

Narratives shape cognitive representations of immigrants and policy preferences

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Abstract:

Scholars from across the social and media sciences have issued a clarion call to address a recent resurgence in criminalized characterizations of immigrants. Do these characterizations meaningfully impact individuals' beliefs about immigrants and immigration? Across two online convenience samples (N = 1,054 adult U.S. residents), we applied a novel analytic technique to test how different narratives—criminal, achievement, struggle-oriented—impact cognitive representations of German, Russian, Syrian, and Mexican immigrants and the concept of “immigrants” in general. All stories featured male targets. Achievement stories homogenized individual immigrant representations whereas both criminal and struggle-oriented stories racialized them along a white/non-white axis: Germany clustered with Russia, Syria with Mexico. However, criminal stories were unique in making our most egalitarian participants' representations as differentiated as our least egalitarian participants'. Narratives about individual immigrants also generalized to update representations of nationality groups. Most important, narrative-induced representations correlated with immigration policy preferences: achievement narratives and corresponding homogenized representations promoted preferences for less restriction, criminal narratives for more.

Statement of relevance:

The news and social media are full of characterizations of immigrants, many of which are unflattering. In this research, we asked whether these characterizations impact the beliefs that individuals hold about immigrants and immigration in general. To find out, we engaged a large sample of people residing in the United States and had them read short narratives about fictitious characters who committed minor criminal transgressions, achieved educational or professional goals, or struggled to make ends meet. We found that criminal narratives reinforced racialized immigrant representations. That is, after reading them, participants were more likely to perceive immigrants as white or non-white, regardless of their national origin. In contrast, after reading achievement narratives, participants were more likely to perceive immigrants as more similar to one another. Achievement narratives also increased participants' support for immigration. These findings speak to the power of stories to influence how people think about immigrants, and how we might use them to attenuate anti-immigrant discrimination.

Narratives shape cognitive representations of immigrants and policy preferences

The U.S. and other western countries are seeing massive backlash in response to a perceived influx of immigrants, particularly those who are non-white. One driving force of this backlash is the characterization of immigrants as criminals (Waters & Kasinitz, 2015). These characterizations and stories—what we call the criminal narrative—represent a stark contrast to findings indicating either no relationship or a small *negative* relationship between immigration and crime rates (Ousey & Kubrin, 2018).

Here we test whether the criminal narrative, relative to other types of narratives, may be contributing to this immigration backlash, whether it does so by altering the structure of individuals' latent cognitive representations of specific immigrant groups and “immigrants” as a whole, and whether egalitarian ideology buffers individuals against these effects.

How does the criminal narrative affect immigrant cognitive representations relative to other types of narratives? By cognitive representation, we mean the relational structure of relevant traits, dimensions, and social groups that make up the construct of “immigrants” (Fiske & Dyer, 1985). Though claims of relatively greater criminality among some immigrant groups are statistically unfounded (Lee & Martinez, 2009; Light et al., 2017), these claims may nevertheless alter the structure of the cognitive representation of “immigrants” as a whole—for example, cleaving immigrants into “good” vs. “bad” subgroups, or more specifically, “white” and “non-white” subgroups (Flores & Schachter, 2018). Racialization of immigrants—e.g., the contemporary ascription (or not) of whiteness to different immigrant groups—matters because it leverages race-related stereotypes to reinforce subgrouping of “good” versus “bad” kinds of immigrants (Brown, 2013). For our purposes, a psychological marker of immigrant racialization would correspond to a latent structure organized by immigrants' ascribed racial categories—white vs. non-white—as opposed to their nationality, their self-identified ethnicity, or a single superordinate “immigrant” category.

At the time of data collection these criminal characterizations were already widespread¹. If participants' representations are racialized prior to beginning the experiment, then another way to test

¹ <https://www.cnn.com/2016/08/31/politics/donald-trump-mexico-statements/index.html>; <https://www.snopes.com/fact-check/trump-animals-hitler/>

whether narratives can alter them is to examine the opposing effect of more positive narratives, e.g., the achievement narrative (Moffit, Nardon, & Zhang, 2019; c.f., Esses et al., 2001). From a representation-structure perspective, an “achievement” narrative of this sort may counteract subgrouping effects by making all immigrants, irrespective of nation of origin, more similar to one another, because positive stimuli tend to be rated and represented more similarly than negative stimuli (Alves et al., 2017). To the extent that all nationalities are perceived similarly to one another, they should be less subject to differential treatment on the basis of their possible subgroups.

Does egalitarian ideology render people less susceptible to criminal narrative influence?

Ideologies that capture people’s preferences for how society should be structured, such as Social Dominance Orientation (SDO) and System-Justification (SJ), should moderate individuals’ susceptibility to narrative influence (Ledgerwood et al., 2011), potentially buffering more egalitarian individuals against the influence of negative narratives. For example, individuals who report greater endorsement of the social status quo—those with higher SJ scores—exhibit higher stereotypic differentiation of high versus low-status groups; they see groups as more different from one another (Jost et al., 2005). Extrapolating to our investigation, low SJ individuals should be less likely to exhibit differentiated, racialized immigrant representations. However, this tendency may be undermined by the criminal narrative in particular because crime is perceived more widely as a threat (as compared to, e.g., symbolic threats like introducing new languages or cultural practices). We measure individual differences in these ideologies to test whether and to what extent they moderate individuals’ representations as a function of the narrative context.

Focusing on the structure of cognitive representations. Here we apply a novel analytic technique to extract participants’ latent cognitive representations of these immigrant groups and their members. The first reason for this approach is pragmatic—the organization of cognitive representations can predict individuals’ policy preferences. For example, the kind of social target that is most accessible when “welfare recipient” is activated (e.g., lazy vs. oppressed individual) predicts weeks later whether people support the continuation of welfare services (Lord et al., 1994; Gilens, 1996). Similarly, more differentiated representations should be associated with less support for immigrants and immigration because people won’t be accessing a single distribution of “immigrants” but rather one of two or more

subgroups. Greater accessibility of negative relative to positive exemplars (Rozin & Royzman, 2001) makes it more likely that they will substitute “bad” immigrants for “immigrants” in general when considering their policy preferences.

The second set of reasons to focus on the structure of cognitive representations are methodological. While past research has relied on evaluations of social groups averaged across samples (e.g., average ratings of stereotypic traits associated with each nationality), we employ representational similarity analyses to measure latent cognitive representations in order to address three significant limitations. First is the challenge of making inferences about within-individual psychological representations from group-averaged data. Second is the problem of shifting standards even within individuals; raters may use the same response option despite having different underlying subjective evaluations (e.g., industrious for a Mexican may not be the same as industrious for a German; Biernat & Manis, 1994). Third, similarity-based indices allow for more flexible and sensitive detection of representational subgrouping and aid in accounting for shifting standards effects because they index patterns of trait ratings across target pairs while being indifferent to absolute values of the targets’ ratings (see Sayans-Jimenez, 2019 for a similar argument adopting a network approach). Consequently, we used representational similarity analysis based on participants’ trait ratings of immigrants (correlation matrices that contain patterns of (dis)similarity between stimuli; Kriegeskorte, 2008), to infer participants’ latent representations from targets’ arrangement in a “trait space.” This allows us to characterize each participant’s mental mapping of immigrants as a whole: a representational similarity measure ranging from highly homogeneous (the correlations across traits are high for most if not all pairs of immigrants) to highly differentiated (the correlations across traits are high for some pairs of immigrants, and low for others, indicating multiple clusters). Because it is a data-driven technique based on a large number of pair-wise correlations, it allows us to map how different narratives affect the organization of immigrant representations in individuals’ minds: e.g., are the four nationalities represented as four distinct clusters? Two racialized clusters?

Current experiments and hypotheses. Across two experiments (N = 1,054, U.S. residents) and one study (N = 218), we manipulated participants’ exposure to criminal, achievement, or struggle-oriented descriptions of immigrants in order to assess how they impact participants’ latent representations of four

politically salient immigrant groups—Germans, Russians, Syrians, and Mexicans. We included struggle narratives as a control condition to isolate the effect of criminalized narratives above and beyond being negatively-valenced. In Experiment 1, we created separate correlational matrices from the trait ratings of individual immigrants and nationality groups to test the following hypotheses: (i) that baseline representations of different immigrant groups are already racialized, (ii) that criminal narratives differentiate representations of individual immigrants from those groups more than other types of narratives, specifically along a racial axis, (iii) that more differentiated representations predict reduced support for immigrants and immigration, and (iv) and that egalitarian ideology is associated with more homogeneous representations, except for in the criminal narrative condition. Experiment 2 replicated Experiment 1 with a larger sample and added a second rating of nationality groups after exposure to the individuals' narratives to test whether this exposure also updated participants' representations of immigrants' respective nationality groups. Finally, Study 3 tested whether our preceding racialization results were driven by perceived race or a plausible alternative: status.

Methods

We report all the measures we collected across all three studies. All materials, source data, data analysis code, and output for all experiments (including pilot data for Study 3) can be downloaded at osf.io/2xgyf/

The preregistration of Experiment 2 can be viewed at: osf.io/f4u92

The preregistration of Experiment 3 can be viewed at: osf.io/kub2d

Participants and Exclusions. Experiment 1: We had no previous work on which to base this power analysis but we knew 100 per condition was necessary to detect an effect size of $f = 0.18$ (half way between a small and medium effect: .1 vs. .25) with 80% power within a three-condition, between-subjects analysis of variance framework. A convenience sample of 300 adult U.S. residents were recruited via Amazon Mechanical Turk (100 per narrative condition) in August of 2017. Two participants failed attention checks and were thus excluded from analysis resulting in a final sample size of 298 (achievement = 99, criminal = 99, struggle = 100; 131 female, $M_{age} = 34.3$ years, $SD = 10.2$). For the representational similarity analyses, another eight participants were excluded from the nation level (5

achievement, 3 crime) and seven from the individual immigrant level analyses (3 achievement, 3 crime, 1 struggle) for lacking variance in their responses (i.e., they entered the same numerical ratings across all traits for a given target or provided a combination of responses such that they all averaged out to the same rating across traits).

Experiment 2: A convenience sample of 795 adult U.S. residents were recruited via Amazon Mechanical Turk (aiming for 260 per condition, the sample size at which small correlations stabilize; Schönbrodt & Perugini, 2013) in June of 2018. Thirty-nine participants failed attention checks and were thus excluded from analysis resulting in a final sample size of 756 (achievement = 252, crime = 251, struggle = 253; 365 female, $M_{age} = 37.2$ years, $SD = 18.2$). For the representational analyses, 36 were excluded from the baseline nation level (12 achievement, 12 crime, 12 struggle), 48 from the post nation level (14 achievement, 20 crime, 14 struggle), and 24 from the individual immigrant level analyses (4 achievement, 15 crime, 5 struggle) for lacking variance in their responses (see above).

Study 3: We used same target sample size as in Experiment 2. A convenience sample of 260 adult U.S. residents were recruited via Amazon Mechanical Turk in May of 2019. Thirty-four were excluded due to failed attention checks and 8 from the individual immigrant level analyses for lacking response variance resulting in a final sample size of 218 (all in the crime condition; gender, age, and ethnicity did not record for 13 participants due to a technical error; remaining participants: 97 female, $M_{age} = 37.1$ years, $SD = 11.9$). These studies were approved by the University's IRB. All participants provided informed consent before beginning the task. Please see Supplementary Online Materials for additional participant demographic information.

Materials. Nationalities. The nationalities of the immigrants portrayed in these stories were German, Russian, Mexican, and Syrian, which were chosen based on their heterogeneity of quadrant positioning within the stereotype content model (Fiske et al., 2002) and their sociopolitical salience following the 2016 presidential election. During Experiment 1's data collection in the late-summer of 2017, Russia was featured in the news for U.S. election interference; Germany was emerging as a leading progressive world power while people were drawing connections between Nazi-ism and alt-right movements in the U.S.; the construction of a wall along the U.S.-Mexico border was part of the national conversation; and Syrian refugees were fleeing the conflict in Syria, sparking discussions about national

sovereignty, threats, and humanitarian responsibility. The political context during Experiment 2's data collection included family detention and separation in immigration centers from the Mexican border; a national debate on Russian interference in elections and Trump-Putin relations cleaved along ideological lines; the bombing of Syria by U.S. military operations; and Germany's declaration to distance itself politically from the United States. Experiment 3 was collected in May 2019 and included the same four nationalities plus Vietnam and Japan. These six countries along with China, India, Pakistan, Myanmar, The Philippines, and Korea were piloted (N = 180) and rated on five dimensions: whiteness, documentation or legality, wealth, familiarity, media exposure. Japan was perceived as a higher-status country and Vietnam a lower-status country, but both as less white than Germany and Russia. Note also that these data confirmed that Syrians and Mexicans were also perceived as less white than Germans and Russians (see **Figure S1**; see also Chaney, Sanchez, & Saud, 2020). Including these additional groups allowed us to disambiguate whether criminal narratives organized representations by race or by status (e.g., wealth), which were confounded within the original four countries.

Stimulus construction. Thirty-six short stories (approximately 2 sentences each, 12 per narrative condition) were constructed in the third person about immigrants in the United States. All stories used male pronouns (He/His/Him). The achievement stories were modeled loosely off scraped tweets marked with the hashtag *#immigrantexcellence* (e.g., "He supported himself and his brother through school. He is now graduating with a PhD."). The criminal stories were inspired by small-scale transgressions listed in the 2017 United States Immigration and Customs Enforcement (ICE) report *Enforcement UslaC, 2017*². These stories structurally mirrored the "achievement" narratives (e.g., "He owns a convenience store and sells liquor without a license."). The struggle stories were also modeled from the *#immigrantexcellence* tweets, but their achievement-related content was replaced with financial and housing struggle (e.g., "He came to the U.S. to study, but dropped out to send money home and can only find temporary employment.").

The final set of stories were chosen from a larger set (N = 60), which we piloted with a separate sample. For the pilot, N = 140 participants rated the stories on their valence and how believable, moral, and related to success they are on a 1-9 scale. To generate the final set, we prioritized the most

² Enforcement USIaC (2017) Enforcement and removal operations: Weekly detainer outcome report, (Security H).

believable stories and then removed those that were outliers on the other dimensions. Critically, the similarity between stories along these dimensions (before being paired with specific immigrants) was not significantly different across conditions, assuring representational similarity differences between narrative conditions in the *experiments* were not driven by story similarity.

On each trial, one story was randomly paired with one of 12 individual immigrants (3 per nationality). The names of the individuals were chosen from the most popular male names in each country. For Mexico: Jose, Carlos, and Fernando; Germany: Klaus, Hans, and Kurt; Syria: Ahmad, Abdallah, and Mohammad; Russia: Nikoláy, Borís, and Andréy. In Study 3, we included only criminal stories. We kept the same number of immigrants—twelve—and criminal narratives, but each nationality was represented by 2 immigrants. For Germany: Hans and Klaus; Russia: Nikoláy and Borís; Mexico: Jose and Carlos; Syria: Abdallah and Ahmad; Japan: Haruto and Riku; Vietnam: Bao and Phuon.

Trait Dimensions. Nationality groups and individual immigrants were rated on a series of seven dimensions using Likert scales ranging from 1 (Not at all) to 7 (Extremely): competence, morality, sociability, Americanness, laziness, dangerousness, and competitiveness. We selected these traits because they represent the cardinal dimensions of social perception across a variety of theories and in the specific context of immigration (Fiske et al., 2002; Landy, Piazza & Goodwin, 2016; Devos & Banaji, 2005; Wiggins, 1979; Esses et al., 2001). We provided participants with definitions for each trait based on previous work to minimize error around trait meaning.

Experimental design. Both Experiments 1 and 2 employed a mixed 3 (story content: Excellence vs. Criminality vs. Struggle) X 4 (Nationality: German vs. Russian vs. Mexican vs. Syrian) factorial design with story content manipulated as a between-subjects variable, and nationality as a within subjects variable. In both cases, each participant was randomly assigned to one of the three story content conditions and evaluated all four nationality groups and specific immigrant exemplars from those groups. Experiment 3 included only the criminal narrative condition but 6 nationalities (German vs. Russian vs. Mexican vs. Syrian vs. Japanese vs. Vietnamese).

Procedure. Participants were told they would be rating individuals and groups on a series of seven trait dimensions. Each of these dimensions were defined for participants in a glossary. Participants

then completed a quiz in which they were asked to pair each dimension with its corresponding definition; we required a score of 100% before participants could continue. Participants were then asked to rate each of four nationality groups on the seven dimensions. For each nationality group rating, they saw a German, Russian, Mexican, or Syrian flag, underneath which was a text label (e.g., “German Immigrants”). Nationality groups were presented in random order. Participants then read 12 narratives about male immigrants in the United States and rated the subject of each narrative on seven dimensions. We included only male targets because from the perspective of Social Dominance Theory (Sidanius & Pratto, 2001) and the Theory of Gendered Prejudice (Sidanius et al., 2018), men are more likely targets of intergroup discrimination than are women. This is bolstered by deportations statistics in the context of immigrants: targets of criminalizing rhetoric and most deported in current immigration system is (Latino) men (Golash-Boza & Hondagneu-Sotelo, 2013).

For each individual rating, participants saw one of the same flags from the group ratings, this time with a silhouette of a face/shoulders overlaid on top. Underneath this image was a text label (e.g., “Klaus immigrated from Germany”) followed by an “achievement,” “criminal,” or “struggle” story. Participants rated each individual immigrant story to which they were assigned on all seven trait dimensions twice across successive blocks of narratives. Note that individual narratives were randomly assigned to each immigrant (across participants) and immigrants’ order of presentation randomized across blocks. The random assignment of story to immigrant ensures that the stories could not be driving the similarity effects between immigrants (e.g., Jose was Story 1 for one participant and Story 12 for another). All seven traits were rated separately in succession per target, but the trait order was also randomized. Overall, participants completed 196 rating trials (4 nationality groups X 7 traits plus 12 immigrants x 7 traits x 2 blocks). Participants then completed an attention check asking, “what percentage of the stories that you read were about immigrants?” Individuals reporting anything besides 100% were excluded from analysis.

In Experiment 1, participants completed two-item measures for social dominance orientation (Ho et al., 2015; inter-item correlation $r(296) = .68$), system justification (Kay & Jost, 2003; inter-item correlation $r(296) = .60$) and immigration policy (see OSF for items). Note, SDO did *not* moderate the

impact of achievement versus criminal stories on representations, so we do not discuss it further.³ Finally, participants completed a demographic questionnaire before being debriefed. We included items assessing fiscal and social conservatism and internal attributions for success as exploratory measures, neither of which moderated the effect of achievement versus criminal narratives.

The procedure for Experiment 2 was almost identical to that used in Experiment 1 with two major differences. First, participants completed a *second* round of group nationality ratings following their ratings of the twelve individual immigrant narratives. Second, participants completed different questionnaire items at the end of the main task: the full eight-item measure of system justification (Cronbach's $\alpha = .90$), with Likert scales ranging from 1 (strongly disagree) to 9 (strongly agree) and the revised policy questions (Ho et al., 2015).

The procedure for Experiment 3 was identical to Experiment 2 except that we only administered the criminal narrative condition and included two new countries: Japan and Vietnam. We kept the same number of immigrants, 12, and criminal narratives, but each nationality was represented by 2 rather than immigrants.

Analysis. The focus of our analyses was to calculate the pairwise similarity between targets' rating pattern across all seven traits at both the nation-level and the individual immigrant level. In other words, each immigrant and immigrant group are conceptualized as represented by a vector of trait ratings, such that the relations between all these trait vector representations constitutes the cognitive representation of "immigrants" (**Figure 1**). To this end, we made use of representational similarity matrices that contain all pairwise similarities, a similarity measure to quantify whether immigrant representations were overall differentiated or homogenized, hierarchical clusters and multidimensional scaling to visualize the structure, racial matrix similarity to examine the extent to which immigrant representations correlated with pre-specified racially-differentiated matrices, and regression models to relate representations to system justification as well as the impact of narratives on policy endorsement.

Representational Matrices. Representations were computed as the pairwise Spearman rank correlations between every individual immigrant or nationality group on the seven social traits. The matrix

³ We observed a significant simple slope in the struggle condition: unsurprisingly, high SDO participants differentiated poor/struggling immigrants more than low SDO participants.

for the individual immigrants was larger (12 x 12) than the nationality groups' matrix (4 x 4). Because the individual narratives were rated twice, we averaged the two blocks per trait, per immigrant, per participant and used those averages to calculate the correlations. As an example of the meaning of these correlations, they track the similarity between two patterns of trait ratings across target pairs while being indifferent to absolute values of the target's scores.

Participants' test-retest reliability was calculated at the level of representational matrices across repetitions for Experiment 1 (achievement: $r = .27$ [.17, .37]; crime: $r = .47$ [.39, .55]; struggle: $r = .34$ [.28, .40]) and Experiment 2 (achievement: $r = .26$ [.22, .30]; crime: $r = .50$ [.46, .55]; struggle: $r = .38$ [.34, .42]). While there is a dearth of literature on the reliability of representational matrices made from trait ratings, our measures are more reliable than those using neural representations (Walther et al., 2016).

Similarity measures. The measure is simply the average Fisher Z transformed correlation of the lower triangle of a representational matrix. Lower or higher Z scores would indicate that the 12 immigrants (*inter-immigrant similarity*) or 4 nations (*inter-group similarity*) or immigrants and their nation (*group-immigrant similarity*) are less or more similar to each other on the whole, respectively. In other words, higher scores are indicative of a more homogenized representational space while lower scores suggest more differentiated representations. Correlation values between .99 and 1 were changed to correlations of .99 for three reasons. The first is that the Fisher Z transformation of perfect correlations is an infinite value. The second is that the Z score of correlations greater than .99 can increase dramatically, producing many outliers. For example, the difference between a correlation of .999 and .9999999999999999 is a Z score difference from around 4 to 18. Lastly, capping correlations at .99 or -.99 (a Z score of around 2.6) addresses the outlier problem, statistically retains the fact that these are highly correlated targets and provides a more conservative test since it pulls extremely high Z scores downward.

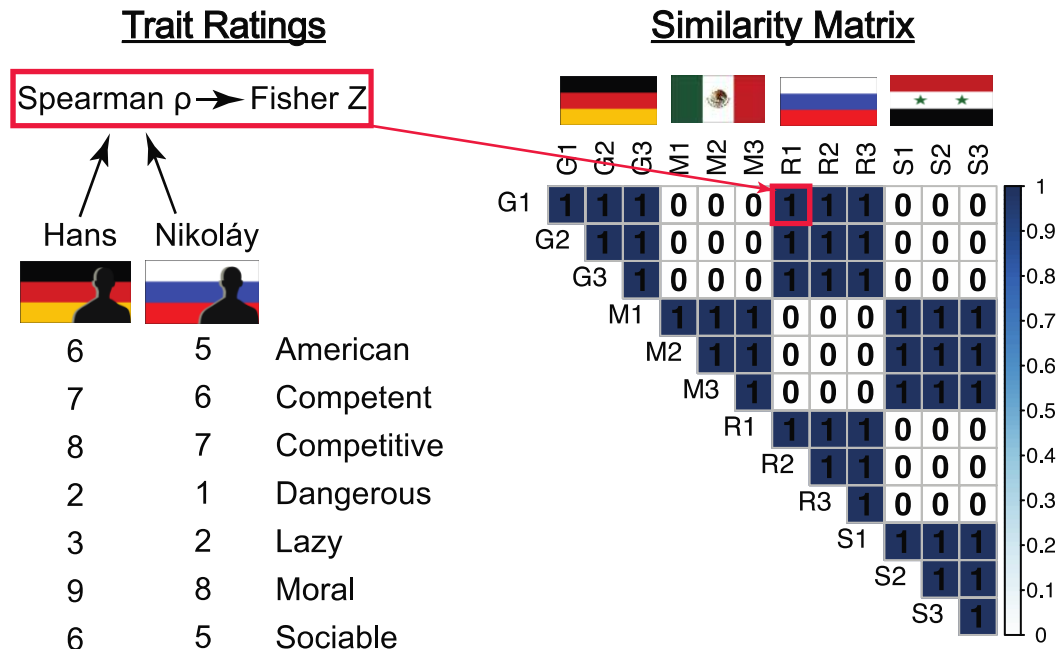


Figure 1. Analytic pipeline for creating the similarity matrices. Pictured above is an example of the similarity matrix generated from the trait ratings of each individual immigrant (Note: not actual data). Left: Each immigrant is represented by a vector of trait ratings (here 7 dimensions) and a spearman rank correlation is computed per pair of immigrants. These rank correlations are either directly inserted into the corresponding location in the similarity matrix or transformed into Fisher Z-scores and then inserted. These matrices are then used as is (e.g., comparing average Z-scores across conditions to test inter-immigrant similarity by narrative type) or further transformed (e.g., into dissimilarities for correlation with a priori matrices).

Hierarchical clusters. For this analysis, nationality group correlation matrices per condition were constructed from cell-by-cell averaging across individual participants' correlation matrices of the nationality groups. For example, the average correlation between German immigrants and Syrian immigrants would be computed by fisher Z transforming the corresponding correlation in each participants' matrix, averaging these Z-scores across participants, and converting the average Z-score back into a correlation. This process was repeated for every group pair. The averaged correlation matrices were converted to dissimilarity matrices by subtracting each correlation from 1 (e.g., convert r into $1 - r$). Lastly, these dissimilarity scores were submitted to a bootstrapping hierarchical clustering procedure to obtain p values using the "pvclust" package (Suzuki & Shimodaira, 2015), and visualized

using both the base stats package in R (R Core Team, 2014) and the “ggdendro” package (de Vries & Ripley, 2013). This hierarchical clustering method begins by calculating all the pairwise distances among nations, merging the closest pairs, recomputing the distance between the new clusters and the old ones, storing these values in a new distance matrix, and then repeating this process until all the clusters merge into one (the right most side of each dendrogram). The approximately unbiased (AU) p values we report are calculated through 10,000 multiscale bootstrapped samples where each branch of the dendrogram is given an AU p value ranging from 0 to 1. Branches with AU p values higher than .95 are considered to be strongly supported by the data (Suzuki & Shimodaira, 2015).

Multidimensional Scaling. Much like the hierarchical clusters, multidimensional scaling (MDS) also visualizes the similarity between immigrants, but as points in a two-dimensional plot. Average correlation matrices between individual immigrants were constructed from cell-by-cell averaging across participants’ immigrant matrices. In other words, the average correlation between Hans and Jose was computed by taking the average of the fisher Z transformed Hans-Jose correlations from each participant. This average Z-score was then re-converted back into a correlation value. This process was repeated for every immigrant pair. We then applied MDS independently to each of the averaged correlation matrices in each narrative condition. Results were rotated to a common orientation via Procrustes transformation, and re-scaled to appropriately reflect the overall similarity between immigrants in each condition. In our case, the two axes are not important, the important aspect is the distance between specific immigrants.

Racial and Status Matrix Similarity. In Experiments 1 and 2, two dissimilarity matrices were constructed for the individual immigrants and the nationality groups. Target pairs that could be considered to share a racialized identity (e.g., Germans and Russians or Mexicans and Syrians) were given a zero, which in a dissimilarity matrix means there is no difference between them (i.e., $1 - r$) (**Figure S2**). Pairings that crossed racial boundaries were given a score of 1, which would represent maximum difference. These matrices represent an a priori model of what the data would look like if immigrant representations were racialized such that “White” immigrants are more similar to themselves, “non-White” immigrants are similar to themselves, but “White” and “non-White” immigrants are different from each other. Dissimilarity matrices were also constructed from the data using the same averaging approach as the matrices for the multidimensional scaling. These group-based dissimilarity matrices were computed per narrative

condition and correlated to the hypothesis matrices to obtain a measure of whether different narratives create or remove racial structures in immigrant representations, on average. High correlations indicate a shared racialized representational structure. Comparison of correlations were computed using the *cocor* package version 1.1.3. in R to obtain confidence intervals of the difference and p-values (Diedenhofen & Musch, 2015). Note that in all cases we report Pearson correlations, but Spearman rank correlations generated very similar results (i.e., no changed in which correlations were or were not significant).

For Study 3, two racial matrices were constructed for the individual immigrants: a 2-cluster racial matrix that distinguished white (Germany and Russia) from non-white (Japan, Vietnam, Mexico, Syria) and a 3-cluster racial matrix where Japan and Vietnam, Syria and Mexico, or Russia and Germany clustered together. A status-based matrix clustered Japan, Germany, and Russia or Syria, Mexico, and Vietnam. We then computed BICs for each matrix for best-fit-model comparison purposes.

Regression models. We ran a combination of ordinary least-squares (OLS) regression analyses and linear mixed-effect regression (LME) models for Experiments 1 and 2. The first OLS analysis tested whether the differentiation or homogenization of immigrants differed across narratives and levels of system justification. These regressions predicted each participant's average inter-immigrant similarity (Fisher Z) from the interaction of narrative type and system justification.⁴ The other OLS analysis only applied to Experiment 2 as it examined whether nationality groups' representations were updated pre to post narratives. Here, difference scores were computed per participant from the post and pre average inter-group similarities of the nationality groups. These difference scores were then predicted by the interaction between narrative type and system justification. The fourth OLS analysis tested policy preferences which were predicted from the same interaction. Policy preferences were also predicted by the interaction between narrative type and average inter-immigrant similarity. For the LME analyses, one examined the generalization of exemplars to groups by regressing the nationality group-individual immigrant similarity on the interaction between narrative type and a time (pre/post) variable. Here, nationality was treated as a control and time and nationality as random slopes of participants to account

⁴ As a more rigorous test, this analysis was also implemented using mixed effect regressions whereby all participants' similarity matrices were combined, the similarity of each immigrant pair was treated as a single observation, and the dependencies between observations were accounted for by random effects of participants and immigrant pairs. The results did not differ much from the OLS analysis. For interested readers, these analyses are available in the analysis scripts within the OSF archive.

for the repeated measures. The last LME analysis assessed average trait ratings by regressing each of the seven trait ratings by the interaction between narrative condition and nationality separately for the immigrant group ratings and ratings of the individual immigrants. The random effect structure to account for data dependencies differed between the group and individual-level models. For the group-level ratings, participant intercepts were allowed to vary since, at baseline, participants rated each nationality group a single time per trait. For the individual story ratings, nationality was a random slope per participant since they rated multiple individuals from multiple nations. Stimulus (individual immigrants) intercepts were allowed to vary in addition to intercepts of the interaction between participants and stimuli to account for the two blocks of repeated ratings per individual immigrant. Regressions were conducted using R (R Core Team, 2014). Multiple comparisons were computed using the “lsmeans” package version 2.26.3 (Lenth & Hervé, 2015) and corrected for false discovery rate using the Benjamini-Hochberg correction. Degrees of freedom were calculated using Satterthwaite approximation for the mixed effect regressions. Effect sizes (d) were calculated by dividing the regression betas by the standard deviation of the model’s residuals. All confidence intervals (CI) reported for means, slopes, differences, and effect sizes are 95% confidence intervals. All analyses were two-sided.

Results

Baseline immigrant representations are racialized. See **Figure 2**, first panel, and **Table S1** for descriptive statistics of averaged baseline nationality ratings, prior to any exposure to narratives.

Prior to any exposure to narratives, hierarchical clusters of the dissimilarity matrices of nationality groups in both Experiments 1 and 2 exhibited racialized organization (see **Figure S3**). Specifically, Germans and Russians were represented more similarly to one another than either group with Syrians or Mexicans (cluster AU $ps = 1$); likewise, Syrians and Mexicans were represented more similarly to one another than either group with Germans or Russians (cluster AU $ps > .97$). These analyses indicate that people’s priors tend to reflect race-based organization of immigrant groups.

Average trait ratings by narrative condition, by country. See **Figure 2**, second through fourth panels for Experiment 1 and **Figure S4** for Experiment 2; see **Table S2** for descriptive statistics of immigrant ratings, by nationality, narrative condition, traits, and experiment; and see **Tables S3a-S3n** for

regression results. We regressed each trait, respectively, onto immigrant nationality, narrative condition, and their interaction. Across both Experiments 1 and 2, the main effect of condition was always significant, nationality was only significant for American and sociable (and dangerous $p = .05$ in Experiment 2), and their interaction was never significant.

Comparing across narrative conditions in Experiment 1 (**Table S3o**): the achievement stories generated significantly higher ratings than criminal and struggle stories for the American, competent, moral, and sociable traits. Achievement stories also generated significantly higher ratings for ‘competitive’ compared to the struggle stories (but not criminal stories), and lower ratings for ‘dangerous,’ and ‘lazy’ compared to both struggle and narrative stories. Criminal and struggle stories generated significantly different ratings across all traits except sociable. The results for Experiment 2 exhibited an identical pattern except that this time criminal and struggle differed across all traits including sociable (**Table S3p**). Overall, these results effectively amount to narrative manipulation checks but it is noteworthy that in no case did we observe an interaction between narrative condition and target nationality.

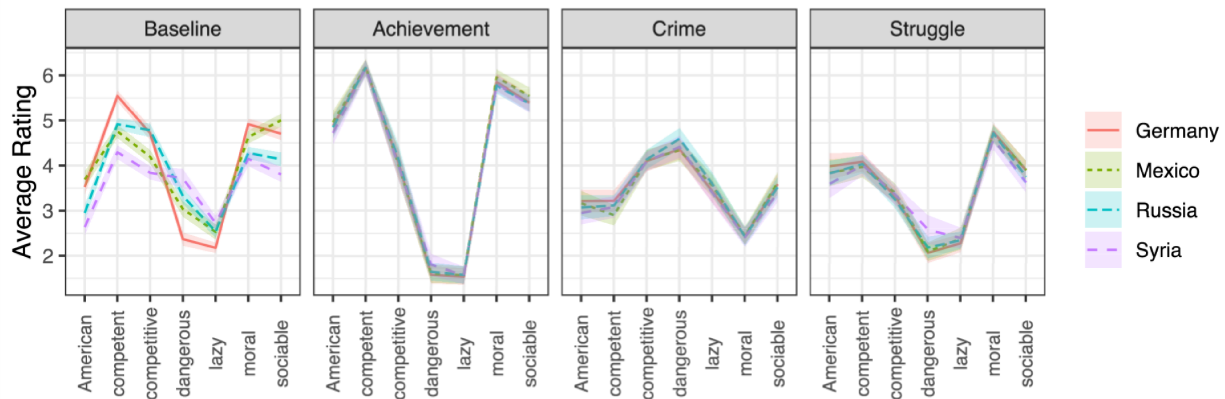


Figure 2. Average trait ratings by country at baseline and in response to each narrative manipulation (averaged across immigrants within country) for Experiment 1. Experiment 2 plot appears in **Figure S4**. Means and standard deviations are reported in **Tables S1** and **S2**. Error shades represent 95% CIs.

In short, the stories drove ratings on most traits to be very similar for all nations *on average*, but critically, different respondents could be driving the means across trait ratings and countries. Assessing immigrant similarity based on sample means does not take into account how immigrants are represented

within individuals: *that requires placing immigrant similarity within respondents as the primary unit of analysis*. We now turn to a series of similarity analyses to address this issue.

Different narratives homogenize or differentiate representations of individual immigrants.

Figure 3A visualizes how the different immigrants clustered as a function of their nation of origin and narrative condition in Experiment 1. Immigrants embedded in achievement narratives were represented most similarly to one another whereas immigrants embedded in criminal narratives were represented the least similarly to one another.

In order to conduct inferential tests, we quantified inter-immigrant similarity as the Fisher Z transformation of the correlations measuring the similarity of individual immigrant representations (see methods for analysis details). In Experiment 1 we found that inter-immigrant similarity was predicted by narrative type ($F(2,285) = 81.88, p < .0001$) and participant SJ scores ($F(1,285) = 5.76, p = .017$); however, there was non-significant interaction between them ($F(2,285) = 2.56, p = .079$) (**Figure 3B, top panel**). Achievement narratives generated more homogenization (mean $Z = 1.58$ CI[1.48, 1.68]) than struggle narratives (mean $Z = .92$ CI[.83, 1.03]; difference = .65 CI[.48, .83], $d = 1.27$ CI[.97, 1.57], $t(285) = 8.88, p < .0001$) and criminal narratives (mean $Z = .67$ CI[.57, .77]; difference = .91 CI[.73, 1.09], $d = 1.77$ CI[1.5, 2.1], $t(285) = 12.26, p < .0001$). Criminal narratives generated more differentiation than struggle narratives (difference = $-.26$ CI[$-.43, -.07$], $d = -.49$ CI[$-.79, -.21$], $t(285) = -3.49, p = .0005$). Individuals with higher SJ scores were also associated with more differentiated representations across immigrant groups ($b = -.04$ CI[$-.08, -.006$], $t(285) = -2.29, p = .022$). Decomposing the interaction: both the achievement ($b = -.07$ CI[$-.14, -.008$], $t(285) = -2.20, p = .029$) and struggle ($b = -.078$ CI[$-.14, -.014$], $t(285) = -2.39, p = .017$) narratives led to more differentiated representations among those with higher SJ scores (**Figure 3B, top panel**). Critically, this was not the case for criminal narratives which generated the same level of differentiation irrespective of SJ scores ($b = .018$ CI[$-.05, .09$], $t(285) = .53, p = .595$; differences to achievement and struggle narratives = .09 CI[$-.02, .21$], $ds = .18$ CI[$-.01, .36$], $ps = .086$). SDO did not moderate the impact of achievement versus criminal stories on representations, so we focused on replicating the SJ findings in Experiment 2.

Experiment 2 similarly resulted in a significant effect of narrative type ($F(2, 726) = 191.4, p < .0001$), SJ ($F(1,726) = 18.82, p < .0001$), and their interaction ($F(2,726) = 15.81, p < .0001$) on inter-

immigrant similarity (**Figure 3B, bottom panels**). Achievement narratives (mean $Z = 1.63$ CI[1.57, 1.69]) homogenized immigrants more than struggle (mean $Z = 1.01$ CI[.95, 1.08]; difference = .62 CI[.51, .73], $d = 1.21$ CI[1, 1.4], $t(726) = 13.5$, $p < .0001$) and criminal narratives (mean $Z = .74$ CI[.67, .80]; difference = .89 CI[.78, 1], $d = 1.7$ CI[1.5, 1.9], $t(726) = 19.13$, $p < .0001$). Criminal narratives differentiated immigrants more than struggle narratives (difference = -.27 CI[-.38, -.16], $d = .53$ CI[.35, .72], $t(726) = -5.85$, $p < .0001$). Again, individuals scoring higher in SJ differentiated immigrants more ($b = -.049$ CI[-.07, -.03], $t(726) = -4.33$, $p < .0001$). Critically, the narrative effect depended on an individual's SJ score. As in Experiment 1, the achievement ($b = -.065$ CI[-.10, -.03], $t(726) = -3.32$, $p = .001$) and struggle narratives ($b = -.11$ CI[-.16, -.08], $t(726) = -6.01$, $p < .0001$) led to more differentiated representations for individuals with higher SJ scores. Again, criminal narratives instead showed a similar level of differentiation across all levels of SJ ($b = .036$ CI[-.002, .07], $t(726) = 1.82$, $p = .069$), a marked difference from achievement (difference = -.10 CI[-.17, -.03], $d = .20$ CI[.09, .30], $t(726) = -3.63$, $p < .001$) and struggle narratives (difference = -.15 CI[-.22, -.09], $d = .30$ CI[.19, .41], $t(726) = -5.54$, $p < .0001$).

Thus, achievement narratives homogenized immigrants, criminal narratives differentiated immigrants, and struggle narratives generated representations between achievement and criminal narratives. Interestingly, the differentiation of immigrants in the criminal condition matched the differentiation level of nationality groups in the baseline measure (i.e., Fisher $Z \sim .8$; compare **Figure 3B**, **Figure 4B**) suggesting that criminal narratives *maintained* baseline representations whereas more change occurred in the achievement and struggle conditions.

Immigrant representations also depended on individual differences in SJ: endorsement of the status quo was associated with more differentiated immigrant representations. The impact of achievement and struggle narratives also differed by levels of SJ: i.e., higher SJ participants were resistant to the homogenizing effects of achievement narratives.

Most notable was that low SJ scores did not buffer participants against the impact of criminalized narratives. Specifically, criminal narratives made even low SJ participants' representations look like high SJ participants'. However, it should be noted that the achievement narratives elicited greater homogeneity relative to the other conditions, even for individuals high in SJ, indicating that these participants were still somewhat susceptible to effects of positive narratives. Experiment 2 exhibited a

very similar pattern of results to Experiment 1, providing further evidence for the stated relationships among narratives, SJ, and immigrant representation.

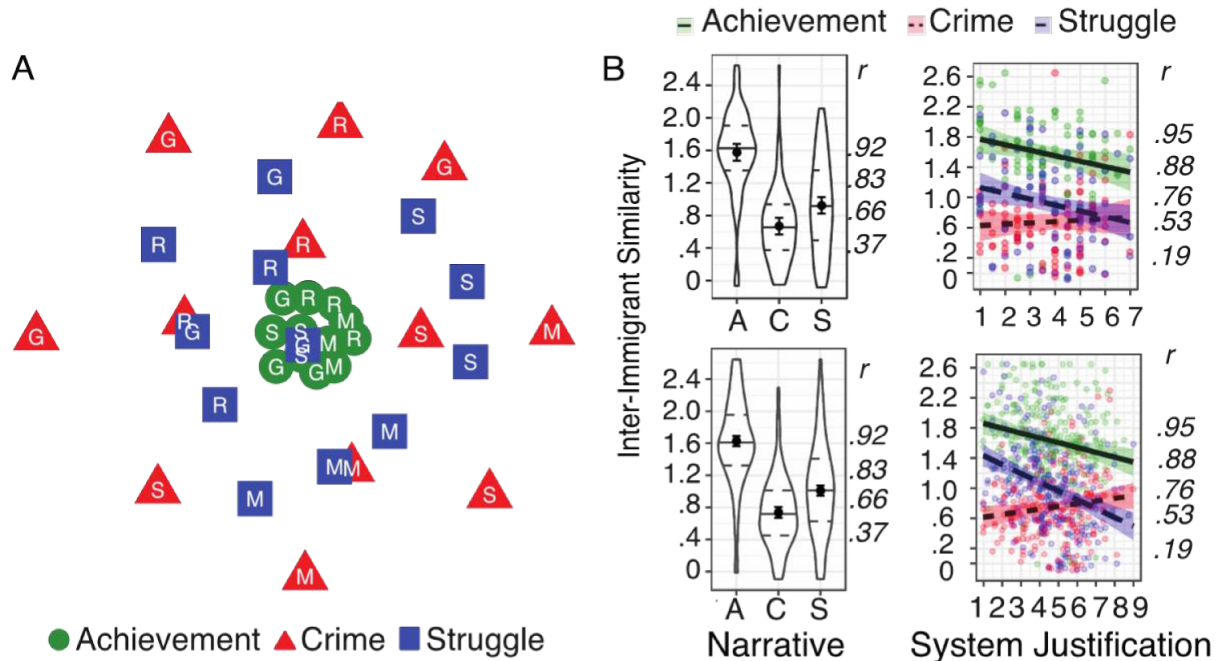


Figure 3. Multidimensional scaling (MDS) and inter-immigrant similarity across conditions. A) MDS plot for Experiment 1 projects the similarity, as spatial distance, between individual immigrants represented by their country's first letter (e.g., G = Germany). We superimposed the achievement (green circle), crime (red triangle), and struggle (blue square) conditions to generate this visualization (see **Figure S5** for Exp. 2). B) Top row: Experiment 1 data; bottom row: Experiment 2. Left panels display average inter-immigrant similarity (e.g., Jose-Hans, Fisher Z values) as a function of narrative type (A-achievement, C-crime, S-struggle); violin plots show the Z values where the data contain greater or lesser densities, horizontal dashed lines represent quartiles. Higher Fisher Z scores indicate greater homogeneity in representation across immigrants. Right panels show the additional effect of SJ on inter-immigrant similarity; slopes where the green solid line is the achievement condition, dashed blue line is the struggle condition, and the dotted red line is the criminal condition (red). Error bars and shaded regions display 95% confidence intervals.

Narratives (de-)racialize representations of individual immigrants. Next we sought to identify the axis along which differentiation occurred. Here, we tested our hypothesis that immigrants are grouped by inferred race (i.e., white/non-white), when their representations are differentiated, by looking at how well the data correlated with an a priori racially-differentiated matrix (see **Figure S2**). As predicted, Experiment 1's dissimilarity matrix of immigrants in the achievement condition showed a weak relationship to an a priori race-based matrix ($r(64) = -.02$ CI[-.26, .22], $p = .881$), whereas the criminal ($r(64) = .32$ [.09, .52], $p = .009$) and struggle narratives ($r(64) = .43$ [.21, .61], $p = .0003$) exhibited significantly stronger correlations with the race-based matrix, suggesting a more racialized representational structure in those conditions. The achievement correlation coefficient differed from the criminal correlation coefficient (difference = .34 CI[.002, .655], $Z = 1.98$, $p = .048$), as well as from the struggle coefficient (difference = .45 CI[.122, .749], $Z = 2.69$, $p = .007$). There was no difference between the criminal and struggle correlation coefficients (difference = .11 CI[-.189, .405], $Z = .719$, $p = .472$). The same occurred in Experiment 2: immigrants presented within criminal ($r(64) = .33$ [.09, .53], $p = .006$) and struggle narratives ($r(64) = .39$ [.16, .57], $p = .001$) were organized in a manner that correlated with a race-based matrix whereas achievement immigrant representations were not ($r(64) = -.03$ [-.27, .21], $p = .795$). Again, the achievement correlation coefficient differed significantly from the criminal correlation coefficient (difference = .37 CI[.027, .677], $Z = 2.12$, $p = .034$), as well as from the struggle coefficient (difference = .42 CI[.085, .723], $Z = 2.463$, $p = .014$), and there was no difference between the criminal and struggle correlation coefficients (difference = .05 CI[-.249, .354], $Z = .342$, $p = .733$).

Please see supplemental results for an exploratory analysis of which traits drove differentiation in the criminal and struggle narratives in Experiments 1 and 2.

In a third study, we sought to test whether status was a viable alternative explanation of this racialization pattern. We administered just the criminal narrative condition with immigrants from the original four countries and added Japanese (perceived as high status, but non-white) and Vietnamese (perceived as low status, and also non-white) immigrants. If Japan clustered with Germany and Russia (all high status) and Vietnam with Mexico and Syria (all low status), status-organization would be a better explanation of our results. However, if Japan and Vietnam clustered with Mexico and Syria (a non-white cluster) or even with each other but not the other groups (an "Asian" cluster), that would support a race-

based organization account. While a white/non-white racial matrix did not correlate with the empirical data ($r(64) = .09$ CI[-.15, .33], $p = .462$), neither did the status matrix ($r(64) = .14$ CI[-.10, .37], $p = .256$). Instead, a three-cluster racial matrix (i.e., Russia-Germany, Mexico-Syria, Japan-Vietnam, which was not pre-registered) correlated most with the empirical data ($r(64) = .22$ CI[-.02, .44], $p = .080$), supporting a racialization interpretation. A comparison of the model fits confirmed that the three-cluster racial matrix (BIC = -263.66) provided the best fit to the data relative to the two-cluster racial matrix (BIC = -261.04) and the status matrix (BIC = -261.82).

Thus, the homogenizing effect of achievement narratives helped de-racialize immigrant representations as compared to baseline representations of nationality groups. However, criminal and struggle narratives maintained the racialized nationality organization at the individual immigrant level, confirming that to the extent that narratives differentiate immigrant representations, race is one driver of that difference.

Individual immigrants update representation of nation groups. Experiment 2 included a second round of evaluations of nationality groups after exposure to the narratives. To test whether immigrant exemplars updated the structure of their respective nationality representations, we examined the representational similarity between individual immigrants and their corresponding nationality groups both pre- and post-narratives. Individual immigrant-nationality similarity was greater after narrative exposure (mean $Z_{Post} = .88$ CI[.79, .97]) than at baseline (mean $Z_{Pre} = .54$ CI[.49, .60]) ($F(1, 716.11) = 105.18$, $p < .0001$; **Figure 4A**) indicating that narratives drove group representation updating (difference_{Post-Pre} = .34 CI[.28, .41], $d = .31$ CI[.25, .37], $t(716.1) = 10.26$, $p < .0001$). The change in group-immigrant similarity also depended on the condition ($F(2, 716.65) = 6.58$, $p = .002$) such that the difference in pre/post correlations in the achievement condition ($b = .50$) was greater than crime (difference = -.29 CI[-.45, -.13], $d = -.27$ CI[-.41, -.12], $t(718.03) = -3.55$, $p = .0004$) and struggle conditions (difference = -.19 CI[-.35, -.04], $d = -.18$ CI[-.32, -.04], $t(714.98) = -2.4$, $p = .017$).

Also important, individual immigrants' narratives updated how similarly nationality groups were represented relative to one another ($F(2,689) = 40.49$, $p < .0001$) (**Figure 4B**; see also **Figure S6A** for plot of change scores). The achievement condition increased homogeneity in the representation of nationality groups after narrative exposure compared to baseline nation ratings ($b = .41$ CI[.34, .47],

$t(689) = 12.46, p < .0001$). The struggle condition also showed increased homogeneity ($b = .13$ CI[.07, .19], $t(689) = 3.98, p = .0001$), while the criminality condition maintained the same level of differentiation ($b = -.003$ CI[-.07, .06], $t(689) = -.11, p = .915$). Pairwise analyses also indicated that representations in the achievement condition were updated more than the struggle (difference = .27 CI[.17, .39], $d = .58$ CI[.37, .74], $t(689) = 6.02, p < .0001$) and criminal conditions (difference = .41 CI[.29, .52], $d = .83$ CI[.64, 1.01], $t(689) = 8.83, p < .0001$); the struggle condition elicited more updating than the criminal condition (difference = .13 CI[.02, .24], $d = .27$ CI[.08, .45], $t(689) = 2.87, p = .004$).

Thus, post-narrative group-immigrant coupling occurred in all three conditions yet led to different structures in the final inter-group similarity (e.g., all groups ended up similar in the achievement condition). This dissociation suggests that the outcome of generalization (i.e., changing or maintaining priors) depends both on the relational structure of the baseline group-level representations and of the exemplars being incorporated.

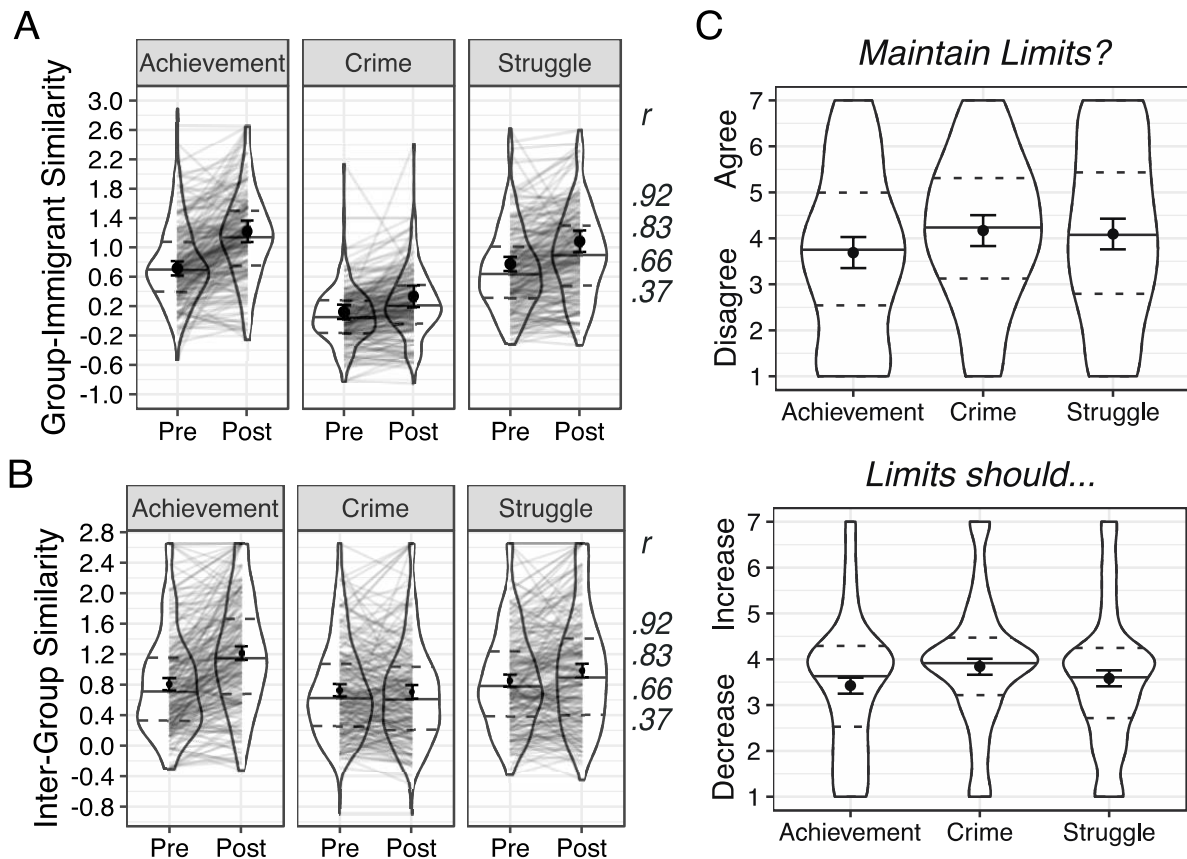


Figure 4. Narrative impact on the updating of nation group representations and policy preferences. A) The violins represent group-immigrant similarity (e.g., Mexico-Jose, Fisher Z values) distributions in Experiment 2 before and after narrative exposure. Grey lines represent individual participants' shifts in group-immigrant similarity, horizontal dashed lines within the violins represent quartiles. B) The violins represent the inter-group similarity (e.g., Mexico-Russia, Fisher Z values) distributions in the Experiment 2 baseline ratings of nationality groups (pre-narratives) and after reading the individual narratives (post-narratives). The lines represent changes in individual participants' inter-group similarity. C) The top panel represents policy preferences in Experiment 1 (N = 298) and the bottom panel illustrates policy preference results from Experiment 2 (N = 756). The midpoint (4) of each scale represents a neutral and no change stance, respectively. Error bars represent 95% confidence intervals.

Finally, there was suggestive evidence that inter-group similarity updating differed along levels of SJ ($F(1,689) = 3.69$, $p = .055$) and SJ's interaction with narrative type ($F(2,689) = 2.98$, $p = .052$), though we hasten to note that both the main effect and interaction were not significant (**Figure S6B**). Generally, individuals higher in SJ updated less ($b = -.02$, $CI[-.04, .00004]$, $t(689) = -1.959$, $p = .051$). In the achievement condition, individuals with higher SJ scores updated less than those with lower SJ scores ($b = -.05$, $SE = .02$, $95\% CI[-.09, -.009]$, $t(689) = -2.4$, $p = .017$). The struggle condition showed the same pattern except it was not significant ($b = -.03$, $SE = .02$, $95\% CI[-.07, .003]$, $t(689) = 1.86$, $p = .096$). The criminal condition showed no updating differences across levels of SJ ($b = .016$ $CI[-.02, .05]$, $t(689) = .83$, $p = .408$). Pairwise differences between the conditions were not significant ($ps > .067$). Again: these results should be interpreted with caution. Our data are inconclusive with regard to whether generalization by condition depends on SJ.

Narratives influence support for immigration policy. Our last set of results indicated that narratives' and their corresponding influence on cognitive representations led to differences in immigration policy preferences. In Experiment 1 we asked participants to rate their level of agreement with maintaining the current immigration restrictions (e.g., number of entrants and access to national resources). However, disagreement with that statement could indicate a preference for more liberal or more strict restrictions. To eliminate this ambiguity in Experiment 2, we asked a directional question: whether participants would increase, decrease, or not change the current limits.

In Experiment 1, agreement with maintaining immigration policy status quo showed a significant association with SJ scores ($F(1,292) = 39.6, p < .0001$), and a non-significant effect of narrative type ($F(2, 292) = 2.88, p = .058$) (**Figure 4C, top panel**), but was not affected by the interaction of the two ($F(2, 292) = .008, p = .992$). Main effect of SJ: individuals with higher SJ scores agreed that the U.S. should maintain the current system ($b = .40$ CI[.27, .52], $t(292) = 6.29, p < .0001$; **Figure S7**). Main effect of narrative: participants in the achievement condition ($M = 3.69, 95\% \text{ CI}[3.35, 4.03]$) were descriptively more likely to disagree with the status quo than participants in the struggle ($M = 4.09$ CI[3.8, 4.4]; difference = .40 CI[-.17, .98], $d = .24$ CI[-.04, .52], $t(292) = -1.67, p = .144$) and criminal condition ($M = 4.16$ CI[3.83, 4.5]; difference = .47 CI[-.1, 1.1], $d = .28$ CI[0, .56], $t(292) = 1.97, p = .144$). Interestingly, all three conditions included the scale's midpoint in their confidence intervals suggesting many individuals reported a neutral stance after exposure to narratives. Thus, SJ predictably related to maintaining the status quo while there was only suggestive evidence that achievement narratives increased a desire to change current immigration policy.

In Experiment 2, directional preferences for policies were significantly predicted by both SJ ($F(1,750) = 88.04, p < .0001$) and narrative type ($F(2,750) = 7.28, p = .0007$), but not their interaction ($F(2,750) = .41, p = .666$; **Figure 4C, bottom panel**). Once again, individuals with higher SJ scores either wanted no change or more restrictions to the current immigration system ($b = .28$ CI[.23, .34], $t(750) = 9.36, p < .0001$; **Figure S7**). More important, participants exposed to achievement narratives (Mean = 3.42 CI[3.25, 3.59]) were more likely to report a preference for fewer immigration restrictions than participants exposed to criminal (Mean = 3.84 CI[3.66, 4.01]; difference = .41 CI[.11, .71], $d = .30$ CI[.12, .47], $t(750) = 3.31, p = .003$) but not struggle narratives (Mean = 3.58 CI[3.41, 3.76]; difference = .16 CI[-.14, .46], $d = .18$ CI[.01, .36], $t(750) = 1.28, p = .201$). Notably, the confidence intervals of the achievement and struggle conditions did not contain the scale's midpoint—the “no change” response.

Speaking to the predictive value of homogenized cognitive representations: the differentiated or homogenized state of individual immigrant representations moderated the impact of narrative type on policy preferences in Experiment 1 ($F(2,285) = 9.13, p = .0001$) and Experiment 2 ($F(2,726) = 27.2, p < .0001$) (**Figure 5**). Participants in the achievement ($b_{\text{Exp1}} = -.64$ CI[-1.3, .04]; $b_{\text{Exp2}} = -.8, 95\% \text{ CI}[-1.1, -.47]$) and struggle conditions ($b_{\text{Exp1}} = -1.34$ CI[-1.9, -.74]; $b_{\text{Exp2}} = -1.1$ CI[-1.3, -.77]) wanted to both change and

decrease limits on immigrants the more homogenous their representations. The same did not occur for the criminal stories ($b_{Exp1} = .79$ CI[.02, 1.6]; $b_{Exp2} = .77$ CI[.36, 1.2]; differences from other conditions > 1.4 , $d_s > .83$, $p_s < .01$).

In sum, once we once we eliminated the directional ambiguity of the policy question and increased the sample size, we observed a main effect of narrative: specifically, participants in the achievement and struggle conditions were more likely to choose to decrease limitations on immigrants, while those in the criminal condition showed preference for the current policy. Furthermore, across both experiments, SJ predicted a preference for the status quo if not an increase in immigration restrictions. Finally, in both the achievement and struggle conditions, more homogenous representations were associated with less restrictive immigration policy preferences.

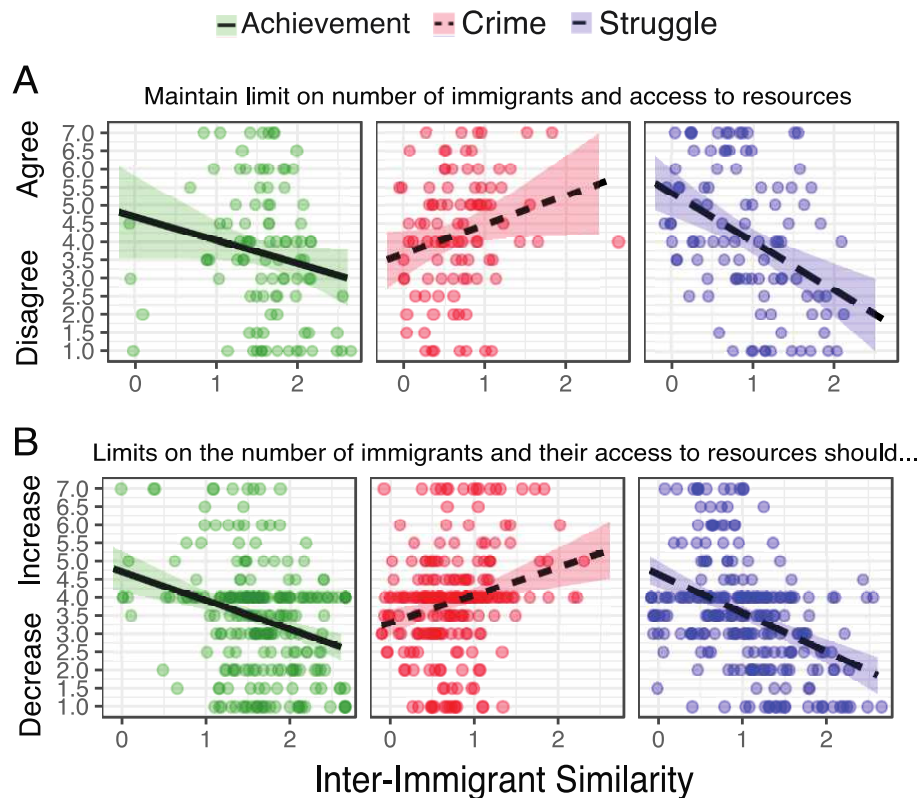


Figure 5. Policy preferences as a function of both narrative type and the homogenization of immigrant representations. A) Each dot represents the policy preference response and average fisher Z score per participant in Experiment 1. The x axis represents the average correlation (Fisher Z transformed) between all pairs of immigrants

such that higher Z scores indicate more homogenization. Higher scores on the y axis represent agreements to maintaining current limits on immigrants and lower scores indicated a desire to change those limits. The columns represent the achievement (green), crime (red), and struggle (blue) conditions. B) The same plot type for participants from Experiment 2. The y axis in this experiment represents whether participants want to increase or decrease limits on immigrants. Shaded regions represent 95% confidence intervals.

Discussion

Media narratives have remarkable power to influence public perception of people and policy. Here we tested the impact of achievement, criminal, and struggle narratives on American participants' latent representations of German, Russian, Syrian, and Mexican immigrants. Across two experiments we discovered that the achievement narrative homogenized immigrants from these different nationalities while criminal and struggle narratives differentiated them—specifically, so that they clustered white versus non-white as perceived by participants. This organization was undetectable in the mean-based ratings, which averaged over the entire sample in each condition. Study 3 indicated status was not a better account for our findings than ascribed race. These narrative effects generalized to the immigrants' respective nationality groups: racialized nation representations were updated and homogenized after exposure to the achievement narrative, but continued to be differentiated after exposure to criminal or struggling narratives. As predicted, ideology (i.e., SJ) moderated several of our findings: individuals with higher SJ scores differentiated immigrants more overall and were less influenced by narratives compared to individuals with lower SJ scores. However, one of our more notable findings was that the criminal narrative made even low SJ individuals' immigrant representations as differentiated as high SJ individuals' representations. Said another way, having low levels of SJ did not buffer these participants against the effects of the criminal narrative, which also explains why the criminal narratives generated more differentiation on average than even the struggle narratives. Lastly, exposure to narratives influenced immigration policy preferences such that achievement and, to a lesser extent, struggle narratives were associated with endorsing fewer restrictions on the number of immigrants allowed to immigrate and their access to national resources (consistent with previous correlational findings; Reyna et al., 2013). This pattern was moderated by the degree of homogeneity exhibited by participants in the

main task: individuals with more homogenous representations expressed greater support for immigrants and immigration.

Potential mechanisms driving homogenization, differentiation, racialization, and updating.

The homogenizing effect of achievement narratives and the differentiating effect of criminal or struggling narratives may be driven by two distinct, but related psychological processes. The first process relies on insights from the density hypothesis, which suggests that positive information tends to be represented more similarly than negative information (Alves et al., 2017). Specifically, events or features which are modal in a distribution tend to be imbued with positivity; as such, there is a restricted range on what counts as “good” (anything too far from the central tendency ceases to be good). Consequently, all good things will tend to be similar. In the context of the U.S., which claims a merit-based social structure, a relatively narrow band of achievements are widely recognized as constituting “success.” There are, however, myriad ways to struggle (e.g., experience difficulty securing housing) or violate rules (e.g., steal food) allowing for greater differentiation. Note, however, that our effects are not due to lesser or greater homogeneity of the stories themselves: when the stories were not yoked to people in the pilot data, there were no differences across narratives in how similar the stories were within condition.

The second, motivation-driven process is ‘template-matching.’ The achievement narrative may have homogenized immigrant representations because immigrants now fit the archetype of the American Dream. This allows raters to integrate them into a common in-group identity—Americans (Kunst et al., 2015). Criminal and struggle narratives differentiated instead because they evoked *othered* out-group identities (Arcimaviciene & Baglama, 2018). In line with this, immigrants in the context of achievement narratives were rated as more ‘American’ than those featured in struggle or criminal narratives.

However, immigrants were not simply *othered* when differentiated; they were organized along a racial axis. The consistent racialization of immigrant representations is especially noteworthy given the turbulent political contexts in which we collected both primary data sets. While Germans and Russians could have easily been represented separately given their nations’ differing associations to the U.S. (friend and foe, respectively), their shared status as majority ‘white’ was a stronger driver of participants’ representations. Conversely, the clustering of Mexicans and Syrians has been documented since the 9/11 attacks, which changed representations of Muslims and Latinxs into a “brown threat” and codified

their interchangeability and criminalization through laws on border protection and the War on Terror (Flores & Schachter, 2018; Rivera, 2014). Consistent with previous theorizing, the criminal narrative appears to mobilize the arbitrary dimension of race to reinforce subgrouping of immigrants (Provine & Doty, 2011) which has implications for reinforcing racism in consequential political decisions (e.g., who gets naturalized and subsequently structurally integrated).

The nationality updating results from the achievement condition in Experiment 2 are striking given the rich literature on stereotype (im)mutability and subtyping (Maurer et al., 1995; Bosak & Diekmann, 2010). In many cases, presenting individuals with counter-stereotypical exemplars results in the treatment of those exemplars as exceptions, which then leads to a failure to incorporate those exemplars into the representation of the larger group (Maurer et al., 1995). One possible explanation for our updating effect is that our paradigm forced participants to learn about different immigrants trial by trial. This structure allows them to *incrementally* modify latent group structures as they encounter multiple immigrants and their narratives (Lau et al., 2018). Nevertheless, researchers should remain mindful of the likelihood of subtyping effects in the absence of multi-trial task structures.

Limitations and implications. An important limitation of the current investigation is our use of convenience sampling. Future research will have to collect data from representative samples, particularly if this work is to be relevant for political practice. Related, future research should include a much broader array of stories, countries, and immigrant names to test the generalizability of our findings (Judd, Westfall, & Kenny, 2012).

A broader practical challenge is that findings is that achievement narratives could ironically serve a system-justifying motive (e.g., “rags-to-riches” narratives; Wakslak et al., 2007). High-achieving immigrants may come to be viewed as “useful” to the dominant majority group—a phenomenon that could result in the commodification of high-achieving immigrants while setting a near impossible standard of inclusion for everyone else (Martinez et al., 2017).

Our results generate two important implications: immigrants can shape public opinion on policies like the Dream Act, the Diversity Immigrant Visa program, and the Wall as border security, through the power of telling their own narratives. Likewise, there is an urgent need for responsible, wide-spread

reporting of the actual relationships among immigration and crime and an increase in the proportion of narratives that counter the criminal immigrant stereotype.

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Supplemental Online Material

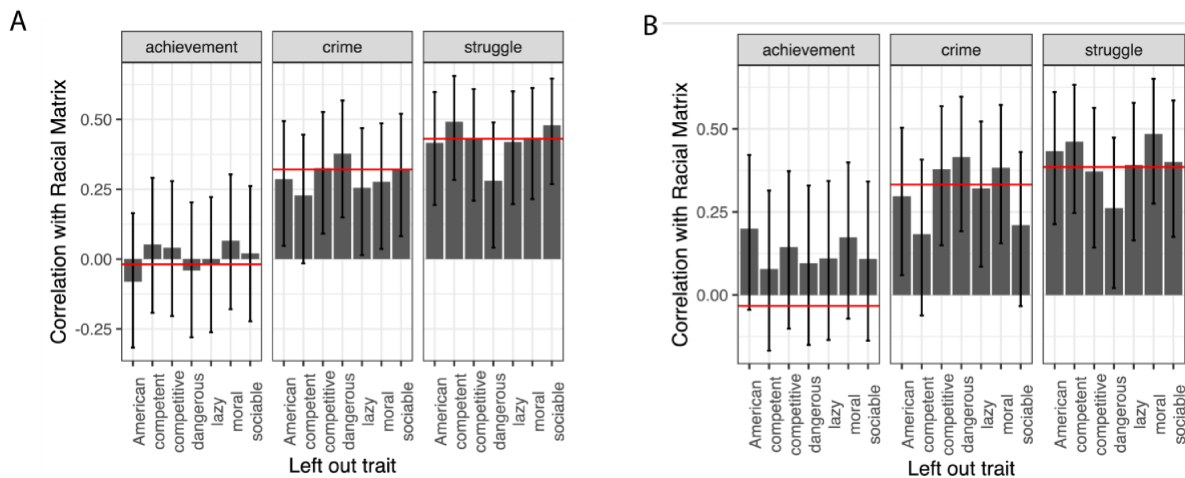
Supplemental Methods

Other participant demographics. Experiment 1 consisted of the following racio-ethnic breakdown: 222 White people, 16 Latinx people, 33 Black people, 18 Asian people, 8 Multiracial people and 1 declined to answer. Experiment 2 consisted of 562 White people, 45 Latinx people, 66 Black people, 51 Asian people, 21 Multiracial people, and 11 Other. Experiment 3 consisted of 141 White people, 10 Latinx people, 31 Black people, 11 Asian people, 10 Multiracial people, and 2 Other. With regard to immigrant status, participants in Experiment 1 had the following breakdown: 281 were born in the U.S., 17 were born outside of the U.S., and 1 preferred not to answer. In Experiment 2, 686 were born in the U.S., 65 were born outside of the U.S., and 5 preferred not to answer. In Experiment 3, 193 were born in the U.S. and 25 were born outside of the U.S. As is evident, our sample is so skewed towards white and non-immigrants that we do not have sufficient statistical power to test whether these dimensions moderate our effects.

Supplemental Results: Which traits drive differentiation in the criminal and struggle narratives?

Analysis. While we pre-registered a racial correlation ratio analysis for the purpose of identifying which traits contribute the most to inter-immigrant racial differentiation, this approach did not account for the possibility that differentiation is not driven by one particular trait but a network of relationships among traits. In other words, the relationships between traits must be accounted for because similarities are computed by comparing immigrants as trait *vectors*. We therefore instead report a leave-one-trait-out analysis where we remove one trait at a time from the data, recompute the between-immigrant dissimilarity matrix, and compare it to the a priori racial matrix. Much like finding key hubs in a functional brain network by knocking each node out to see how the network fares, this approach eliminates the influence of the left-out trait to the final dissimilarity matrix. We iterated this procedure over every trait. If excluding a given trait changes the correlation between the empirical and racialized matrices such that the confidence interval now includes 0, it indicates that the left out trait was contributing to the significant racialization effect in the criminal and achievement conditions. If leaving out a specific trait increases the correlation (e.g. away from $r = 0$), then that trait homogenized immigrants instead. While this procedure does effectively reduce the number of data points used for computing inter-immigrant similarity (each immigrant is represented by one less trait), this issue affects each iteration similarly.

Results. In the struggle condition, no one trait's removal changed the relationship between the data and the racialized matrix such that the confidence interval now included 0 (though across both Experiments 1 and 2, "dangerous" came the closest). In contrast, in the criminal condition, eliminating "competent" across Experiments 1 and 2 (and eliminating "sociable" in Experiment 2) reduced the correlation between the empirical matrix and the racialized matrix. One notable trend: excluding "dangerous" slightly increased racialization in the crime condition but decreased racialization in the struggle condition suggesting that all criminals are dangerous in similar ways but struggling immigrants are differentially dangerous depending on race. However, our most consistent finding was that "competence" related to all the other traits in way that was more similar within-perceived race than between perceived races in the criminal narrative condition. This is particularly interesting in light of the fact that high versus low ascriptions of competence are another dimension along which Germany and Russia differed from Syria and Mexico.



Leave-one-out analysis for identifying trait-specific contributions to racial differentiation. Red line represents the correlation value of the immigrant dissimilarity matrix using all the traits with the racial matrix. Error bars represent 95% CIs. Note that there was no racialized differentiation to reduce in the Achievement condition (the red line is near 0 in both experiments), but we include the data here in case it is of interest to readers

Supplementary Table S1. *Baseline trait ratings by nationality by narrative condition*

Trait	Achievement				Crime				Struggle			
	Ger	Rus	Mex	Syr	Ger	Rus	Mex	Syr	Ger	Rus	Mex	Syr
Experiment 1												
American	3.58 (1.65)	2.99 (1.64)	3.69 (1.59)	2.69 (1.59)	3.56 (1.71)	3.12 (1.57)	3.71 (1.64)	2.7 (1.7)	3.43 (1.51)	2.73 (1.56)	3.67 (1.63)	2.51 (1.56)
Competent	5.59 (1.09)	5.09 (1.09)	4.94 (1.17)	4.46 (1.26)	5.49 (1.08)	4.79 (1.22)	4.60 (1.35)	4.11 (1.39)	5.56 (1.02)	4.87 (1.10)	4.73 (1.30)	4.30 (1.37)
Competitive	4.54 (1.44)	4.78 (1.49)	4.05 (1.43)	3.82 (1.30)	4.89 (1.29)	4.75 (1.30)	4.17 (1.46)	3.79 (1.22)	4.72 (1.26)	4.81 (1.28)	4.35 (1.07)	3.9 (1.34)
Dangerous	2.56 (1.43)	3.38 (1.43)	3.02 (1.39)	3.62 (1.75)	2.4 (1.25)	3.48 (1.55)	3.05 (1.57)	3.83 (1.76)	2.16 (1.19)	3.10 (1.53)	3.03 (1.59)	3.70 (1.97)
Lazy	2.31 (1.04)	2.61 (1.16)	2.54 (1.4)	2.68 (1.28)	2.13 (1.04)	2.55 (1.31)	2.46 (1.51)	2.74 (1.39)	2.09 (1.01)	2.46 (1.18)	2.59 (1.50)	2.75 (1.49)
Moral	4.94 (1.07)	4.39 (1.05)	4.75 (1.18)	4.27 (1.30)	4.90 (1.11)	4.14 (1.15)	4.47 (1.34)	3.98 (1.50)	4.91 (1.06)	4.29 (1.32)	4.66 (1.24)	4.18 (1.46)
Sociable	4.64 (1.35)	4.25 (1.40)	5.16 (1.27)	3.98 (1.52)	4.76 (1.20)	4.01 (1.28)	4.87 (1.28)	3.69 (1.38)	4.71 (1.04)	4.14 (1.37)	4.98 (1.24)	3.73 (1.43)
Experiment 2												
American	3.51 (1.64)	2.80 (1.55)	3.56 (1.66)	2.69 (1.67)	3.49 (1.61)	2.78 (1.48)	3.62 (1.62)	2.69 (1.58)	3.53 (1.60)	2.96 (1.57)	3.61 (1.66)	2.69 (1.65)
Competent	5.62 (1.11)	5.04 (1.21)	4.84 (1.35)	4.58 (1.43)	5.50 (1.15)	4.93 (1.18)	4.76 (1.32)	4.33 (1.29)	5.57 (1.06)	5.13 (1.21)	4.85 (1.27)	4.51 (1.43)
Competitive	4.69 (1.37)	4.75 (1.41)	4.06 (1.38)	3.78 (1.36)	4.62 (1.44)	4.78 (1.35)	4.28 (1.50)	4.00 (1.40)	4.68 (1.36)	4.80 (1.38)	4.36 (1.44)	4.00 (1.32)
Dangerous	2.31 (1.27)	3.46 (1.56)	2.95 (1.40)	3.52 (1.74)	2.34 (1.25)	3.59 (1.55)	3.08 (1.38)	3.74 (1.66)	2.40 (1.22)	3.38 (1.51)	2.99 (1.36)	3.61 (1.75)
Lazy	2.18 (1.18)	2.61 (1.31)	2.42 (1.37)	2.73 (1.40)	2.31 (1.23)	2.73 (1.31)	2.40 (1.44)	2.90 (1.43)	2.22 (1.20)	2.46 (1.17)	2.55 (1.48)	2.70 (1.31)
Moral	5.05 (1.11)	4.23 (1.29)	4.81 (1.31)	4.38 (1.51)	4.99 (1.16)	4.18 (1.19)	4.76 (1.31)	4.26 (1.33)	5.03 (1.13)	4.40 (1.29)	4.64 (1.35)	4.32 (1.44)
Sociable	4.75 (1.28)	4.07 (1.45)	5.06 (1.36)	3.84 (1.44)	4.73 (1.24)	4.12 (1.32)	5.02 (1.24)	3.69 (1.40)	4.80 (1.22)	4.26 (1.43)	5.12 (1.34)	3.90 (1.43)

Note: Mean (SD).

Supplementary Table S2. *Individual immigrant trait ratings by nationality (averaged across 3 targets in each nationality) by narrative condition.*

Trait	Achievement				Crime				Struggle			
	Ger	Rus	Mex	Syr	Ger	Rus	Mex	Syr	Ger	Rus	Mex	Syr
Experiment 1												
American	4.88 (1.31)	4.85 (1.28)	4.96 (1.30)	4.72 (1.31)	3.21 (1.29)	3.07 (1.34)	3.16 (1.37)	2.95 (1.28)	3.98 (1.43)	3.82 (1.39)	3.83 (1.49)	3.59 (1.59)
Competent	6.16 (0.90)	6.16 (0.87)	6.18 (0.86)	6.15 (0.91)	3.21 (1.21)	3.11 (1.17)	2.90 (1.14)	3.08 (1.19)	4.08 (1.09)	4.03 (1.02)	3.96 (1.19)	4.01 (1.20)
Competitive	4.07 (1.62)	4.14 (1.65)	4.03 (1.68)	4.00 (1.67)	4.09 (1.15)	4.13 (1.08)	4.12 (1.13)	4.09 (1.06)	3.31 (1.03)	3.24 (0.97)	3.39 (1.05)	3.35 (1.11)
Dangerous	1.58 (0.95)	1.65 (1.00)	1.61 (1.01)	1.80 (1.24)	4.36 (1.15)	4.59 (1.19)	4.34 (1.20)	4.41 (1.23)	2.06 (1.10)	2.19 (1.21)	2.10 (1.04)	2.58 (1.60)
Lazy	1.54 (0.88)	1.58 (0.95)	1.57 (0.96)	1.57 (0.95)	4.34 (1.28)	3.59 (1.27)	3.55 (1.25)	3.39 (1.19)	2.28 (1.02)	2.35 (0.96)	2.38 (1.23)	2.40 (1.14)
Moral	5.85 (0.91)	5.77 (0.90)	5.95 (0.87)	5.82 (0.98)	2.43 (0.88)	2.42 (1.04)	2.45 (0.98)	2.41 (1.06)	4.74 (0.98)	4.71 (0.93)	4.70 (1.05)	4.58 (1.14)
Sociable	5.40 (0.91)	5.38 (0.91)	5.55 (0.89)	5.35 (0.90)	3.59 (1.19)	3.52 (1.15)	3.62 (1.18)	3.39 (0.99)	3.89 (1.05)	3.75 (0.98)	3.89 (1.08)	3.62 (1.17)
Experiment 2												
American	4.94 (1.39)	4.80 (1.44)	4.95 (1.46)	4.76 (1.53)	2.94 (1.28)	2.93 (1.25)	2.95 (1.34)	2.76 (1.28)	3.90 (1.45)	3.72 (1.48)	3.83 (1.58)	3.58 (1.61)
Competent	6.34 (0.77)	6.38 (0.75)	6.33 (0.86)	6.30 (0.92)	3.13 (1.14)	3.11 (1.08)	3.01 (1.08)	3.09 (1.11)	4.30 (1.20)	4.27 (1.22)	4.23 (1.31)	4.28 (1.33)
Competitive	4.20 (1.53)	4.22 (1.46)	4.19 (1.49)	4.10 (1.47)	4.05 (1.15)	4.06 (1.14)	4.06 (1.13)	4.04 (1.15)	3.41 (1.23)	3.37 (1.18)	3.45 (1.28)	3.41 (1.23)
Dangerous	1.51 (0.85)	1.57 (0.95)	1.54 (0.98)	1.70 (1.13)	4.68 (1.17)	4.67 (1.14)	4.77 (1.12)	4.74 (1.18)	2.13 (1.10)	2.20 (1.11)	2.24 (1.21)	2.53 (1.39)
Lazy	1.45 (0.85)	1.46 (0.85)	1.46 (0.90)	1.51 (0.93)	3.71 (1.17)	3.75 (1.11)	3.79 (1.17)	3.78 (1.20)	2.43 (1.11)	2.52 (1.09)	2.41 (1.26)	2.46 (1.23)
Moral	6.08 (0.81)	6.05 (0.86)	6.04 (0.93)	6.05 (0.99)	2.22 (0.93)	2.23 (0.93)	2.24 (0.89)	2.23 (0.95)	4.99 (1.04)	4.87 (1.00)	4.89 (1.13)	4.84 (1.16)
Sociable	5.59 (0.88)	5.55 (0.88)	5.64 (0.91)	5.47 (0.95)	3.40 (1.08)	3.35 (1.04)	3.37 (0.98)	3.27 (1.04)	4.04 (1.05)	3.91 (1.11)	4.12 (1.09)	3.84 (1.15)

Note: Mean (SD).

Supplementary Table S3a. *Nationality and narrative predicting ‘American’: ANOVA and regression for Experiment 1.*

<i>Predictor</i>	<i>Sum.Sq</i>	<i>Mean.Sq</i>	<i>NumDF</i>	<i>DenDF</i>	<i>F.value</i>	<i>p</i>
nationality	12.552	4.184	3	371.651	8.149	0
narrative	46.727	23.364	2	316.302	45.506	0
nat X narr	2.282	0.38	6	371.655	0.741	0.617

<i>Predictors</i>	<i>Estimates CI</i>		<i>p</i>
(Intercept)	4.89	4.61 – 5.16	<0.001
Mexico	0.08	-0.10 – 0.27	0.376
Russia	-0.03	-0.20 – 0.14	0.748
Syria	-0.17	-0.37 – 0.02	0.086
crime	-1.67	-2.07 – -1.28	<0.001
struggle	-0.90	-1.29 – -0.51	<0.001
Mexico:crime	-0.17	-0.43 – 0.10	0.215
Russia:crime	-0.12	-0.36 – 0.12	0.323
Syria:crime	-0.08	-0.36 – 0.20	0.598
Mexico:struggle	-0.24	-0.50 – 0.02	0.072
Russia:struggle	-0.14	-0.38 – 0.10	0.264
Syria:struggle	-0.21	-0.49 – 0.07	0.136
Marginal R ² / Conditional R ²	0.178 / 0.830		

Note: reference levels are Germany & achievement

Supplementary Table S3b. *Nationality and narrative predicting ‘Competitive’: ANOVA and regression for Experiment 1.*

<i>Predictor</i>	<i>Sum.Sq</i>	<i>Mean.Sq</i>	<i>NumDF</i>	<i>DenDF</i>	<i>F.value</i>	<i>p</i>
nationality	0.333	0.111	3	356.474	0.155	0.927
narrative	18.184	9.092	2	321.688	12.688	0
nat X narr	3.41	0.568	6	356.475	0.793	0.576

<i>Predictors</i>	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	4.06	3.79 – 4.33	<0.001
Mexico	-0.02	-0.23 – 0.19	0.847
Russia	0.07	-0.12 – 0.27	0.463
Syria	-0.06	-0.26 – 0.14	0.551
crime	0.01	-0.37 – 0.39	0.961
struggle	-0.73	-1.11 – -0.35	<0.001
Mexico:crime	0.08	-0.22 – 0.37	0.603
Russia:crime	-0.01	-0.28 – 0.27	0.945
Syria:crime	0.06	-0.21 – 0.34	0.648
Mexico:struggle	0.08	-0.22 – 0.37	0.606
Russia:struggle	-0.18	-0.46 – 0.09	0.195
Syria:struggle	0.09	-0.18 – 0.37	0.505
Marginal R ² / Conditional R ²	0.154 / NA		

Note: reference levels are Germany & achievement

Supplementary Table S3c. *Nationality and narrative predicting ‘Competent’: ANOVA and regression for Experiment 1.*

<i>Predictor</i>	<i>Sum.Sq</i>	<i>Mean.Sq</i>	<i>NumDF</i>	<i>DenDF</i>	<i>F.value</i>	<i>p</i>
nationality	2.094	0.698	3	364.235	1.261	0.288
narrative	270.984	135.492	2	350.798	244.707	0
nat X narr	3.081	0.513	6	364.235	0.927	0.475

<i>Predictors</i>	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	6.14	5.91 – 6.38	<0.001
Mexico	0.05	-0.17 – 0.27	0.637
Russia	0.02	-0.19 – 0.23	0.855
Syria	0.01	-0.22 – 0.23	0.962
crime	-2.93	-3.27 – -2.60	<0.001
struggle	-2.05	-2.38 – -1.72	<0.001
Mexico:crime	-0.36	-0.67 – -0.05	0.024
Russia:crime	-0.12	-0.42 – 0.19	0.453
Syria:crime	-0.14	-0.46 – 0.18	0.396
Mexico:struggle	-0.17	-0.48 – 0.14	0.276
Russia:struggle	-0.09	-0.39 – 0.21	0.569
Syria:struggle	-0.09	-0.41 – 0.23	0.581
Marginal R ² / Conditional R ²	0.467 / 0.845		

Note: reference levels are Germany & achievement

Supplementary Table S3d. *Nationality and narrative predicting ‘Dangerous’: ANOVA and regression for Experiment 1.*

<i>Predictor</i>	<i>Sum.Sq</i>	<i>Mean.Sq</i>	<i>NumDF</i>	<i>DenDF</i>	<i>F.value</i>	<i>p</i>
nationality	3.806	1.269	3	454.448	2.804	0.039
narrative	154.991	77.495	2	425.77	171.275	0
nat X narr	3.1	0.517	6	454.448	1.142	0.337

<i>Predictors</i>	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	1.58	1.31 – 1.86	<0.001
Mexico	0.03	-0.27 – 0.34	0.838
Russia	0.06	-0.24 – 0.36	0.674
Syria	0.22	-0.13 – 0.56	0.212
crime	2.78	2.39 – 3.17	<0.001
struggle	0.46	0.07 – 0.85	0.022
Mexico:crime	-0.02	-0.45 – 0.41	0.938
Russia:crime	0.11	-0.31 – 0.54	0.599
Syria:crime	-0.21	-0.69 – 0.28	0.409
Mexico:struggle	0.02	-0.41 – 0.45	0.925
Russia:struggle	0.12	-0.30 – 0.54	0.581
Syria:struggle	0.34	-0.15 – 0.82	0.176
Marginal R ² / Conditional R ²	0.385 / 0.877		

Note: reference levels are Germany & achievement

Supplementary Table S3e. *Nationality and narrative predicting ‘Moral’: ANOVA and regression for Experiment 1.*

<i>Predictor</i>	<i>Sum.Sq</i>	<i>Mean.Sq</i>	<i>NumDF</i>	<i>DenDF</i>	<i>F.value</i>	<i>p</i>
nationality	0.975	0.325	3	361.585	0.802	0.493
narrative	283.122	141.561	2	345.75	349.238	0
nat X narr	1.311	0.218	6	361.585	0.539	0.779

<i>Predictors</i>	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	5.85	5.64 – 6.06	<0.001
Mexico	0.10	-0.09 – 0.29	0.311
Russia	-0.04	-0.23 – 0.15	0.653
Syria	-0.04	-0.24 – 0.17	0.732
crime	-3.39	-3.69 – -3.10	<0.001
struggle	-1.11	-1.41 – -0.81	<0.001
Mexico:crime	-0.13	-0.40 – 0.14	0.338
Russia:crime	0.00	-0.26 – 0.27	0.984
Syria:crime	0.01	-0.27 – 0.30	0.921
Mexico:struggle	-0.14	-0.40 – 0.13	0.324
Russia:struggle	0.02	-0.25 – 0.29	0.874
Syria:struggle	-0.12	-0.41 – 0.17	0.414
Marginal R ² / Conditional R ²	0.565 / 0.886		

Note: reference levels are Germany & achievement

Supplementary Table S3f. *Nationality and narrative predicting 'Lazy': ANOVA and regression for Experiment 1.*

<i>Predictor</i>	<i>Sum.Sq</i>	<i>Mean.Sq</i>	<i>NumDF</i>	<i>DenDF</i>	<i>F.value</i>	<i>p</i>
nationality	1.501	0.5	3	375.493	0.897	0.443
narrative	93.576	46.788	2	354.034	83.887	0
nat X narr	1.945	0.324	6	375.491	0.581	0.745

<i>Predictors</i>	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	1.55	1.31 – 1.79	<0.001
Mexico	0.01	-0.22 – 0.24	0.905
Russia	0.04	-0.19 – 0.26	0.758
Syria	0.03	-0.19 – 0.25	0.808
crime	1.87	1.53 – 2.21	<0.001
struggle	0.73	0.39 – 1.07	<0.001
Mexico:crime	0.12	-0.21 – 0.44	0.476
Russia:crime	0.14	-0.17 – 0.46	0.375
Syria:crime	-0.08	-0.39 – 0.24	0.632
Mexico:struggle	0.07	-0.25 – 0.39	0.670
Russia:struggle	0.05	-0.27 – 0.36	0.779
Syria:struggle	0.08	-0.23 – 0.39	0.622
Marginal R ² / Conditional R ²	0.238 / 0.787		

Note: reference levels are Germany & achievement

Supplementary Table S3g. *Nationality and narrative predicting ‘Sociable’: ANOVA and regression for Experiment 1.*

<i>Predictor</i>	<i>Sum.Sq</i>	<i>Mean.Sq</i>	<i>NumDF</i>	<i>DenDF</i>	<i>F.value</i>	<i>p</i>
nationality	6.529	2.176	3	390.921	4.268	0.006
narrative	108.783	54.391	2	374.186	106.665	0
nat X narr	1.05	0.175	6	390.921	0.343	0.914

<i>Predictors</i>	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	5.41	5.16 – 5.65	<0.001
Mexico	0.15	-0.08 – 0.38	0.196
Russia	-0.01	-0.24 – 0.22	0.929
Syria	-0.07	-0.30 – 0.17	0.587
crime	-1.81	-2.15 – -1.47	<0.001
struggle	-1.51	-1.85 – -1.17	<0.001
Mexico:crime	-0.14	-0.47 – 0.19	0.400
Russia:crime	-0.04	-0.37 – 0.28	0.785
Syria:crime	-0.13	-0.46 – 0.21	0.460
Mexico:struggle	-0.16	-0.48 – 0.17	0.347
Russia:struggle	-0.14	-0.47 – 0.18	0.390
Syria:struggle	-0.21	-0.54 – 0.13	0.223
Marginal R ² / Conditional R ²	0.282 / 0.797		

Note: reference levels are Germany & achievement

Supplementary Table S3h. *Nationality and narrative predicting ‘American’: ANOVA and regression for Experiment 2.*

<i>Predictor</i>	<i>Sum.Sq</i>	<i>Mean.Sq</i>	<i>NumDF</i>	<i>DenDF</i>	<i>F.value</i>	<i>p</i>
nationality	14.528	4.843	3	469.1	10.278	0
narrative	116.535	58.268	2	868.694	123.664	0
nat X narr	1.576	0.263	6	469.1	0.558	0.764

<i>Predictors</i>	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	4.94	4.75 – 4.14	<0.001
Mexico	0.03	-0.14 – 0.19	0.751
Russia	-0.13	-0.28 – 0.03	0.113
Syria	-0.20	-0.37 – -0.03	0.021
crime	-1.99	-2.27 – -1.72	<0.001
struggle	-1.03	-1.31 – -0.76	<0.001
Mexico:crime	-0.02	-0.25 – 0.21	0.883
Russia:crime	0.10	-0.13 – 0.32	0.396
Syria:crime	0.02	-0.21 – 0.26	0.843
Mexico:struggle	-0.11	-0.34 – 0.12	0.336
Russia:struggle	-0.06	-0.28 – 0.16	0.594
Syria:struggle	-0.13	-0.37 – 0.10	0.269
Marginal R ² / Conditional R ²	0.200 / 0.857		

Note: reference levels are Germany & achievement

Supplementary Table S3i. *Nationality and narrative predicting ‘Competitive’: ANOVA and regression for Experiment 2.*

<i>Predictor</i>	<i>Sum.Sq</i>	<i>Mean.Sq</i>	<i>NumDF</i>	<i>DenDF</i>	<i>F.value</i>	<i>p</i>
nationality	0.946	0.315	3	446.692	0.459	0.711
narrative	36.846	18.423	2	876.804	26.814	0
nat X narr	1.4	0.233	6	446.692	0.34	0.916

<i>Predictors</i>	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	4.21	4.02 – 4.39	<0.001
Mexico	-0.02	-0.18 – 0.14	0.774
Russia	0.01	-0.14 – 0.17	0.859
Syria	-0.11	-0.27 – 0.05	0.193
crime	-0.15	-0.42 – 0.11	0.249
struggle	-0.79	-1.05 – -0.53	<0.001
Mexico:crime	0.03	-0.19 – 0.26	0.768
Russia:crime	0.00	-0.22 – 0.22	0.998
Syria:crime	0.09	-0.14 – 0.32	0.434
Mexico:struggle	0.05	-0.18 – 0.27	0.696
Russia:struggle	-0.05	-0.27 – 0.17	0.638
Syria:struggle	0.10	-0.13 – 0.33	0.399
Marginal R ² / Conditional R ²	0.044 / 0.737		

Note: reference levels are Germany & achievement

Supplementary Table S3j. *Nationality and narrative predicting 'Competent': ANOVA and regression for Experiment 2.*

<i>Predictor</i>	<i>Sum.Sq</i>	<i>Mean.Sq</i>	<i>NumDF</i>	<i>DenDF</i>	<i>F.value</i>	<i>p</i>
nationality	0.791	0.264	3	466.717	0.484	0.694
narrative	660.175	330.088	2	987.184	605.94	0
nat X narr	0.6	0.1	6	466.717	0.184	0.981

<i>Predictors</i>	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	6.34	6.17 – 6.51	<0.001
Mexico	-0.01	-0.19 – 0.17	0.917
Russia	0.04	-0.14 – 0.21	0.677
Syria	-0.05	-0.23 – 0.14	0.617
crime	-3.21	-3.45 – -2.97	<0.001
struggle	-2.03	-2.27 – -1.79	<0.001
Mexico:crime	-0.09	-0.35 – 0.17	0.492
Russia:crime	-0.08	-0.33 – 0.17	0.541
Syria:crime	-0.00	-0.26 – 0.26	0.993
Mexico:struggle	-0.06	-0.32 – 0.20	0.648
Russia:struggle	-0.08	-0.33 – 0.17	0.533
Syria:struggle	0.01	-0.25 – 0.27	0.928
Marginal R ² / Conditional R ²	0.492 / 0.851		

Note: reference levels are Germany & achievement

Supplementary Table S3k. *Nationality and narrative predicting ‘Dangerous’: ANOVA and regression for Experiment 2.*

<i>Predictor</i>	<i>Sum.Sq</i>	<i>Mean.Sq</i>	<i>NumDF</i>	<i>DenDF</i>	<i>F.value</i>	<i>p</i>
nationality	3.354	1.118	3	459.518	2.683	0.046
narrative	375.986	187.993	2	1098.371	451.123	0
nat X narr	1.715	0.286	6	459.517	0.686	0.661

<i>Predictors</i>	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	1.51	1.28 – 1.73	<0.001
Mexico	0.03	-0.25 – 0.31	0.857
Russia	0.07	-0.21 – 0.34	0.645
Syria	0.21	-0.08 – 0.49	0.163
crime	3.16	2.84 – 3.48	<0.001
struggle	0.61	0.29 – 0.93	<0.001
Mexico:crime	0.01	-0.39 – 0.41	0.964
Russia:crime	0.02	-0.37 – 0.42	0.901
Syria:crime	-0.14	-0.55 – 0.26	0.488
Mexico:struggle	0.09	-0.31 – 0.49	0.660
Russia:struggle	0.03	-0.36 – 0.43	0.862
Syria:struggle	0.22	-0.19 – 0.63	0.290
Marginal R ² / Conditional R ²	0.468 / 0.892		

Note: reference levels are Germany & achievement

Supplementary Table S31. *Nationality and narrative predicting 'Moral': ANOVA and regression for Experiment 2.*

<i>Predictor</i>	<i>Sum.Sq</i>	<i>Mean.Sq</i>	<i>NumDF</i>	<i>DenDF</i>	<i>F.value</i>	<i>p</i>
nationality	0.717	0.239	3	466.178	0.631	0.595
narrative	783.208	391.604	2	1002.441	1034.245	0
nat X narr	1.013	0.169	6	466.177	0.446	0.848

<i>Predictors</i>	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	6.08	5.92 – 6.23	<0.001
Mexico	-0.02	-0.19 – 0.15	0.803
Russia	-0.02	-0.19 – 0.14	0.767
Syria	-0.03	-0.21 – 0.14	0.708
crime	-3.85	-4.07 – -3.63	<0.001
struggle	-1.08	-1.30 – -0.86	<0.001
Mexico:crime	0.04	-0.20 – 0.28	0.751
Russia:crime	0.01	-0.22 – 0.24	0.916
Syria:crime	0.05	-0.19 – 0.30	0.675
Mexico:struggle	-0.09	-0.33 – 0.15	0.467
Russia:struggle	-0.11	-0.33 – 0.12	0.364
Syria:struggle	-0.14	-0.38 – 0.11	0.275
Marginal R ² / Conditional R ²	0.635 / 0.906		

Note: reference levels are Germany & achievement

Supplementary Table S3m. *Nationality and narrative predicting 'Lazy': ANOVA and regression for Experiment 2.*

<i>Predictor</i>	<i>Sum.Sq</i>	<i>Mean.Sq</i>	<i>NumDF</i>	<i>DenDF</i>	<i>F.value</i>	<i>p</i>
nationality	1.334	0.445	3	450.501	0.775	0.509
narrative	331.42	165.71	2	1002.99	288.656	0
nat X narr	0.671	0.112	6	450.5	0.195	0.978

<i>Predictors</i>	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	1.44	1.27 – 1.62	<0.001
Mexico	0.01	-0.18 – 0.20	0.933
Russia	0.02	-0.17 – 0.20	0.835
Syria	0.06	-0.13 – 0.25	0.516
crime	2.26	2.01 – 2.50	<0.001
struggle	0.95	0.71 – 1.20	<0.001
Mexico:crime	0.06	-0.21 – 0.34	0.648
Russia:crime	0.04	-0.22 – 0.31	0.738
Syria:crime	0.02	-0.25 – 0.29	0.887
Mexico:struggle	0.00	-0.27 – 0.28	0.982
Russia:struggle	0.10	-0.16 – 0.36	0.451
Syria:struggle	0.01	-0.26 – 0.27	0.968
Marginal R ² / Conditional R ²	0.312 / 0.796		

Note: reference levels are Germany & achievement

Supplementary Table S3n. *Nationality and narrative predicting ‘Sociable’: ANOVA and regression for Experiment 2.*

<i>Predictor</i>	<i>Sum.Sq</i>	<i>Mean.Sq</i>	<i>NumDF</i>	<i>DenDF</i>	<i>F.value</i>	<i>p</i>
nationality	7.532	2.511	3	449.897	5.039	0.002
narrative	302.781	151.391	2	1037.8	303.819	0
nat X narr	0.837	0.139	6	449.897	0.28	0.946

<i>Predictors</i>	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	5.58	5.41 – 5.76	<0.001
Mexico	0.07	-0.12 – 0.26	0.479
Russia	-0.03	-0.22 – 0.16	0.746
Syria	-0.12	-0.31 – 0.08	0.241
crime	-2.18	-2.43 – -1.94	<0.001
struggle	-1.54	-1.78 – -1.29	<0.001
Mexico:crime	-0.06	-0.33 – 0.21	0.658
Russia:crime	-0.05	-0.32 – 0.21	0.694
Syria:crime	-0.01	-0.29 – 0.26	0.934
Mexico:struggle	0.00	-0.27 – 0.28	0.975
Russia:struggle	-0.10	-0.36 – 0.17	0.483
Syria:struggle	-0.09	-0.36 – 0.18	0.521
Marginal R ² / Conditional R ²	0.338 / 0.807		

Note: reference levels are Germany & achievement

Supplementary Table S3o. *Narrative condition contrasts across traits for Experiment 1.*

American	<i>estimate</i>	<i>SE</i>	<i>df</i>	<i>t.ratio</i>	<i>p.value</i>
achievement - crime	1.765	0.186	316.222	9.483	0
achievement - struggle	1.05	0.186	316.365	5.658	0
crime - struggle	-0.714	0.186	316.319	-3.847	0
Competent	<i>estimate</i>	<i>SE</i>	<i>df</i>	<i>t.ratio</i>	<i>p.value</i>
achievement - crime	3.084	0.143	350.584	21.589	0
achievement - struggle	2.138	0.143	350.965	15	0
crime - struggle	-0.946	0.143	350.845	-6.637	0
Competitive	<i>estimate</i>	<i>SE</i>	<i>df</i>	<i>t.ratio</i>	<i>p.value</i>
achievement - crime	-0.043	0.174	321.58	-0.247	0.967
achievement - struggle	0.736	0.174	321.778	4.23	0
crime - struggle	0.779	0.174	321.706	4.478	0
Dangerous	<i>estimate</i>	<i>SE</i>	<i>df</i>	<i>t.ratio</i>	<i>p.value</i>
achievement - crime	-2.75	0.157	425.336	-17.542	0
achievement - struggle	-0.576	0.156	426.07	-3.684	0.001
crime - struggle	2.173	0.156	425.902	13.894	0
Lazy	<i>estimate</i>	<i>SE</i>	<i>df</i>	<i>t.ratio</i>	<i>p.value</i>
achievement - crime	-1.918	0.149	353.806	-12.878	0
achievement - struggle	-0.781	0.149	354.217	-5.252	0
crime - struggle	1.137	0.149	354.078	7.654	0
Moral	<i>estimate</i>	<i>SE</i>	<i>df</i>	<i>t.ratio</i>	<i>p.value</i>
achievement - crime	3.421	0.132	345.555	25.994	0

achievement - struggle	1.168	0.131	345.9	8.897	0
crime - struggle	-2.253	0.131	345.796	-17.156	0

Sociable	<i>estimate</i>	<i>SE</i>	<i>df</i>	<i>t.ratio</i>	<i>p.value</i>
achievement - crime	1.887	0.14	373.892	13.437	0
achievement - struggle	1.638	0.14	374.408	11.689	0
crime - struggle	-0.249	0.14	374.256	-1.776	0.179

Supplementary Table S3p. *Narrative condition contrasts across traits for Experiment 2.*

American	<i>estimate</i>	<i>SE</i>	<i>df</i>	<i>t.ratio</i>	<i>p.value</i>
achievement - crime	1.968	0.125	868.517	15.682	0
achievement - struggle	1.111	0.125	868.992	8.868	0
crime - struggle	-0.857	0.125	868.572	-6.837	0

Competent	<i>estimate</i>	<i>SE</i>	<i>df</i>	<i>t.ratio</i>	<i>p.value</i>
achievement - crime	3.251	0.095	986.98	34.389	0
achievement - struggle	2.066	0.094	987.647	21.882	0
crime - struggle	-1.186	0.094	986.923	-12.554	0

Competitive	<i>estimate</i>	<i>SE</i>	<i>df</i>	<i>t.ratio</i>	<i>p.value</i>
achievement - crime	0.123	0.113	876.635	1.093	0.519
achievement - struggle	0.766	0.112	877.139	6.817	0
crime - struggle	0.643	0.112	876.639	5.718	0

Dangerous	<i>estimate</i>	<i>SE</i>	<i>df</i>	<i>t.ratio</i>	<i>p.value</i>
achievement - crime	-3.131	0.109	1098.68	-28.592	0
achievement - struggle	-0.692	0.109	1098.344	-6.328	0
crime - struggle	2.439	0.109	1098.088	22.287	0

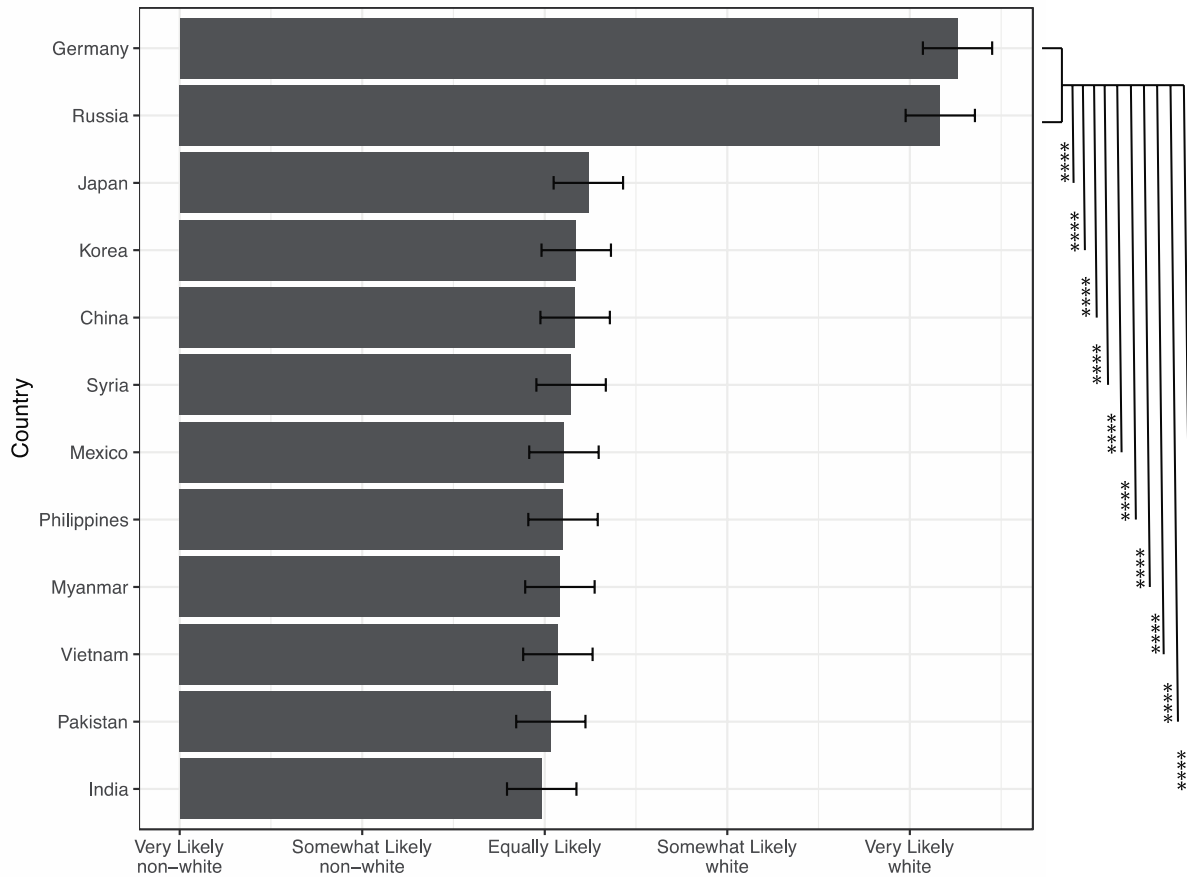
Lazy	<i>estimate</i>	<i>SE</i>	<i>df</i>	<i>t.ratio</i>	<i>p.value</i>
achievement - crime	-2.288	0.096	1002.808	-23.947	0
achievement - struggle	-0.98	0.095	1003.447	-10.272	0
crime - struggle	1.308	0.095	1002.713	13.703	0

Moral	<i>estimate</i>	<i>SE</i>	<i>df</i>	<i>t.ratio</i>	<i>p.value</i>
achievement - crime	3.828	0.086	1002.217	44.355	0

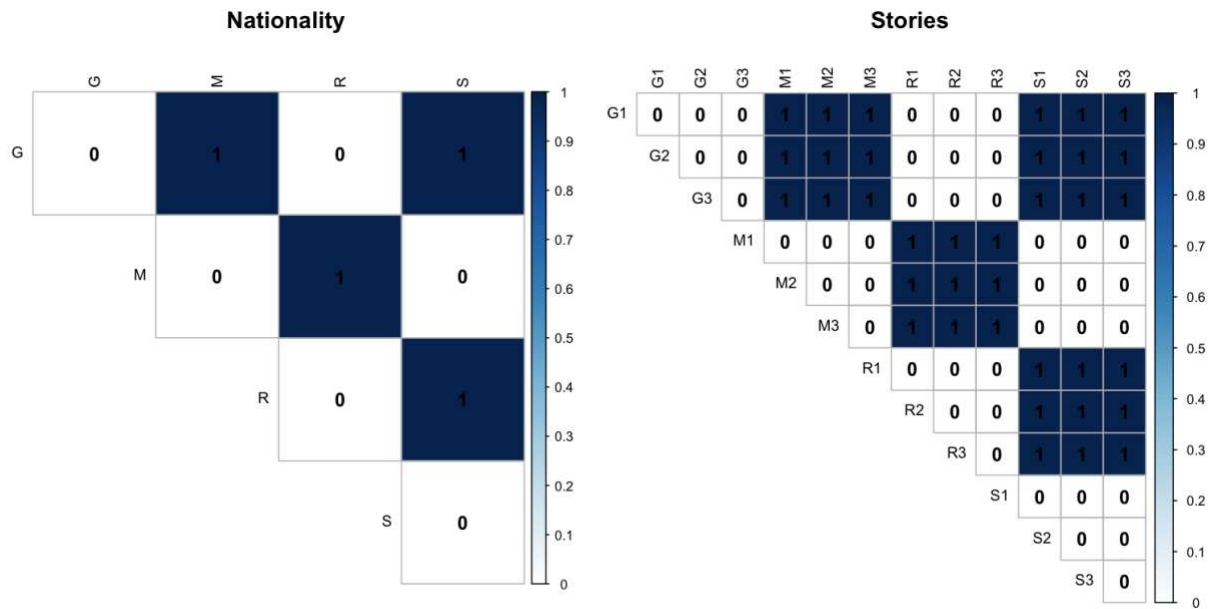
achievement - struggle	1.161	0.086	1002.918	13.473	0
crime - struggle	-2.667	0.086	1002.186	-30.93	0

Sociable	<i>estimate</i>	<i>SE</i>	<i>df</i>	<i>t.ratio</i>	<i>p.value</i>
achievement - crime	2.215	0.093	1037.634	23.92	0
achievement - struggle	1.583	0.092	1038.247	17.12	0
crime - struggle	-0.632	0.093	1037.518	-6.832	0

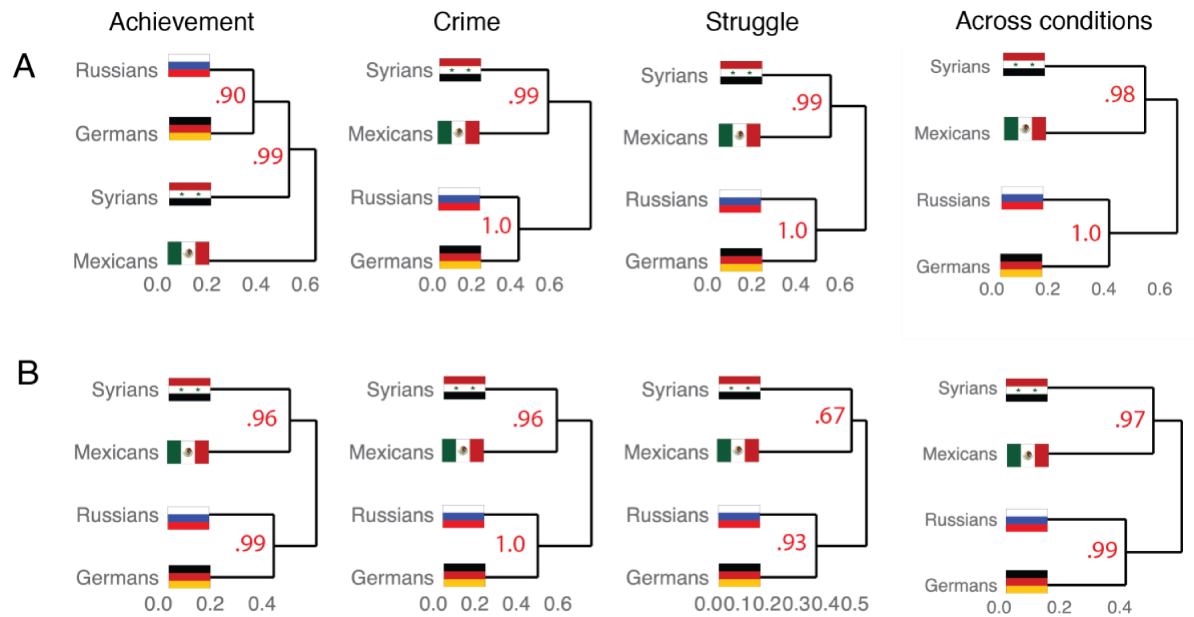
As viewed by American (U.S.) society,
to what extent is an immigrant (who has arrived to the U.S.)
from each of the following countries
likely to be white versus non-white?



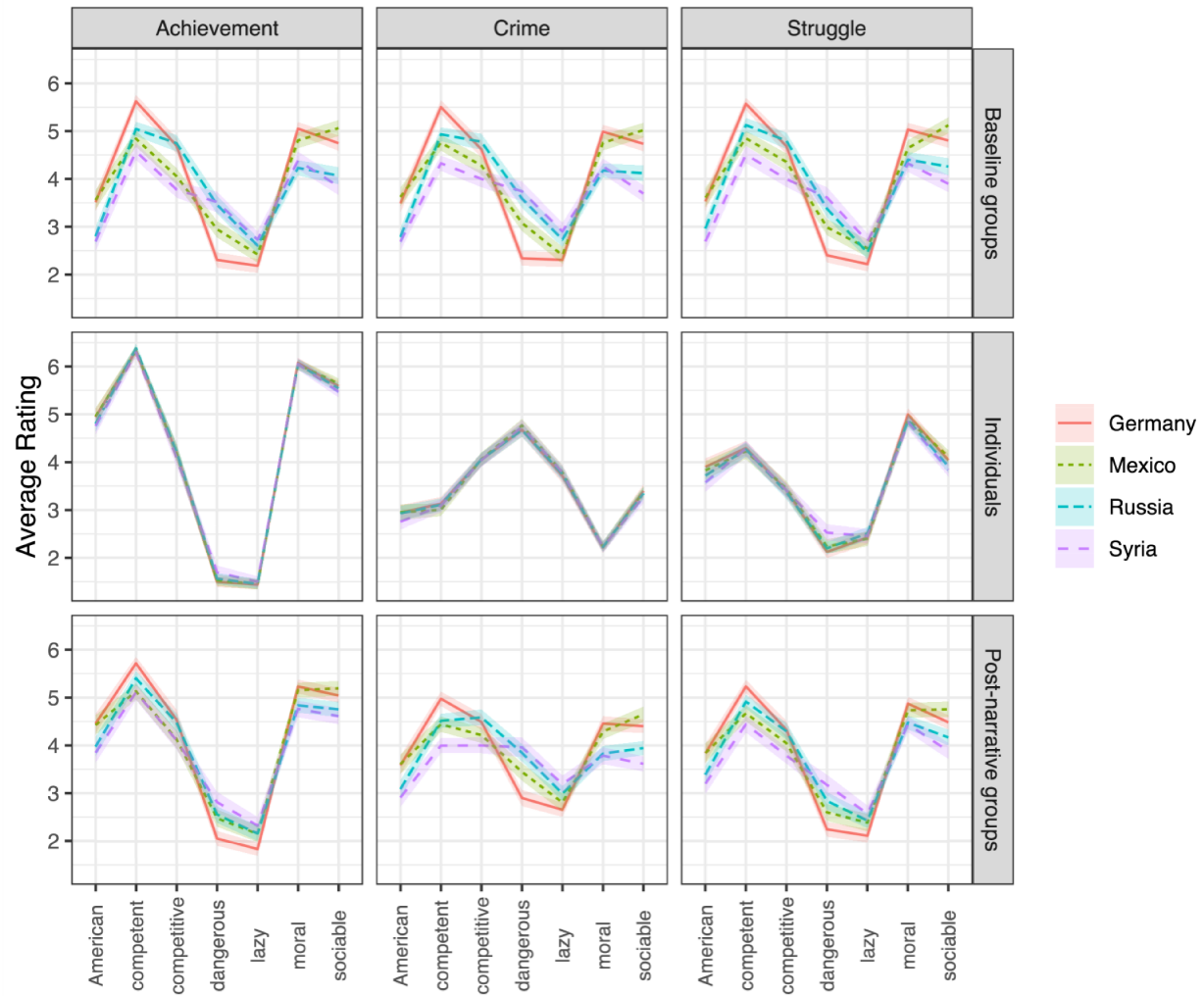
Supplementary Figure S1. Study 3 pilot ratings (N = 180) of ascribed whiteness across countries. Bars are estimated means from a mixed effects model including a fixed effect of country and random effect of participant. Errors bars are 95% CIs. Russia and Germany are perceived as significantly more likely to be white than all the other countries, *** $p < .001$.



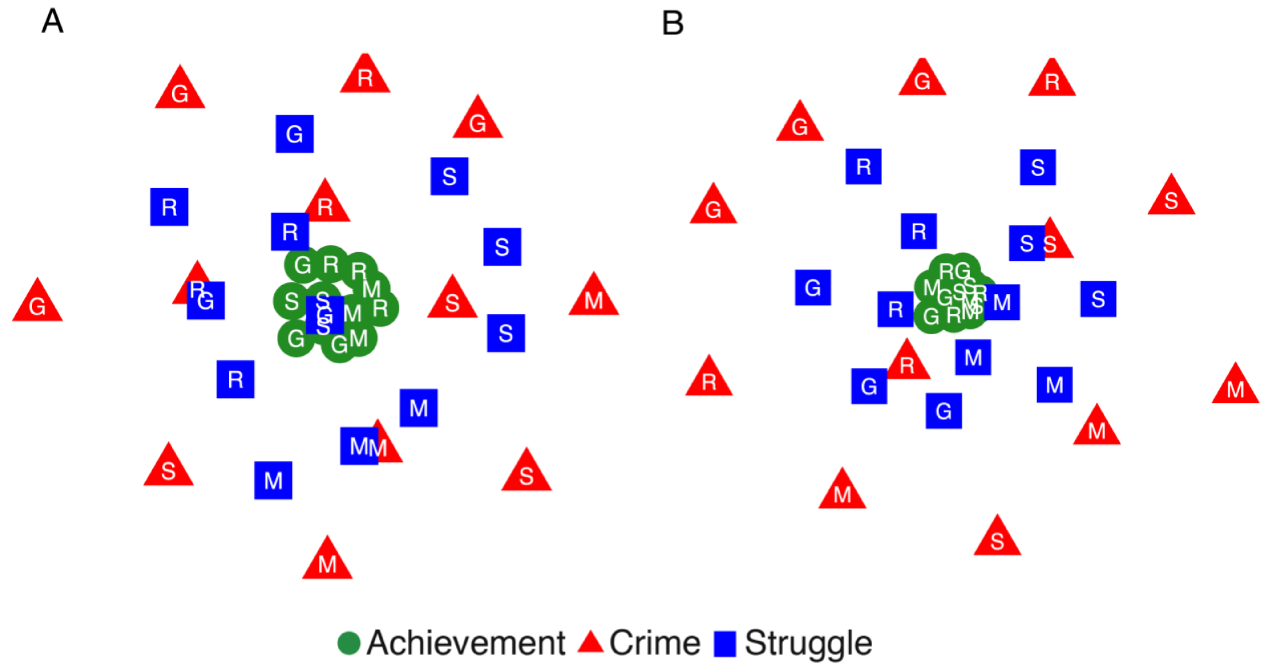
Supplementary FigureS2. Hypothesized racially-differentiated matrices. The y-axis displays a dissimilarity score (1-r) such that a 0 represents maximal similarity and a 1 represents maximum dissimilarity. The nationality matrix contains pairwise relationships between nationality groups (G = Germany, M = Mexico, R = Russia, S = Syria). The story matrix contains pairwise relationships between the 12 individual immigrants from the four nationality groups (e.g., G1 could be Hans, G2 could be Klaus, M1 could be Carlos and so on).



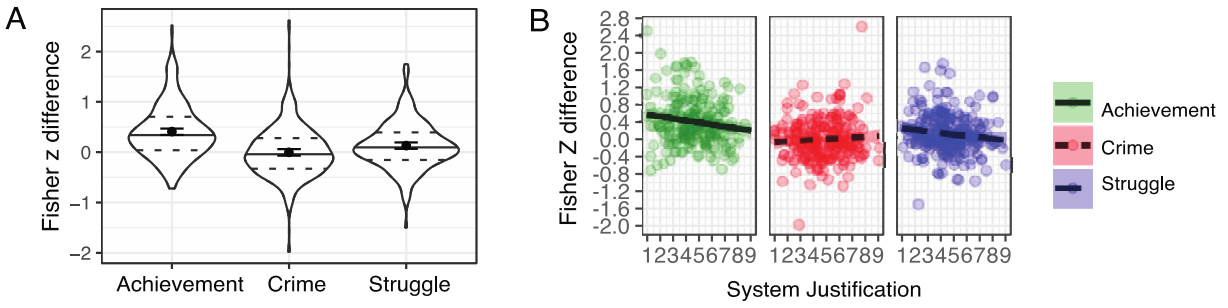
Supplementary Figure S3. Hierarchical clustering of nationality groups from baseline ratings prior to any narrative manipulation. A) Clusters from Experiment 1. B) Clusters from Experiment 2. We display the clusters broken up by condition for transparency's sake. Note that the achievement condition in Experiment 2 was the only exception where Germans and Mexicans or Syrians and Russians clustered together. The final column presents the clustering results collapsing across condition (because the baseline ratings were assessed prior to any narrative manipulation). The x-axis represents distance between pairs. Red values on the branch clusters represent bootstrapped AU p-values: values **higher** than .95 represent strong support for the cluster.



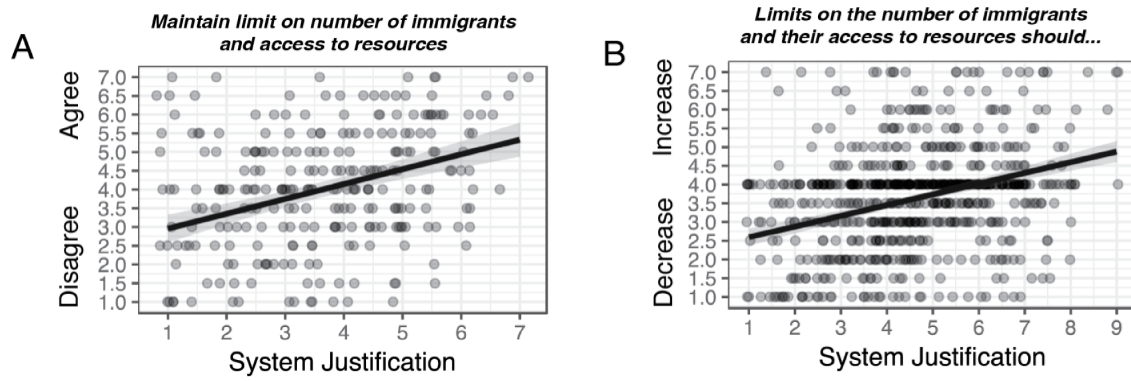
Supplementary Figure S4. Average trait ratings by country at baseline, in response to each narrative manipulation (averaged across immigrants within country), and following narrative exposure (Experiment 2). Means and standard deviations are reported in **Tables S1 and S2**. Corresponding regression results appear in **Tables S3a-S3n**. Error shades are 95% CI.



Supplementary Figure S5. Multidimensional scaling plots of individual immigrants in each narrative condition. A) MDS for experiment 1. B) MDS for experiment 2. For ease of visualization and comparison, the plots above are three separate plots superimposed onto each other: one for achievement (green/circle), criminality (red/triangle), and struggle (blue/square). The nationality of each immigrant is represented by the first letter of each country (“M” = Mexico, “R” = Russia, “G” = Germany, “S” = Syria). The distance between immigrants (within a narrative type, e.g., all green/achievement immigrants) represents the similarity between them, such that closer is more similar. Note that the distance is quantified on the same scale across conditions (distance between 2 red triangles is on same scale as distance between 2 blue squares). However, readers should not interpret the distance between any one immigrant in one condition and another immigrant in a different condition (e.g., the distance between a red triangle and a blue square). Immigrants in the achievement narratives are compressed and homogeneous, whereas immigrants in the crime (red), and struggle (blue) narratives are differentiated from each other along racial (and national) lines. *Note: these plots are for visualization purposes; formal testing of the similarities are reflected in the z-score analyses reported in the manuscript.*



Supplementary Figure S6. Updated differentiation index of the nationality groups' representations across narrative types and system justification. A) Actual differences between the pre and post narrative differentiation indices (Fisher Z) per narrative type. The denser areas of the violin plot represent where more of the data are, horizontal lines represent quartiles. B) The Fisher Z differences pre/post as a function of both narrative type (achievement = green solid, crime = red dotted, struggle = blue dashed) and system justification ($b_{\text{achieve-crime}} = -.06$, $SE = .027$, $t(689) = -2.29$, $p = .067$; $b_{\text{achieve-struggle}} = -.01$, $SE = .027$, $t(689) = -.433$, $p = .665$; $b_{\text{crime-struggle}} = .05$, $SE = .027$, $t(689) = 1.86$, $p = .096$; $b_{\text{SJ simple effect}} = -.022$, $SE = .01$, $t(689) = -1.96$, $p = .051$). Error bars and shaded regions represent 95% confidence intervals.



Supplementary Figure S7. Policy preferences as a function of system justification. A) Data from Experiment 1. B) Data from Experiment 2. Shaded regions represent 95% confidence intervals.