220)	(0.254)
Spouse born in Shanghai·information		−0.351**	−0.233		−0.634**	−0.510*
		(0.136)	(0.144)		(0.210)	(0.221)
Born in Shanghai·information			−0.420*			−0.446
			(0.171)			(0.265)
Born in rural area·information			−0.126			0.0597
			(0.201)			(0.306)
"Impression" before reading information·information	−0.218***	−0.231***	−0.246***			
	(0.0385)	(0.0386)	(0.0392)			
"Policy" before reading information ·information				−0.300***	−0.321***	−0.337***
				(0.0341)	(0.0346)	(0.0357)
Constant	0.0658	0.0658	0.0658	0.184	0.184	0.184
	(0.140)	(0.139)	(0.138)	(0.213)	(0.211)	(0.211)
R-squared	0.0732	0.0862	0.0980	0.143	0.159	0.165
Observations	470	470	470	470	470	470

Note: Standard errors are listed in parentheses. *, **, and *** indicate significance at 5%, 1%, and 0.1%, respectively.

7. Conclusion

It is the best of times; it is the worst of times. It is an age of growing immigration but also one of anti-immigration. Questions remain about how to change negative attitudes toward immigration so that social welfare can be improved.

In this study, we constructed a model that included the social psychological adjustment cost of a change in attitude. The model related an individual's change in attitude after receiving information to the specific form of that individual's utility function, the total number of people involved, and the expected average social attitude. In this model, the cost of attitude change was paid by the individuals themselves, but the benefits of change in attitude had externality. Since an increase in the number of people involved in the relevant policy reduced the benefits, individuals tended to avoid changing their attitudes. At the same time, the expected average behavior within an identity group could reinforce the initial attitude of the group member.

Shanghai was chosen for the empirical study, and we collected information about local residents through field interviews. After the survey, participants received implicitly positive information related to migration. We found that attitudes toward migrants among residents who had Shanghai hukou (especially those born in Shanghai) worsened while migrants' attitudes toward migrants improved.

We conclude that when people have established their social identities, they tend to show rigidity with respect to attitude changes, a pattern that can be termed "rational stubbornness." While these findings are somewhat disappointing regarding expectations for social change, they may help us understand why social development and progress are often slow. This study also provided the weakly optimistic signal that young and well-educated people became friendlier toward immigrants after receiving information; thus, they may become the main force for promoting changes in social attitudes. While this study only investigated the short-term effects of information

Table 6
Influence of hukou on attitude change (a different survey).

	"Impression" change		"Policy" change	
	(1)	(2)	(3)	(4)
Hukou	−0.215*	−0.150	−0.359***	−0.288**
	(0.0934)	(0.101)	(0.106)	(0.112)
Spouse born in Shanghai		−0.298*		−0.223
		(0.152)		(0.164)
Age	0.000910	0.00562	0.00832	0.0126*
	(0.00438)	(0.00510)	(0.00468)	(0.00547)
Gender	−0.0320	−0.0227	−0.0688	−0.0724
	(0.0920)	(0.0922)	(0.0992)	(0.0992)
Education level	0.0179	0.0170	0.00421	0.00846
	(0.0174)	(0.0176)	(0.0187)	(0.0188)
"Impression" before reading information	−0.253***	−0.256***		
	(0.0271)	(0.0272)		
"Policy" before reading information			0.155***	0.156***
			(0.0206)	(0.0207)
Constant	1.40***	1.32***	−0.853**	−1.04**
	(0.315)	(0.325)	(0.314)	(0.331)
R-squared	0.126	0.130	0.0879	0.0909
Observations	636	628	634	626

Note: Standard errors are listed in parentheses. *, **, and *** indicate significance at 5%, 1%, and 0.1%, respectively.

exposure, future research could focus on whether longer and more explicitly positive information exposure could change people's social attitudes.

Appendix. News in the Survey

Information 1: Immigrant population and urban prosperity.
Population migration and urban construction: Immigrant population promotes Shanghai's prosperity.
Research by the Urban Reform and Development Center of the National Development and Reform Commission and other units shows that the migrants has filled the local demand for labor at different levels, so that the labor demand of high-tech, knowledge-based industries, or labor-oriented services, and entertainment industries are all satisfied with the filling of the migrant population. At present, the migrant labor force in Shanghai has accounted for more than half of the total labor force. The migrant population enjoys the resources and space of the place of immigration, they also provide strong human resources support for the local area.
Information 2: Labor shortage.
Shanghai's labor shortage three months ahead of schedule, labor shortage may become the norm.
The labor shortage in 2015 was nearly three months earlier than in previous years. Just after October, some labor-intensive companies have fallen into the embarrassing situation of losing old employees and difficult recruiting new ones. The manufacturing industry and service industry are even more desperate.
Research by the Urban Reform and Development Center of the National Development and Reform Commission and other units showed that the labor shortage came early due to more than one reason. The rising consumption index, the improvement of employment conditions in other places, and the shifting of enterprises to second-tier cities have jointly contributed to labor shortage. The restrictions on the settlement of migrant workers in Shanghai are particularly one of the reasons for this labor shortage.
Message 3: Aging.
Shanghai faces the threat of aging and restricting population migration will have many problems.
Research by the Urban Reform and Development Center of the National Development and Reform Commission and other units shows that in recent years, a large proportion of Shanghai's social security supply has been provided by the migrant labor population, and this trend is becoming more and more obvious with the aging tendency of Shanghai local residents.
In 2011, the migrant population was included in the pension insurance payment ranks. By 2013, the total pension income rose to 143.7 billion yuan, an average annual increase of 27%. The replenishment of the migrant population has greatly eased the social security

pressure of aging. If all the migrants are evacuated, there will be a shortfall of more than 40 billion yuan in Shanghai's pensions. Due to reduced taxes, the government is unable to provide financial subsidies, and the retirement pension for the elderly in Shanghai needs to be reduced by one-third to maintain the balance of social security funds.

Message 4: The lonely elderly.

The number of elderly people in Shanghai has soared, and pensions have become the only source of income.

Research by the Urban Reform and Development Center of the National Development and Reform Commission and other units shows that the number of lonely elderly families in Shanghai is rapidly expanding, and the trend of living alone is becoming more and more obvious. Pensions and retirement funds have become the sole source of income for most Shanghai elderly.

Shanghai entered an aging society in 1979 and was the first city in China to enter an aging society. According to statistics, at the end of 2010, the elderly population of 60 years old and above in Shanghai's registered population accounted for 23.4% of its total registered population. According to predictions by relevant departments, during the "Twelfth Five-Year Plan" period, the number of elderly people registered in Shanghai will increase by an average of more than 200,000 per year. By 2015, the proportion of elderly people in Shanghai will be close to 30%.

Pensions have even become the only source of income for most of the elderly here. The survey shows that the proportion of Shanghai elderly people who receive financial support from their children is relatively low. Only 14.7% receive child allowances and alimony, and 14.3% need to use their savings to subsidize their daily expenses. Relying on government subsidies, the proportion of rental housing income is only about 3%, and the income from commercial insurance is less than 1%.

Information 5: Urban Disease.

Urban disease is not the responsibility of immigration; government planning is the countermeasure though.

Research by the Urban Reform and Development Center of the National Development and Reform Commission and other units shows that urban diseases such as poor traffic, environmental pollution, and lack of public resources cannot be simply attributed to the expansion and development of the city, nor can it be used as a restriction on population flow and reasonable urban expansion.

Urban diseases must be managed through improvements in technology and management. The population of large cities in developed countries continues to grow, but urban diseases have been effectively controlled. International experience shows that through the government's rational urban planning and construction and the optimal allocation of public resources, urban diseases are indeed "medicated."

Information 6: Left-behind children.

Need to pay attention to the shortage of education and companionship for left-behind children.

Research by the Urban Reform and Development Center of the National Development and Reform Commission and other units shows that the current household registration system requires the children of migrant workers to be educated mainly in the place of origin schools, which objectively creates the problem of left-behind children today. As a place for labor inflows, megacities' policies to exclude migrants have exacerbated the problem of left-behind children.

According to the 2010 census, the total number of left-behind children reached 61 million, and this number is still growing. Due to their parents leaving their hometowns to work in different places, these children are forced to stay behind and cannot receive the care they deserve. Paying attention to left-behind children urgently needs policy support.

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