The Centrality of Ethnicity in Perceptions about Immigration:

Evidence from a Conjoint Experiment in the United States

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Abstract

Existing literature often makes a presumption that Americans think of immigrants as Hispanics, but how central is ethnicity to perceptions about immigration when compared with other attributes such as skill? I answer these questions using two original conjoint experiments carried out in the United States, in which respondents estimate hypothetical persons' probabilities of being immigrants based on presented descriptions. Results demonstrate that perceptions about immigrants among Americans are strongly dominated by ethnicity. Regression analyses using individual-level estimates from conjoint experiments show that perceptions about immigrants' ethnicity and criminal behavior consistently predict anti-immigration attitudes, whereas perceptions about skill do not. An embedded priming experiment further demonstrates that making these perceptions salient changes respondents' attitudes. Overall, ascriptive identities dominate both content and consequences of perceptions about immigration.

Keywords: attitudes, conjoint analysis, ethnicity, immigration, perceptions

An extensive literature in the social sciences explores the factors that shape public attitudes toward immigration (Hainmueller and Hopkins 2014), and (mis)perceptions about immigrants seem to play an important role in social attitudes (Lutz and Bitschnau 2022). For instance, attitudes toward immigrants are broadly believed to be heavily impacted by group-based prejudice, with Hispanics in the United States being the most prominent case.[1] Presentation of Hispanic immigrants in the news media changes whites' opinions on the issue (Brader, Valentino, and Suhay 2008), and implicit attitudes toward Hispanics spill over into immigration policy preferences (Perez 2010). The standard interpretation of these findings deals with perceptions: according to a popular logic, Americans imagine immigrants as predominantly Hispanics, and these mental images color opinions on immigration. However, existing evidence for this conjecture is only indirect since the degree to being Hispanic is central to perceptions about immigrants in the U.S. public has never been measured.

Importantly, group affect is not the only consideration that likely factors into natives' opinions on immigration—and, consequently, ethnicity is not the only dimension of perceptions about immigrants that researchers may be interested in exploring. For instance, Americans as well as citizens of other industrial democracies agree that potential immigrants who have valuable skills should be preferred for admission (Hainmueller and Hopkins 2015; Valentino et al. 2019). Immigrants' willingness to integrate and respect both formal and informal rules of the host society also prominently impact opinions on immigration (Levy and Wright 2020; Ostfeld 2017). At the same time, evidence shows that preferences for skilled and law-abiding immigrants can mask group-based prejudice among natives. In the U.S. context, Mexican immigrants are

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[1]   In my experiment, I use "Hispanic" as an attribute because incorporating gendered labels like "Latina" and "Latino" in conjoint designs is less straightforward, whereas the gender-neutral term "Latinx" may still be unfamiliar to many respondents. Throughout the paper, I also use "Hispanic" as a group label for consistency.

more strongly penalized for transgressive behavior than immigrants from the UK or Canada (Hartman, Newman, and Bell 2014). Similarly, evaluations of Hispanic immigrants depend on skill more heavily than evaluations of immigrants from Europe (Newman and Malhotra 2018). In other words, different perceptions about immigration—such as natives' beliefs about immigrants' ethnicity, economic contribution, and threatening behavior—likely overlap.

Existing research on the stereotypical association between Hispanics and immigration in the United States does not measure it directly—instead, this link is inferred from the observed effect of anti-Hispanic prejudice on anti-immigration attitudes (e.g., Valentino, Brader, and Jardina 2013). This analytical approach leaves important gaps. While it shows evidence for the presence of a connection between race/ethnicity and immigration in the minds of Americans, it is less clear how strong these perceptions are, both in absolute sense and relatively to perceptions about other relevant attributes. As a result, the unique contribution of perceptions about immigrants' race/ethnicity to anti-immigration attitudes—separate from perceptions about their skill, criminal behavior, and so on—cannot not be established. Addressing this gap is important in the light of recent experimental findings demonstrating that Americans' immigration preferences are more meritocratic than ethnocentric (Hainmueller and Hopkins 2015).

Disentangling different dimensions of perceptions about immigrants, which can be thought of as a "bundle of sticks" (Sen and Wasow 2016), is a complicated task. Recent research employing latent class analysis demonstrates that attributes potentially associated with immigrants, such as "Hispanic" and "low skilled," are indeed intertwined in the minds of white Americans (Flores and Azar 2022). A limitation of the latent class approach is that although it allows exploring how different attributes are conflated in common immigrant "archetypes," there is no straightforward way to compare their centrality in the content and consequences of

perceptions. Some studies also use respondents' self-reports to explore perception dimensions separately (Blinder 2015; Zhirkov 2021), but they are subject to other methodological problems including social desirability bias and respondents' innumeracy.

This discussion suggests several requirements that a good measure of perceptions about immigrant populations should satisfy. First, it must allow investigating multiple beliefs simultaneously: potential examples include immigrants' ethnicity or religion, skill/occupation, and propensity for criminal behavior. Second, such a measure should allow the researchers to compare the centrality or importance of different dimensions in both content and consequences of perceptions about immigrants. Third, a method needs to be subtle to decrease concerns about social desirability that can arise due to the sensitivity of immigration as a topic. Fourth, a good measure should be flexible and applicable to perceptions about immigrant populations beyond the case of Hispanics in the United States.

In this paper, I contribute to the literature by exploring the content and implications of perceptions about immigrants using a recently validated method based on conjoint experiments (Myers, Zhirkov, and Lunz Trujillo 2022). In these experiments, respondents are presented with profiles that describe hypothetical persons in terms of several attributes; then they are asked to estimate these persons' probabilities of belonging to a certain social category (in this case, immigrants). Estimated effects from such conjoint designs measure the direction and strength of cognitive associations between each included attribute and the social category in question.

The conjoint method of measuring perceptions adheres to all the requirements specified above. It is inherently multidimensional since respondents are asked to rate profiles described in terms of several attributes. Inferring perceptions from observed categorizations instead of relying on self-reports provides greater protection against social desirability, demand effects, and

rationalization. Since conjoint effects are estimated independently for different perception dimensions, they allow comparing the centrality of different attributes for both content and consequences of beliefs about immigrants.

I report results of an original conjoint experiment carried out in the United States demonstrating that respondents primarily rely on persons' ethnicity when making guesses about their nativity status. Further, regression analyses that employ individual-level estimates from conjoint experiments show consistent effects of perceptions about immigrants' ethnicity on attitudes toward immigration—but not of perceptions about skills. Embedded priming experiments address the causality question: when perceptions about immigrants are activated, participants report attitudes toward immigration that are significantly more negative. Priming attitudes, in turn, does not change the content or consequences of perceptions.

Perceptions and Attitudes toward Immigration

The realities of life in a modern society create an essential gap between people's cognitive abilities and the amount of information they need to acquire and process (Lippmann 1922). To cope with these challenges of information processing and storage, people create simplified and often distorted mental images of social reality. Then these images, rather than the underlying reality, inform social attitudes. This conjecture, even though first put forward a century ago, has held up well to the present: people's preferences are largely built on imagination, and policies that benefit populations imagined as "undeserving" enjoy lower levels of public support (Petersen 2012; Schneider and Ingram 1993).

This framework is applicable to immigration for several reasons. Immigrants are a complicated and abstract category that most people are not familiar with and have little knowledge about (Lutz and Bitschnau 2022). Studies have repeatedly demonstrated large and

consequential misperceptions about the size of immigrant populations among the publics in industrial democracies (Citrin and Sides 2008; Gorodzeisky and Semyonov 2020; Hjerm 2007). The centrality of perceptions in the formation of attitudes toward immigration can explain their stability (Kustov, Laaker, and Reller 2021), given that beliefs about immigrants are extremely resilient even in the light of new relevant information (Glinitzer, Gummer, and Wagner 2021; Hopkins, Sides, and Citrin 2019).

Researchers have recently moved from describing perceptions about sizes of immigrant populations to exploring more detailed beliefs about the specific attributes that, in people's minds, distinguish immigrants from natives. Studies have shown that natives' beliefs about immigrant populations significantly deviate from objective data and that these beliefs predict attitudes toward immigration (Blinder 2015; Flores and Azar 2022; Zhirkov 2021). In other words, people's opinions are based on perceptions about immigrants rather than on the underlying social reality.

Problems with Measuring Perceptions

Existing studies on perceptions about immigrants use standard survey questions. For instance, respondents may choose the most frequent value of a certain attribute, such as reason for migration (Blinder 2015). Such responses can be analyzed using the latent class technique to see which immigrant attributes tend to go together in people's minds: for instance, whether respondents who associate immigration with Hispanics are also more likely to see more immigrants as low skilled (Flores and Azar 2022). Alternatively, respondents estimate the percentages of immigrants having the attribute values of interest, such as a college education or English proficiency (Zhirkov 2021). Then, independent of the specific measurement method, self-reported attitudes are regressed on self-reported perceptions.

This inferential strategy carries several methodological challenges. One of them is social desirability bias, a tendency to underreport beliefs considered inappropriate (Nederhof 1985). Another problem is demand-effects that arise when participants make guesses of the study purpose and change responses to fit that assumed purpose (Nichols and Maner 2008). Self-reported perceptions, especially for attributes involving strong affect, can also be rationalizations of preexisting attitudes rather than their antecedents (Lodge and Taber 2013).

These methodological issues likely have different consequences for measuring various perception dimensions and estimating their social implications. Respondents may be more hesitant to express perceptions about immigrants' ethnicity and religion while arguments about immigrants' economic productivity and reliance on welfare are more accepted in the public debate. As a result, researchers may underestimate both the extent and variation of ethnic and religious perceptions about immigrants—and this can bias estimated relationships between these perceptions and attitudes toward immigration.

Measuring Perceptions Using Conjoint Experiments

This paper addresses these challenges by measuring perceptions about immigrants with conjoint experiments. The conjoint analysis is a survey-experimental design that allows researchers to study choices potentially affected by multiple factors or considerations (Hainmueller, Hopkins, and Yamamoto 2014). Conjoint experiments are commonly used to explore multidimensional preferences, including on immigration (Clayton, Ferwerda, and Horiuchi 2021; Ford and Mellon 2020; Hainmueller and Hopkins 2015). In such tasks, respondents are presented with multiple pairs of hypothetical immigrants described using a set of randomized attributes; then they are asked to choose the immigrant they would prefer to admit.

Researchers have recently started using conjoint experiments to study beliefs about the social world rather than preferences (Flores and Schacter 2018; Goggin, Henderson, and Theodoridis 2020; Myers, Zhirkov, and Lunz Trujillo 2022; Schachter, Flores, and Maghbouleh 2021). In these categorization-based conjoint experiments, respondents are asked to infer group memberships of hypothetical persons from presented attributes rather than to express preferences. For instance, the task can present respondents with profiles of candidates and ask them to guess whether each profile belongs to a Democrat or a Republican based on information about religion, military experience, occupation, and so on.

The conjoint-experimental design offers essential protections against social desirability, demand effects, and rationalization. It can lead respondents to believe that they can "conceal" the characteristics most impactful for their classification decisions from the researcher since the profiles they are asked to categorize differ on multiple dimensions. Unlike standard survey questions that require respondents to rate perceptions on all dimensions of interest, conjoint designs tap judgments based only on dimensions relevant for each respondent. Conjoint tasks infer perceptions indirectly from observed choices; thus, concerns about rationalization are decreased. In addition, conjoint-based measures have been externally validated (Hainmueller, Hangartner, and Yamamoto 2015; Jenke et al. 2020), are resilient to data quality problems in survey research, such as satisficing (Bansak et al. 2018, 2021), and help decrease social desirability bias (Horiuchi, Markovich, and Yamamoto 2021).

Conjoint experiments have another important benefit as a measure of perceptions: protection from survey participants using factual knowledge. When answering a standard question on perceptions, such as an item asking about the percentage of immigrants who are younger than age 40, a respondent can simply know the statistic or even look it up online

(Clifford and Jerit 2016; Graham 2023). However, a conjoint-based measure makes application

of such knowledge nearly impossible because of the provision of multiple attributes in profiles.

For instance, calculating the conditional probability of being an immigrant (A) for a woman (B)

with a high-skilled job (C) would require knowing both the joint probability of having the latter

two characteristics and the joint probability of having all three:

$$\Pr(A|B,C) = \frac{\Pr(A,B,C)}{\Pr(B,C)}.$$

This obviously becomes even more difficult as more attributes enter the calculation process.

Individual Estimates from Conjoint Experiments

Usually, researchers use average marginal component effects (AMCEs) from conjoint

experiments to describe aggregate perceptions in studied populations. However, a procedure has

recently been proposed to obtain individual marginal component effects (IMCEs; Zhirkov 2022).

This procedure does not require any additional assumptions compared to the standard conjoint

analysis. At the same time, there are some design requirements: using an interval response scale,

minimizing the number of randomized values per attribute, and maximizing the number of

profiles presented to respondents. IMCEs from categorization-based conjoint experiments

measure individual-level perceptions, similar to how estimates from standard choice-based

conjoint tasks measure preferences. These measures can be used in inferential analyses to

explore how perceptions relate to attitudes (Myers, Zhirkov, and Lunz Trujillo 2022).

Formally, the procedure for obtaining IMCEs and using them as predictors in subsequent

regression analysis can be described as follows. Consider a sample of respondents indexed $i = 1, \ldots, I$. Each respondent rates profiles of hypothetical persons indexed $j = 1, \ldots, J$ by likelihood

of being immigrants. Profiles have attributes indexed $k = 1, \ldots, K$. Each attribute has a specific

number of levels indexed $l = 1, \dots, L^k$. At the first step, IMCEs for each attribute k are estimated using respondent-specific regression models:

$$y_{ij} = \alpha_{ik} + \sum_{l=2}^{L^k} \beta_{ikl} x_{ijkl} + \varepsilon_{ijk}$$

where y_{ij} is the rating given by respondent i to profile j, α_{ik} is the constant, β_{ikl} is the respondent-specific regression coefficient for value l of attribute k, x_{ijkl} is an indicator variable that equals one if attribute k from profile j presented to respondent i has value l and zero otherwise, and ε_{ijk} is the error. To achieve identification, β_{ik1} is not estimated and IMCEs effectively represent the estimated differences in average ratings between profiles with their respective attribute values and profiles with the baseline value.

Estimate of IMCE for value l of attribute k specific to respondent i, denoted π_{ikl}, is equivalent to the estimate of respondent-specific regression coefficient:

$$\hat{\pi}_{ikl} = \hat{\beta}_{ikl}.$$

This estimate assesses the direction and strength of the perception along a specific dimension for each individual: the degree to which respondent i associates value l of attribute k (e.g., having a low-skilled occupation) with the outcome (e.g., being an immigrant). At the second step, IMCE estimates for all K attributes and $(L^k - 1)$ attribute values (baseline values excluded) are used in regression analysis to predict the outcome of interest z, such as attitude toward immigration, with a set of control variables indexed $h = 1, \dots H$:

$$z_i = \gamma + \sum_{k=1}^{K} \sum_{l=2}^{L^k} \delta_{kl} \hat{\pi}_{ikl} + \sum_{h=1}^{H} \theta_h w_{ih} + u_i$$

where γ is the constant, δ_{kl} is the coefficient of perception l along dimension k, θ_h is the coefficient of control variable h, w_{ih} is the value of variable h for respondent i, and u_i is the error.

Outline of the Study

I use the conjoint method to study the perceptions about immigration in the United States. I start from analyzing conjoint-experimental data to understand the attributes that respondents associate with immigrants. I also explore the degree to which these perceptions vary by respondents' partisanship and education. These results provide important descriptive findings regarding the perceptions about immigration in the two countries. My main analyses, however, concern the relationships between these perceptions and attitudes toward immigration. To achieve that goal, I predict attitudes with individual-level perceptions estimated from conjoint experiments as described in the methodological section above. I also manipulate salience of perceptions about immigration using a question-order experiment to assess whether perceptions cause attitudes rather than vice versa.

Data and Measures

To explore perceptions about immigrants in the United States, I designed and fielded an original survey-experimental study in March 2019. Participants were recruited using the Lucid panel that matches the American National Election Study on several benchmarks (Coppock and McClellan 2019). The survey, including the conjoint task, was completed by 916 respondents. The sample characteristics were the following: Mean age was 44.5 years, and the gender ratio was 49% male to 51% female. In terms of race/ethnicity, 70.6% of respondents self-identified as non-Hispanic whites. College education was reported by 39.3% of respondents. Finally, 38% of respondents identified as Democrats, 36% as Republicans, and 26% as independents.

In the conjoint experiment, each respondent rated 20 profiles by probability of being an immigrant.[2] The profiles were presented in 10 pairs and the outcome measure was an interval

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[2] When completing the conjoint experiment, 12 respondents ended up rating fewer than 20 profiles (the lowest number was 17 rated profiles for one respondent). These respondents were kept in the analysis.

scale from 0% to 100%. Even though the task was formulated in terms of percentages, its goal was not to measure the true conditional probability of a profile belonging to an immigrant given a certain description. It is well established that most people have trouble calculating percentage-based quantities (Landy, Guay, and Marghetis 2018). Moreover, as discussed above, presentation of conjoint profiles in terms of multiple attributes makes calculation of conditional probabilities practically impossible. Therefore, I simply use conjoint estimates as measures of perceptions or associative networks linking immigrants to certain attributes in the minds of respondents.

Table 1. Attributes for profiles in U.S. conjoint experiment

Attribute	Values
Age	*Young:* 25–39
	Older: 40–54
Gender	Female
	Male
Race/ethnicity	White
	Black
	Hispanic
	Asian
Occupation	*High-skilled:* Accountant, Engineer, Graphic designer, Nurse, Teacher
	Low-skilled: Cook, Day laborer, Gardener, Janitor, Waiter
Government benefits	*No benefits:* None
	Receives benefits: Food stamps, Housing assistance, Medicaid, Supplemental income
Police record	*No record:* None
	Has record: Assault, Drug possession, Drunk driving, Theft, Trespassing

Note. Age values (in years) were randomly chosen from the specified intervals. Collapsed values are in italics.

Attribute values were fully and independently randomized with uniform distributions—that is, all distinct values for a specific attribute had equal probabilities of being presented.[3] For government benefits and police record attributes, I assigned equal probabilities to "no" and "yes"

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[3] Due to randomization, 11 respondents never saw a profile with at least one specific attribute value and were excluded from the analysis.

categories with each specific welfare program or crime having equal chances of being presented.

See Figure 1 for an example of conjoint profiles as presented to respondents.

Pair 1 out of 10.

Please carefully review the profiles detailed below, then answer the questions.

	Person 1	Person 2
Age	27	47
Gender	Male	Female
Race/ethnicity	Asian	White
Occupation	Engineer	Waiter
Government benefits	None	Housing assistance
Police record	Drunk driving	None

Please rate the probability of being an immigrant for each of the two persons.

Probability of being an immigrant, %

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

Person 1

Person 2

Figure 1. Sample screenshot from the conjoint task

Attitudes toward immigration were measured using a three-item battery that asked

respondents to assess the impact of immigrants on American economy, culture, and

communities.[4] One half of respondents completed the conjoint task after answering the questions about their attitudes toward immigration, whereas the other half answered the questions about attitudes toward immigration after completing the conjoint task. I use this question-order experiment to understand whether activation of perceptions (by completing the conjoint task that requires respondents to think about immigrants and natives as social categories) changes expressed attitudes toward immigration—and vice versa.
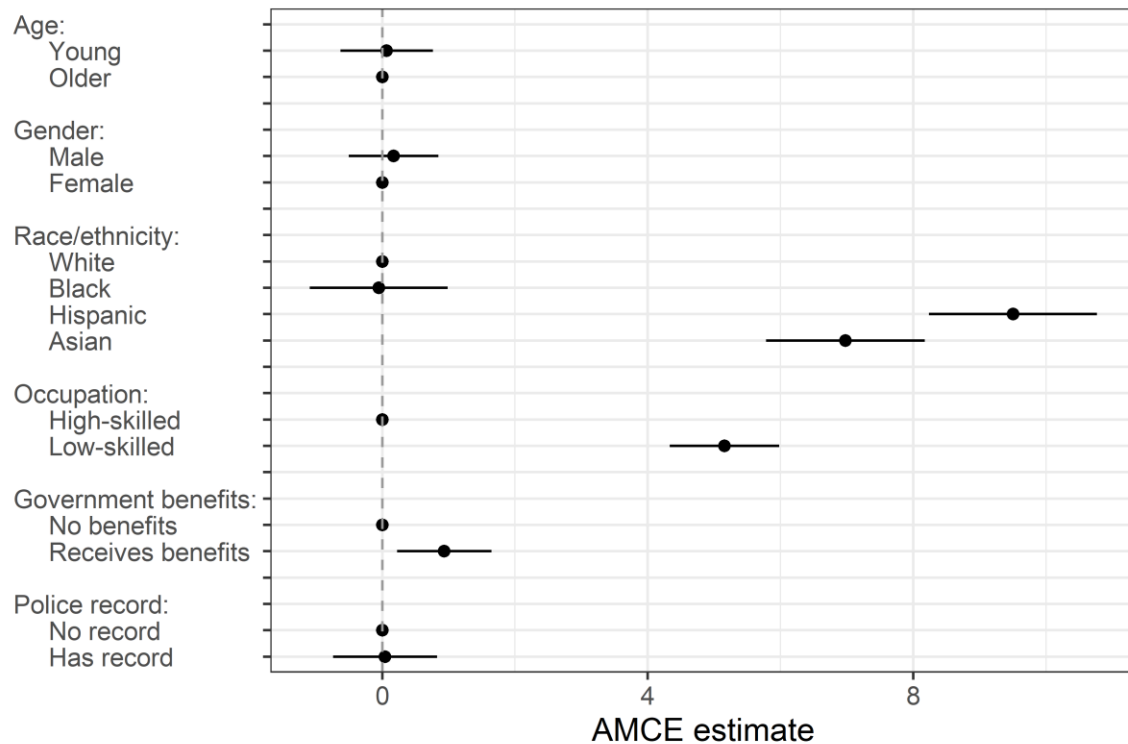
Results

I begin by implementing the standard procedure for conjoint experiments: estimating AMCEs of different profile attributes on the probability of being categorized as an immigrant. Results are presented in Figure 2. Standard errors are clustered on the level of individual respondents. Estimates suggest that perceptions about immigrants among U.S. respondents are dominated by race/ethnicity. Specifically, being described as Hispanic (compared with white) increases the profile's perceived probability of being an immigrant by 9.5 percentage points. The corresponding effect for being described as Asian is 7 percentage points. Occupational status is also a significant component of perceptions about immigrants: profiles described as having low-skilled occupations (compared with high-skilled ones) are rated 5.2 percentage points higher by probability of being an immigrant. Age, gender, being described as Black, and having a police record do not have significant effects. Receiving government benefits is significant on the 95% confidence level, but its estimated effect on probability of a profile being assessed as belonging to an immigrant is less than one percentage point.

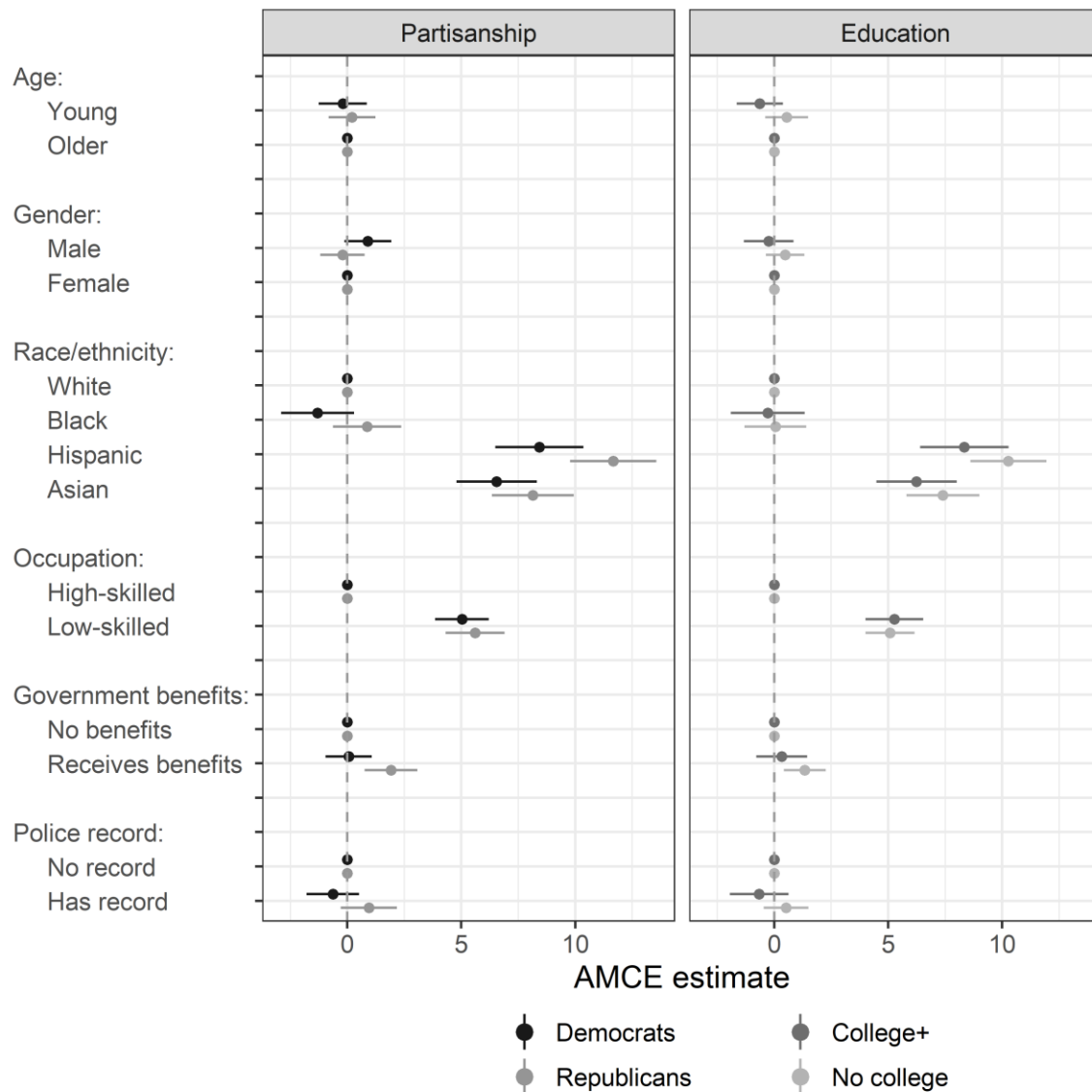[4]   See Supplementary Material for the full questions and response options.

Figure 2. Conjoint results: effects of different attribute values on a profile's estimated probability of belonging to an immigrant, U.S. sample
Note. For the full results, see Table S1 in Supplementary Material

Figure 3 presents AMCEs with the sample divided by partisanship (leaning independents are treated as partisans, true independents excluded) and education (college or higher vs. no college). Partisanship may impact what kind of sources respondents use to obtain information (Stroud 2011), and thus the content of their perceptions about immigrants. Education, in turn, can shape perceptions by affecting how often respondents are exposed to immigrants and, even more importantly, what kinds of immigrants they are exposed to. Results show that Republicans and respondents without college education tend to see nonwhites, people on welfare, and those with criminal record as more likely to be immigrants. The differences, however, are relatively small and the directions of the marginal effects are mostly similar. A formal test suggests that perceptions about immigrants are different across supporters of the two major parties ($F_{8, 874} = 2.11$, $p = .032$), but this is a relatively weak result for an effective sample of more than 17,000

observations (the total number of conjoint profiles rated by all respondents). In other words, Democrats and Republicans do see immigrants differently, but these differences in perceptions are small and, for the most part, concern strength rather than directions of perceptions. The differences in perceptions by education are not significant ($F_{8, 996} = 1.19$, $p = .300$).

Figure 3. Conjoint results: effects of different attribute values on a profile's estimated probability of belonging to an immigrant by respondents' partisanship and education, U.S. sample
Note. For the full results, see Table S2 in Supplementary Material

The standard conjoint analyses presented above describe the average perceptions about immigrants and reveal the central role of race/ethnicity in categorization of people as foreign born, independently of respondents' partisanship or education. At the same time, they do not tell whether the perceptions about immigrants are consequential for attitudes toward immigration. This question, however, is exactly the one that can be answered with the help of IMCEs.
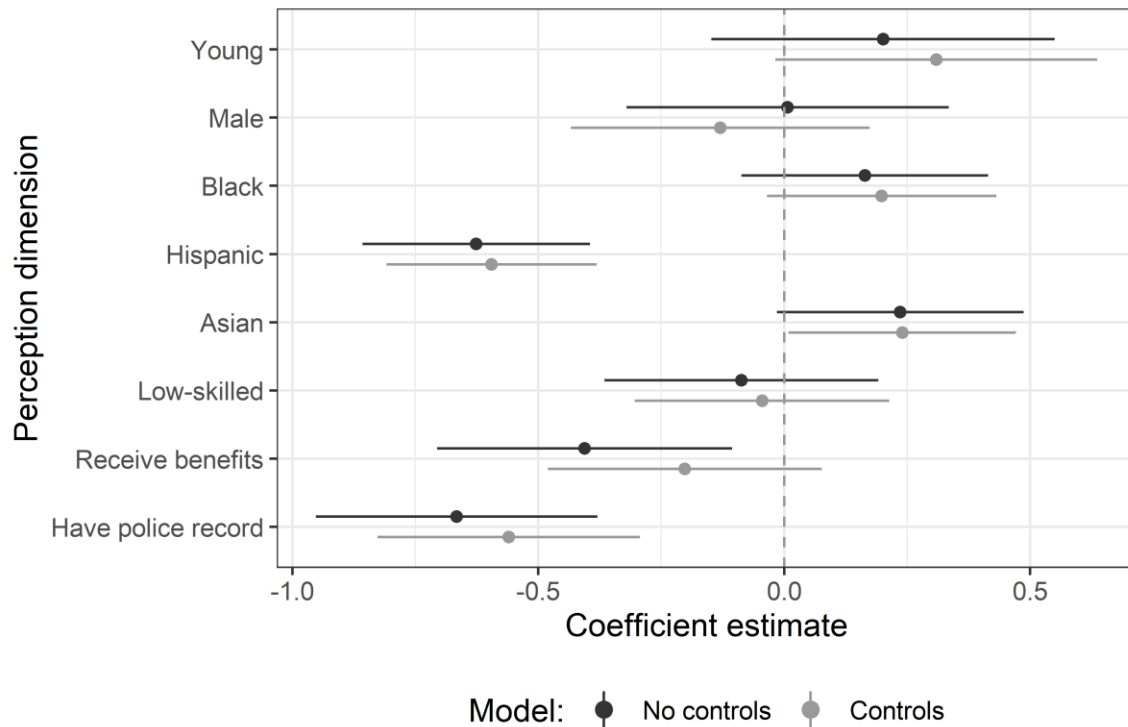
I use IMCEs as measures of U.S. respondents' perceptions about immigrants to predict attitudes toward immigration.[5] Results are presented in Figure 4. The dependent variable is recoded to have the same theoretical range as the IMCEs, from −100 to 100, to obtain reasonably scaled regression coefficients. Two dimensions are consistently consequential: perceptions of immigrants as, respectively, Hispanics and people with criminal records predict negative attitudes toward immigration. The perception of immigrants as recipients of government benefits loses significance when controls are added.[6] Perceptions about immigrants' age, gender, nonwhite ancestry other than Hispanic, and occupation are not consequential on the 95% confidence level.[7] It is necessary to note that IMCEs make relatively noisy measures of perceptions, and some estimated effects may turn reliably different from zero in a larger sample. However, non-trivial coefficients for the most consequential attributes—Hispanic ethnicity and criminal record—are established with 99.9% certainty even in the chosen sample size.

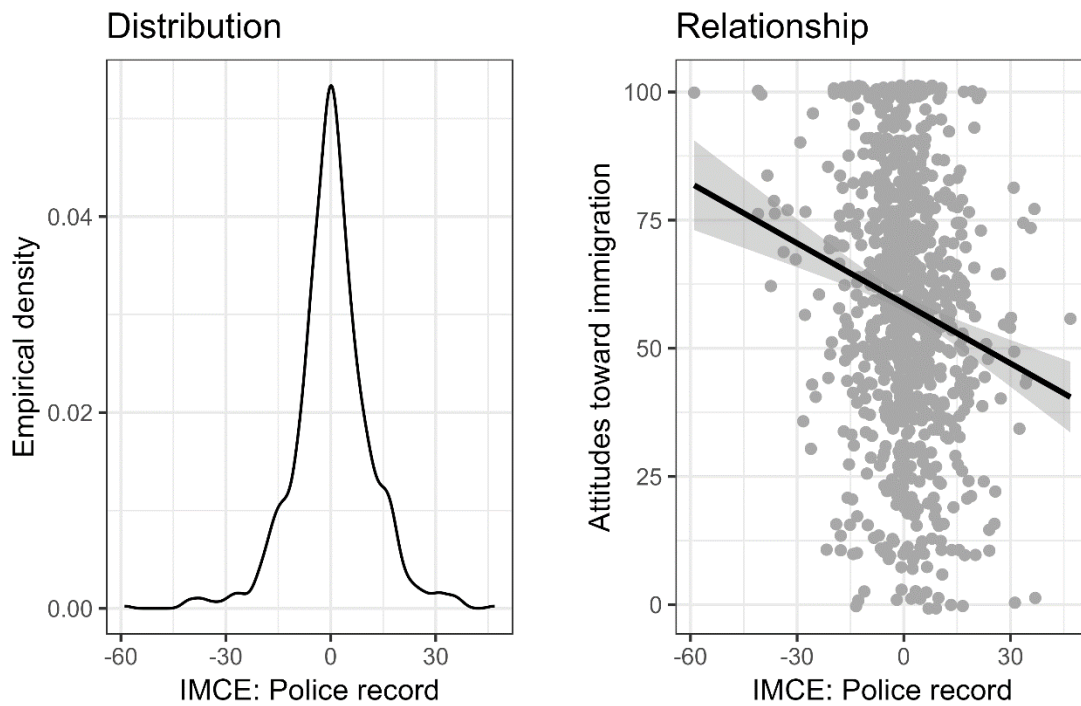[5]   IMCEs were successfully estimated for 905 respondents.

[6]   Adding controls does not make much difference for the effects of other perceptions, thus suggesting that potential demographic imbalances in a convenience sample do not bias regression coefficients.

[7]   I replicate this analysis using the method of correction for the uncertainty of IMCE estimates based on normal approximation (Zhirkov 2022). Results are presented in Figure S1 in Supplementary Material. They confirm that perceiving immigrants as Hispanics and people with criminal record significantly predicts negative attitudes toward immigration.

Figure 4. OLS regression results predicting attitudes toward immigration using different dimensions of perceptions about immigrants, U.S. sample
Note. Controls: respondents' age, gender, income, race/ethnicity, education, and partisanship. For the full results, see Table S3 in Supplementary Material

These findings highlight the importance of looking into individual perceptions rather than just describing them in the aggregate. For instance, conjoint profiles described as having a police record are not rated by respondents as more likely belonging to immigrants. At the same time, there is consequential individual-level variation on this perception dimension: respondents who associate immigrants with criminal behavior tend to express negative attitudes toward immigration. This phenomenon is illustrated in Figure 5. The left-side panel presents empirical density of perceptions regarding the connection between immigration and criminality (with non-trivial variance), whereas the right-side presents the estimated relationship between the immigration–criminality perception and attitudes toward immigration.
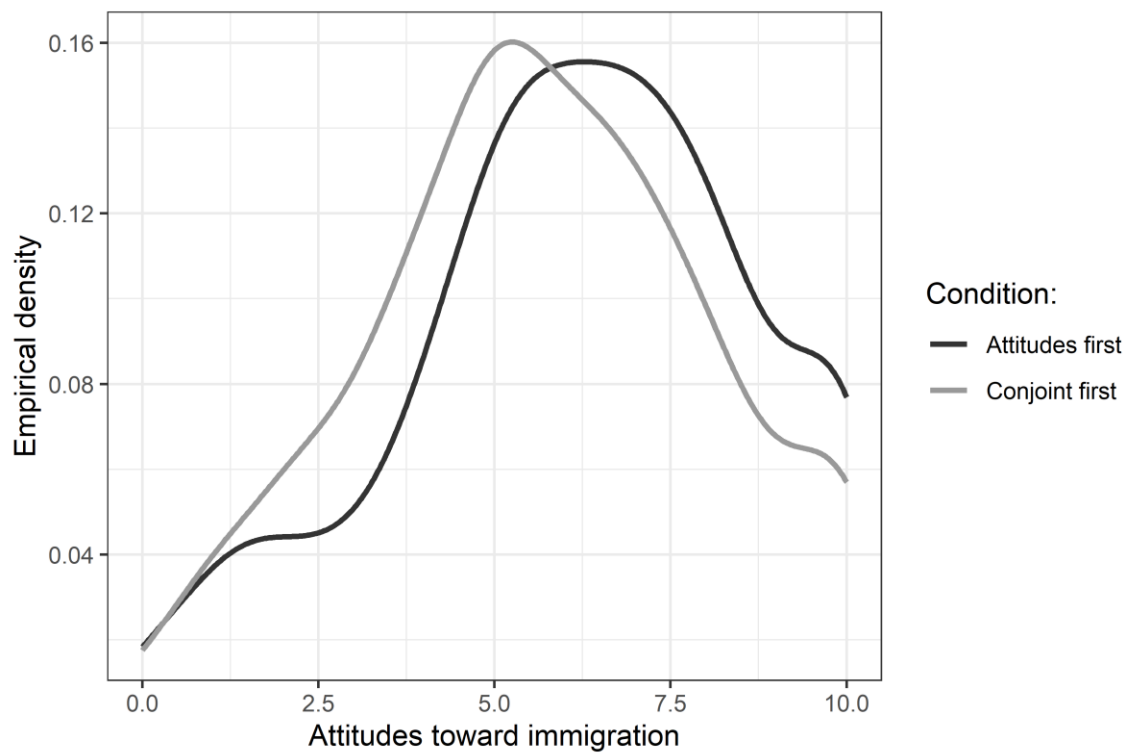
Figure 5. Empirical density of IMCEs for the "Police record" attribute (left) and association between IMCEs for the "Police record" attribute and attitudes toward immigration (right)

Recall that within the survey study, respondents have completed the immigration policy attitudes battery either before or after the conjoint task. Using these data, I investigate whether attitudes toward immigration change depending on whether they are reported before or after the conjoint. This can be seen as a priming effect: the necessity to categorize persons as native- vs. foreign-born should activate respondents' perceptions about immigrants that, then, exert greater influence on attitudes toward immigration in subsequent questions. Results demonstrate that when perceptions about immigrants are made salient, attitudes toward immigration turn more negative. The average treatment effect is −0.51 on the 0–10 scale ($p = .002$).

I investigate the nature of this effect more closely using the observed distributions of anti-immigration attitudes that are presented in Figure 6. There is an interesting difference across the two conditions: attitudes expressed before completing the conjoint task show a thicker tail at the

pro-immigration (right) end of the spectrum. When immigration perceptions are made salient, however, distribution mass moves closer to the center and the tail on the right becomes less pronounced. The nature of this shift suggests that some respondents give normative answers in favor of immigration if asked before completing the conjoint task but start to express more ambiguous attitudes after prompted to think about immigrants and natives as social categories.

Figure 6. Distribution of attitudes toward immigration by priming condition, U.S. sample

Note that the question order effect can work in the opposite direction: priming attitudes toward immigration can impact estimates of perceptions about immigrants. To check whether such a reverse effect is indeed found in the data, I re-analyze the conjoint experiment by comparing AMCEs across the two conditions. Results show that respondents' perceptions about immigrants are not significantly affected by whether they are measured before or after attitudes

toward immigration ($F_{8, 996} = 1.28$, $p = .248$).[8] This means that the causal direction likely goes from perceptions to attitudes and not the other way around.

Conclusion

In this paper, I have used survey-experimental studies to investigate the content and consequences of beliefs about immigration in the United States. Using original conjoint designs, I have measured respondents' perceptions about immigrants and then explored how these perceptions predict attitudes toward immigration. My results strongly suggest that immigrants' ethnicity is central for both the content of perceptions and their effects on attitudes toward immigration. When respondents are asked to estimate probabilities of being an immigrant for profiles in the conjoint experiment, they almost exclusively rely on ethnicities stereotyped as foreign: profiles described as Hispanics and Asians are rated as much more likely to be immigrants. Importantly, these results may underestimate the impact of ethnicity on guesses about people's nativity status in real-life situations. Unlike attributes that can be manipulated in a conjoint experiment but are not known in brief social interactions (such as occupation), ethnicity is often inferred from appearance.

When used as covariates in regression analysis, perceptions about immigrants' ethnicity demonstrate consistently significant positive associations with negative attitudes toward immigration. These effects are independent of any other perception dimensions, such as skills or criminality, and persist even when controlled for respondents' demographics, partisanship, and ideology. In terms of magnitudes, the perception of immigrants as Hispanics is related to attitudes toward immigration as strongly as the perception concerning immigrants' criminal

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[8]   For the full results, see Figure S2 in Supplementary Material.

behavior. The perceptions of immigrants as having low-skilled occupations does not predict attitudes toward immigration when measured in the conjoint categorization task.

The question order experiment further shows that priming perceptions about immigrants shifts attitudes toward immigration in the negative direction. There is no corresponding reverse effect, thus suggesting that perceptions about immigrants are causally prior with respect to attitudes toward immigration. A closer investigation of the experimental effect also reveals the likely mechanism at work: making the perceptions salient overrides the normative tendency to give pro-immigration answers among some respondents.

One important question that lies beyond the scope of this paper but can be addressed in future research concerns the origins of perceptions about immigrant populations. The two most prominent avenues in this regard are likely the role of media (Blinder and Jeannet 2018), and local context (Hopkins 2010; Newman 2013). Due to their resilience to social desirability and rationalization, measures of perceptions obtained from classification conjoint experiments, like the ones employed in this study, can be a useful tool in such research.

Overall, findings reported in this paper have important implications for attitudes toward immigration as they show that both content and consequences of perceptions about immigrants are dominated by ethnicity. The conjectures that Americans strongly associate immigration with Hispanics and that holding such an association predicts negative attitudes toward immigration have been made in the literature before, but evidence for them was only indirect. The present paper has corroborated these hypotheses by directly measuring perceptions about immigrants.

My findings largely confirm a previously reported result that skill premium in Americans' immigration preferences may mask anti-Hispanic prejudice (Newman and Malhotra 2018). I demonstrate that when measured through revealed associations rather than self-reports,

perceptions of immigrants as Hispanics are consequential for attitudes toward immigration—
whereas perceptions about skill are not. The same is true for immigrants' reliance on government
benefits: the effect of this perception disappears after controlling for partisanship or ideology,
suggesting that anti-immigration and anti-welfare attitudes likely stem from generalized
ideological conservatism (Levy 2021). In other words, Americans may not inherently care about
immigrants' skills, and the effects of self-reported sociotropic economic concerns can be
exaggerated due to social desirability bias.

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Supplementary Material

Contents

Survey items

Table S1. Conjoint results: effects of different attribute values on a profile's estimated probability of belonging to an immigrant

Table S2. Conjoint results: effects of different attribute values on a profile's estimated probability of belonging to an immigrant by respondents' partisanship and education

Table S3. OLS regression results predicting attitudes toward immigration using different dimensions of perceptions about immigrants

Figure S1. OLS regression results predicting attitudes toward immigration using different dimensions of perceptions about immigrants with correction for IMCE uncertainty

Figure S2. Conjoint results: effects of different attribute values on a profile's estimated probability of belonging to an immigrant by the question order condition

Survey items

Attitudes toward immigration
"There are different opinions about immigration from other countries to the United States. For each of the following statements, please choose the position that is closest to yours."
- Would you say immigration is generally bad or good for the U.S. economy? (0 = Bad for the economy, 10 = Good for the economy)
- Would you say that U.S. cultural life is generally undermined or enriched by immigration? (0 = Cultural life undermined, 10 = Cultural life enriched)
- Does immigration make the U.S. a worse or a better place to live? (0 = Worse place to live, 10 = Better place to live)

Statement order randomized.

Conjoint: preamble
"In the following questions, you will be presented with pairs of profiles describing different people living in the United States. For each pair of profiles, please look at the information carefully, and then indicate which person is more likely to be an immigrant. Even if you aren't entirely sure, please indicate your best guess."

Table S1. Conjoint results: effects of different attribute values on a profile's estimated probability of belonging to an immigrant

	AMCE
Age (Older = ref.)	
Young	0.07
	(0.36)
Gender (Female = ref.)	
Male	0.17
	(0.34)
Race/ethnicity (White = ref.)	
Black	-0.05
	(0.53)
Hispanic	9.50***
	(0.65)
Asian	6.98***
	(0.61)
Occupation (High-skilled = ref.)	
Low-skilled	5.16***
	(0.42)
Government benefits (No benefits = ref.)	
Receives benefits	0.93*
	(0.36)
Police record (No record = ref.)	
Has record	0.04
	(0.40)
N	19,918

Note. Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S2. Conjoint results: effects of different attribute values on a profile's estimated probability of belonging to an immigrant by respondents' partisanship and education

	AMCE			
	Partisanship		Education	
	Democrats	Republicans	College+	No college
Age (Older = ref.)				
Young	-0.20	0.21	-0.63	0.55
	(0.54)	(0.53)	(0.52)	(0.48)
Gender (Female = ref.)				
Male	0.90	-0.21	-0.25	0.48
	(0.53)	(0.50)	(0.56)	(0.43)
Race/ethnicity (White = ref.)				
Black	-1.31	0.86	-0.28	0.05
	(0.82)	(0.76)	(0.83)	(0.69)
Hispanic	8.43***	11.66***	8.34***	10.27***
	(0.98)	(0.96)	(0.99)	(0.85)
Asian	6.55***	8.15***	6.24***	7.40***
	(0.90)	(0.92)	(0.90)	(0.82)
Occupation (High-skilled = ref.)				
Low-skilled	5.03***	5.61***	5.27***	5.08***
	(0.60)	(0.66)	(0.65)	(0.55)
Government benefits (No benefits = ref.)				
Receives benefits	0.06	1.91**	0.33	1.34**
	(0.52)	(0.59)	(0.57)	(0.47)
Police record (No record = ref.)				
Has record	-0.63	0.94	-0.66	0.52
	(0.59)	(0.63)	(0.66)	(0.50)
N	9,130	8,353	8,034	11,884

Note. Standard errors in parentheses
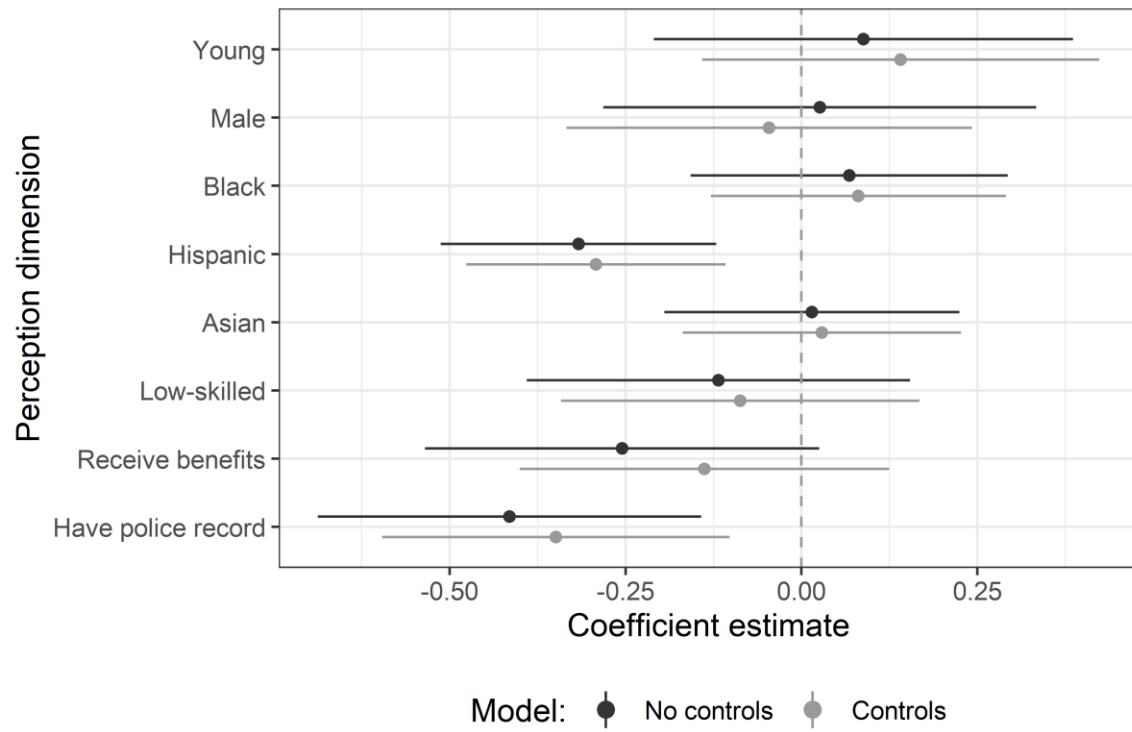* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S3. OLS regression results predicting attitudes toward immigration using different dimensions of perceptions about immigrants
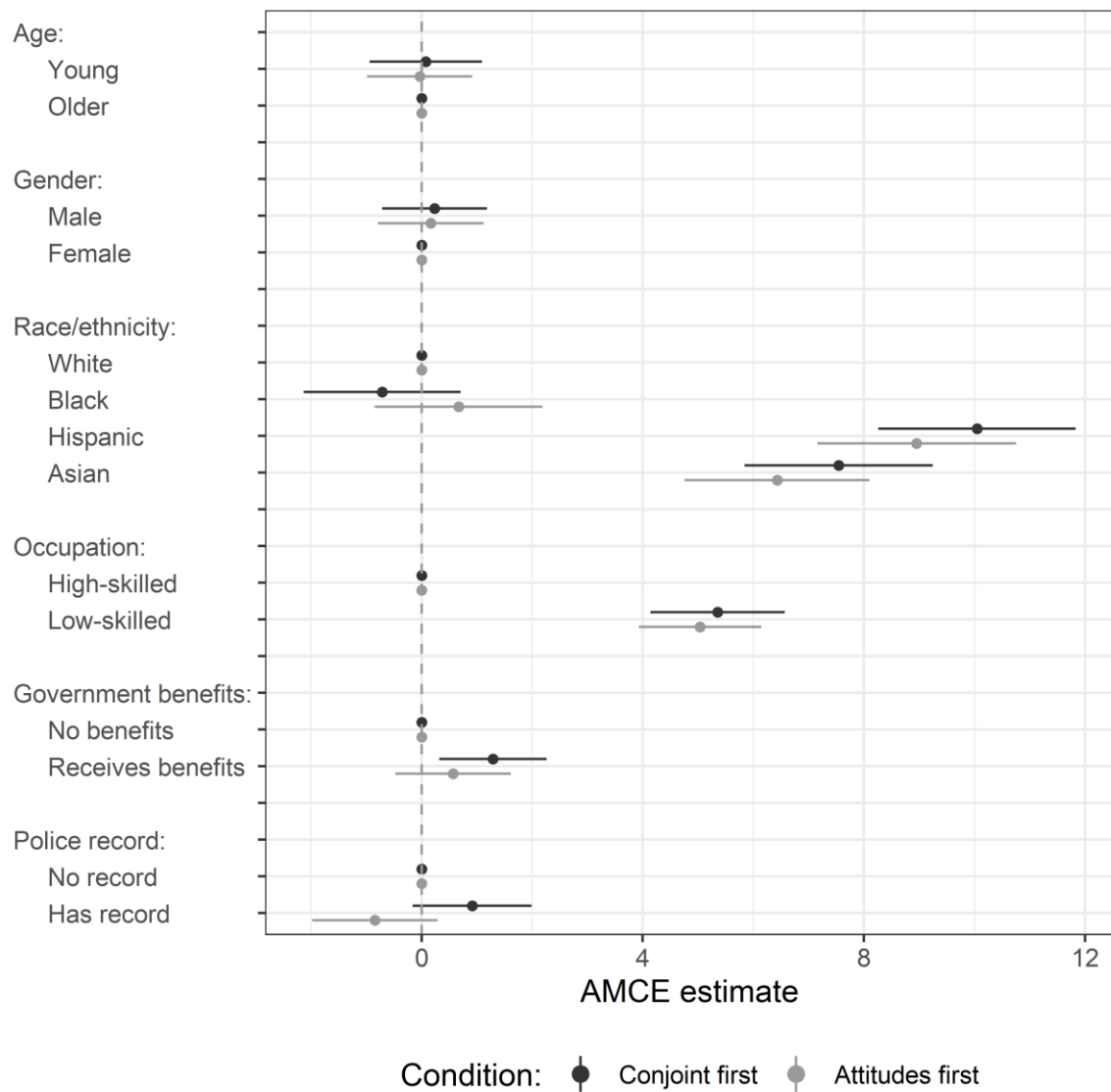
	No controls	Controls
Perceptions (IMCEs):		
Young	0.20	0.31
	(0.18)	(0.17)
Male	0.01	-0.13
	(0.17)	(0.15)
Black	0.16	0.20
	(0.13)	(0.12)
Hispanic	-0.63***	-0.60***
	(0.12)	(0.11)
Asian	0.24	0.24*
	(0.13)	(0.12)
Low-skilled	-0.09	-0.04
	(0.14)	(0.13)
Receive benefits	-0.41**	-0.20
	(0.15)	(0.14)
Have police record	-0.67***	-0.56***
	(0.15)	(0.14)
Controls:		
Age		-0.22*
		(0.09)
Female		-1.64
		(2.99)
Income		0.62*
		(0.25)
Nonwhite		3.29
		(3.42)
Education		3.18***
		(0.87)
Partisanship (Republican)		-7.14***
		(0.65)
N	904	883

Note. Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure S1. OLS regression results predicting attitudes toward immigration using different dimensions of perceptions about immigrants with a correction for IMCE uncertainty

Figure S2. Conjoint results: effects of different attribute values on a profile's estimated probability of belonging to an immigrant by the question order condition