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**Selective Cultural Adoption: The Roles of Warmth, Competence, Morality, and
Perceived Indispensability in Majority-Group Acculturation**

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Abstract

Psychological research has only recently begun to consider the dynamics involved in majority-group acculturation, that is, the extent to which cultural majority groups adopt the culture of minority groups. However, previous research has predominantly concentrated on reactions to “immigrants” as a homogenous entity, overlooking the nuanced perceptions and varied valuations attributed to different groups. Recognizing the heterogeneity among immigrant groups, the present work investigated the influence of several perceived characteristics of immigrant groups on majority-group members’ adoption of their cultures. Specifically, in three pre-registered studies—one correlational ($N = 201$) and two within-subjects experimental ($Ns = 144$ and 146) designs with close to politically representative samples from the UK and US—we show that majority-group members are more willing to adopt immigrant cultures that are perceived as warm, competent, and moral because this makes these immigrants seem indispensable to the identity and economy of the mainstream society. Our studies highlight the importance of considering the differentiated acculturation that majority-group members have to various immigrant groups within the same national context. We delve into the societal and cultural repercussions arising from this selective uptake of other cultures.

Keywords: acculturation, immigrants, intergroup relations, majority acculturation, perceived indispensability

Selective Cultural Adoption: The Roles of Warmth, Competence, Morality, and Perceived Indispensability in Majority-Group Acculturation

While research on social influence traditionally focused on the influence of the majority on the minority, minority-group members can exert influence on the thoughts and actions of majority-group members as classic (Moscovici & Nemeth, 1974) and more recent research has revealed (see Butera et al., 2017 for a review). This principle holds particular significance in the field of acculturation, which is dedicated to exploring the dynamics of cultural transmission and change. However, although acculturation is commonly defined as a two-way process, research has only recently focused on the cultural and psychological changes experienced by ethnic majority-group members living in increasingly diverse societies (Kunst, Lefringhausen, Sam, et al., 2021). Previous work has frequently studied the preferences of majority-group members concerning how immigrants and other minority-group members should acculturate (i.e., "acculturation expectations"; see, e.g., Montreuil & Bourhis, 2004) or how diversity should be managed at the societal level (e.g., ideologies such as "multiculturalism" or "interculturalism"; Verkuyten & Thijs, 2002; Yogeewaran et al., 2021). By contrast, majority-group acculturation refers to the extent to which members of a socially dominant group adopt aspects of the culture of immigrant and other minority groups and/or maintain their dominant culture (Kunst, Lefringhausen, Sam, et al., 2021).

At first glance, the idea that majority-group members acculturate may seem counterintuitive. After all, they belong to the dominant culture in society and experience less pressure and practical incentives to change their culture. However, each encounter with newcomers provides the opportunity to learn from and improve one's cultural repertoire (see Molleman et al., 2013). History is full of examples where various types of newcomers transformed the majority societies they joined. The Vikings and Huguenots influenced the English language, art, architecture, and values. Chinese immigrants contributed to Canada by

introducing new cuisine, music, dances, and martial arts. Jewish immigrants transformed U.S. American literature, music, and film. Such changes to the fabric of societies' mainstream culture are only possible if many majority-group members are receptive to and adopt new cultural content (also see Erten et al., 2018).

Indeed, previous studies show that across a range of immigrant-receiving societies, a sizeable group (about 30%) of majority-group members report that they generally adopt the culture of immigrants (Kunst, Lefringhausen, Sam, et al., 2021). At the same time, a group of similar size tends to reject immigrant cultures, whereas the remaining cluster is undecided. Some studies have examined the underlying personality (e.g., openness) or social-psychological factors (e.g., ethnocentrism, national or global identity) among majority-group members that shape their acculturation orientations toward "immigrants" generally (Haugen & Kunst, 2017; Komisarof, 2009; Kunst, Lefringhausen, Skaar, et al., 2021; Lefringhausen & Marshall, 2016; Lefringhausen et al., 2021; Lefringhausen et al., 2022; Ozer et al., 2021). However, while offering some general insights into the majority populations' overall acculturation orientations and the influence of individual characteristics, a significant limitation of this existing research is that it has assessed these orientations generically without specifying the cultural group in question or considering its characteristics. As societies usually consist of many immigrant groups that are assigned different statuses and prestige by the majority society, majority-group members can be expected to adopt the culture of some immigrant groups more than others.

Addressing this gap, we here propose and aim to empirically demonstrate in three pre-registered studies that the distinct ways groups are perceived on key dimensions of intergroup evaluations (e.g., warmth, competence, morality; Leach et al., 2007) explain majority-group members' selective cultural uptake of these groups' cultures. Furthermore, we contend and empirically investigate through experimental manipulation of the entire mediation pathway

that a fundamental rationale for the observed effect of these intergroup perceptions and heightened cultural adoption is their role in enhancing the perceived functional and identity-related indispensability of immigrants within society (Ng Tseung-Wong & Verkuyten, 2010). For example, the perception of warmth may be anticipated to result in a greater perceived indispensability related to societies' social identity, or perceptions of competence may lead to an increased sense of functional indispensability. These perceptions, in turn, could elevate the value attributed to adopting the respective group's culture for reasons elucidated in the following sections.

As such, the contributions of this research are multifaceted. The influence of minorities has been explored for decades within social groups defined by characteristics such as political affiliations or gender (Butera et al., 2017). However, to our knowledge, it has not been examined systematically within the context of ethnicity, aside from the nascent research area concerning the acculturation of majority groups, to which our work directly contributes. Given the early state of this field, the impact of attributes perceived to differ among minority groups on the acculturation processes of majority-group members remains largely unexplored. Consequently, our research makes an important theoretical contribution to this developing area by melding it with foundational frameworks related to intergroup perception and evaluation. Exploring the determinants that influence the selective adoption of cultural elements by members of the majority group is crucial for understanding cultural transformation and beyond the field of acculturation holds significance for disciplines such as cultural evolution. On a practical level, our research has the potential to guide interventions aimed at preventing the formation of cultural hierarchies, thus fostering equality and the success of diverse societies.

Key Dimensions of Intergroup Perceptions

Previous research (Fiske, 2018; Fiske et al., 2002) demonstrated the robust impact of two fundamental dimensions, warmth and competence, that shape people's perceptions of social groups and their members. Warmth refers to how friendly, trustworthy, and likable a group is perceived to be, whereas competence refers to how capable, skilled, and successful it is believed to be. Both dimensions consistently predict attitudes toward various groups, including immigrants (Fiske, 2018). Moreover, the extent to which people view groups as warm and/or competent has distinct consequences also for intercultural relations. For instance, higher perceptions of competence and warmth predict generally more positive attitudes toward immigration and more welcoming acculturation ideologies (i.e., less assimilationism, more multiculturalism; Kil et al., 2019).

In an additional set of seminal studies, Leach et al. (2007) showed that, beyond the dimensions of warmth and competence, the perception of social groups as moral (e.g., honest, sincere) explained positive attitudes toward them over and beyond competence and warmth. More recent studies suggest that the three dimensions of intergroup perceptions are complementary, each explaining a share of variance in out-group evaluations (Constantin & Cuadrado, 2021; López-Rodríguez, Zagefka, et al., 2014).

We hypothesized that these three fundamental dimensions of intergroup perceptions – warmth, competence, and morality – would also play critical, independent roles in majority-group members' acculturation orientations. First, warmth is related to less perceived competition and more positive emotions (Bye et al., 2014; Constantin & Cuadrado, 2021; Froehlich & Schulte, 2019; López-Rodríguez, Navas, et al., 2014). Thus, if immigrants are seen as warm and approachable, this may create a more welcoming environment for cultural exchange. Moreover, a perceived lack of warmth of immigrants is related to an assimilation-like expectation toward them (Kil et al., 2019; Urbiola et al., 2021), which is logically

opposite to viewing acculturation as a two-way process, wherein all groups in contact undergo change.

Next, we predicted that, when immigrants are perceived as competent, majority-group members may be more motivated to adopt their culture. Adopting the culture of groups that are perceived as competent may be an opportunity for growth and increased success of the in-group and its members (Kunst & Mesoudi, 2023; Mesoudi, 2011). Indeed, majority-group members are less likely to exclude and more willing to cooperate with immigrants perceived as competent (Froehlich & Schulte, 2019).

Lastly, we expected that the perceived morality of immigrants predicts majority-group members' cultural adoption. If immigrants are viewed as morally upstanding, majority-group members might be more inclined to trust them and consider their cultural practices inherently valuable and worth adopting. Consistent with this perspective, perceiving immigrants as moral has been linked to less negative and more positive intergroup evaluations and reactions (Constantin & Cuadrado, 2021; Cuadrado et al., 2021). Majority-group members also are more supportive of immigrants maintaining their culture and more willing to behaviorally oppose the discrimination they may experience if immigrants are perceived as moral (Brambilla et al., 2013; Urbiola et al., 2021).

We also tested for interactive effects between warmth and competence, such that culture adoption is highest when immigrant groups are simultaneously perceived as competent and warm. This prediction is consistent with previous findings and theoretical notions suggesting that out-groups are most positively received when they are seen as both warm and competent (Fiske et al., 2002; Lee & Fiske, 2006). For interested readers, we further explore interactions of morality with warmth and competence and also test for the three-way interaction between the three dimensions.

The Mediating Role of Perceived Indispensability

Beyond increasing the understanding of majority-group acculturation by studying the differentiated influence of perceived immigrant group variation on fundamental dimensions, the current research extends previous work by examining a key mediator, perceived indispensability (Guerra et al., 2015; Verkuyten et al., 2014). Whereas much research on host-immigrant relations has identified intergroup threat of various forms (e.g., realistic/economic and symbolic/identity) as key factors (Stephan et al., 2016), orientations toward immigrants and immigration may also be driven by positive elements of the relationship as are other forms of intergroup relations. For instance, in Sherif and Sherif's classic Robber's Cave studies, two groups of boys in competition and conflict developed more reciprocally positive and productive relations when they had superordinate goals— aspirations that could only be achieved by the joint contributions of both groups and the reciprocal appreciation of each group's indispensability. Applied to a migration context, perceived indispensability refers to the extent to which immigrants are viewed as integral to the economic fabric and identity of the host country by majority-group members (Guerra et al., 2015; Mepham & Verkuyten, 2017; also see Walsh & Tartakovsky, 2020). These perceptions typically fall within two distinct, yet often strongly and positively correlated dimensions (Guerra et al., 2015; Guerra et al., 2016): Identity indispensability pertains to the perception that immigrants constitute a vital component of a country's cultural identity (Fluit et al., 2023; Verkuyten & Khan, 2012). By contrast, economic indispensability—also referred to as functional indispensability—relates to the belief that the absence of immigrants would be detrimental to the economy (Mepham & Verkuyten, 2017). In terms of the latter economic indispensability and in addition to identity indispensability, our research narrows its focus on the perceived economic indispensability of immigrants rather than their other comprehensive functional roles. We therefore opt for the term perceived “economic indispensability”

throughout, while recognizing that this concept is a variant of the wider concept of functional indispensability.

Perceptions of high levels of warmth, competence, and morality could potentially inform perceived indispensability. For instance, from a social identity perspective (Tajfel, 1978), the inclusion of a group recognized as warm, competent, and moral can aid majority-group members in fortifying a favorable in-group identity, thus contributing to the perceived identity indispensability of immigrants. Moreover, it could enhance the perceived significance that immigrants have to the economy (i.e., their economic indispensability), in line with research showing the impact of intergroup perceptions on evaluations in work-related settings (Kunst, Kirkøen, et al., 2023).

Whereas each of the three dimensions of intergroup evaluation may impact the two forms of perceived indispensability of immigrants, their influence might be particularly pronounced in specific areas. Warmth primarily reflects the degree to which individuals are expected to be empathetic and cooperative, and prioritize the interests of the group over individual interests (Cislak & Wojciszke, 2008), an essential aspect for the formation of functional social groups (Brewer, 1999; Van Vugt & Hart, 2004). Previous research has linked warmth with the process of integrating oneself into a group of strangers, thereby forming a social identity, while the link with competence was found to be non-significant (Kong, 2018). Hence, it might be posited that warmth predominantly influences perceptions of the identity indispensability of immigrants.

Competence pertains to attributes such as the perceived skillfulness and intelligence of a group or individuals, and is particularly salient in social evaluations in organizational and economic contexts (Cuddy et al., 2011). Therefore, perceived competence may exert a particular impact on economic indispensability, signifying the inherent value that newcomers

bring to an economy, for instance because highly competent immigrants can fulfill critical roles with high recruitment demand, such as specialists.

Morality is posited to play a pivotal role in shaping our social identities and in the delineation of individuals as either insiders or outsiders (Ellemers et al., 2017). As Goodwin (2015) articulated, “moral character is important for impression formation because it indicates the nature of a person’s intentions and whether those intentions are oriented toward being helpful or harmful, good or bad” (p. 41). Indeed, although all three dimensions have been demonstrated to predict trust—a factor integral to both types of perceived indispensability—morality tends to have the most substantial impact (Weiss et al., 2021). Thus, perceived morality can be expected to play a similar role in both perceived economic and identity indispensability. It signals the trustworthiness of prospective group members, which indicates whether they will be reliable group members and contribute to social identity cohesion. It is also of great significance for perceived economic indispensability, as it may indicate a sincere intention to contribute economically and the absence of tendencies to exploit collective resources without contributing.

Importantly, these perceptions of indispensability could subsequently influence the acculturation orientations of majority-group members in systematic ways. The perception of indispensability diminishes social distancing—an obstacle to intercultural interaction and, by extension, acculturation (Guerra et al., 2015). Concurrently, it triggers the activation of shared superordinate group categorization, thereby theoretically fostering acculturation (Guerra et al., 2015; Verkuyten et al., 2014). Moreover, the positive appraisal of an immigrant group’s contributions is correlated with increased interactions with the group (Tartakovsky & Walsh, 2022). This interaction is fundamentally vital for acculturation, offering theoretical support for the predicted role of indispensability perceptions in the acculturation of the majority group.

Study 1

In this first study, White British participants indicated warmth, competence, and morality ratings for 14 immigrant groups in the U.K. and their own group. After that, participants indicated how much they adopted the culture of each group. Finally, they reported to what extent they maintained their British mainstream culture. With these data, we tested a series of pre-registered predictions.

Based on the theoretical rationales outlined in the introduction, we investigated whether perceived warmth (H1), competence (H2), their interaction (H3), and morality (H4) would positively predict culture adoption.¹

Next, as pre-registered, we examined whether participants' ratings of their own culture moderated the effects of warmth, competence, and morality. Here, we tested two competing predictions: (a) culture adoption is highest when immigrants are seen as warmer, more competent, or more moral than the in-group (H5a), or (b) culture adoption is highest when immigrants are seen as similar to the in-group on the three dimensions, suggesting curvilinear relationships (H5b). The former hypothesis suggests that majority-group members are inclined to adopt the culture of immigrant groups they perceive as superior, as incorporating them into the self may bolster self-esteem and a positive group identity (Alicke & Sedikides, 2009; Sapienza et al., 2010; Sedikides & Gregg, 2008; Tajfel, 1982; Tajfel & Turner, 1979). The latter hypothesis suggests that such cultural adoption may occur if immigrant groups are perceived as similar to the in-group, a notion backed by research highlighting the appeal of similarity (Byrne, 1997; Montoya et al., 2008).

Finally, we tested whether the association between own culture maintenance and immigrant culture adoption would become more positive the more favorably the immigrant

¹ For this and the second study, we also explored potential curvilinearity and the moderating role of social dominance orientation. Due to space limitations, these results are presented in the SOM, but we are happy to move them into the main text if this is deemed suitable.

groups are evaluated on the three dimensions (H6). Whether individuals perceive both acculturation dimensions (own culture maintenance and other culture adoption) as reconcilable has been tested among minority-group members, finding an average weak and negative relationship ($r = -.18$) between them (see Yoon et al., 2020 for a meta-analysis). However, we are only aware of one study investigating the factors moderating this relationship among majority-group members (Kunst, Coenen, et al., 2023). Whereas this existing study focused on the role of individual differences (e.g., participants' global identity, political orientation) and the adoption of the culture of immigrants generally, we aimed to test whether positive intergroup perceptions of a range of different immigrant groups would moderate the association between participants' own culture maintenance and other culture adoption. Based on the notion that people strive for a positive and integrated self-concept (Benet-Martinez & Haritatos, 2005; Sedikides & Gregg, 2008; Tajfel, 1982), we predicted that both acculturation orientations would become more positively associated the more positively the respective out-groups are evaluated.

Methods

Participants

A pre-registered power simulation using the SIMR package (Green & MacLeod, 2016) suggested that 200 participants with each 14 responses (i.e., 2800 trials in total) would provide 90% power to detect a small to medium-sized cross-level interaction² ($b = .25$) at a .05 significance level. Thus, we recruited a politically representative (as of January 26, 2023) and gender-balanced sample of 201 participants ($M_{age} = 43.30$, $SD_{age} = 14.63$; women: 48.8%, men: 50.7%, other: 0.5%) from the U.K. via Prolific. Participants in this and the

² The power analysis was conducted to assess the feasibility of a cross-level interaction in exploratory analyses involving social dominance orientation, presented in SOM. This approach was selected due to its requirement for a significantly larger sample size compared to that needed for trial-level interactions, presented in the main text.

remaining studies were paid the equivalent of £8.5/hour. Detailed demographic information is presented in Table 1.

Table 1

Participant Demographics in Study 1

Variable		%
Inhabitants at place of living	More than 1 million	15.4
	300,000 - 1 million	15.9
	100,000 - 300,000	16.9
	50,000 - 100,000	14.4
	10,000 - 50,000	16.4
	5,000 - 10,000	10.4
	Less than 5000	10.4
Education	Secondary education	10.4
	High school diploma	11.9
	Technical/community college	17.9
	Undergraduate degree (BA/BSc/other)	34.3
	Graduate degree (MA/MSc/MPhil/other)	23.4
	Doctorate degree (PhD/other)	2.0
Occupation	Student	3.5
	Employed full-time	58.7
	Employed part-time	15.4
	Unemployed (and job seeking)	3.5
	Sick leave/disability benefit	2.0
	Not in paid work (e.g., homemaker, retired)	14.4
	Other	2.5
Income	Less than \$10.000	11.9
	\$10.000 - \$19.999	15.4
	\$20.000 - \$29.999	20.9
	\$30.000 - \$39.999	15.9
	\$40.000 - \$49.999	9.0
	\$50.000 - \$59.999	10.9
	More than \$60.000	8.0
	Rather not say	8.0

Political Affiliation	Labour	47.5
	Conservatives	22.2
	Liberal Democrats	9.1
	Reform	3.5
	Greens	4.0
	SNP	3.5
	UKIP	0.5
	Other	9.6

Procedure

The present study was pre-registered at https://osf.io/qvjky/?view_only=ac984a48a3134688a2131c41c8194e61. All materials, code, and data for this and the remaining studies are available at https://osf.io/gav7r/?view_only=cd41212909444228b5e345426df61ead. Participants first completed two measures assessing their political orientation. They then indicated their intergroup perceptions and culture adoption in terms of 14 immigrant or minority groups in the U.K. and their own group: African, Arab, Bangladeshi, Caribbean, Chinese, German, Gypsy or Irish Traveller, Indian, Irish, Italian, Pakistani, Polish, Roma, Romanian, and British people. These groups were selected based on U.K. census data of the official ethnic categories (GOV.UK, 2022) and the most frequent immigrant groups (GOV.UK, 2021). Participants first rated each group's competence, warmth, and morality (in random order) and then their acculturation orientations towards it. The order in which the groups were rated was randomized within the warmth, competence, morality, and acculturation measures to prevent order effects. In this and the remaining studies, participants had to complete the survey using a personal computer.

Measures

Warmth, Competence, Morality. We presented participants with instructions adopted from Cuddy et al. (2009). To reduce social desirability, these asked participants to

indicate how people in the U.K. (rather than they themselves) perceived the different groups. Next, participants in random order rated the different groups on three warmth items (likable, friendly, warm), three competence items (intelligent, competent, skilled), and three morality items (honest, sincere, trustworthy) adopted from Leach et al. (2007). Each item was rated on a 7-point scale ranging from 1 (*not at all*) to 7 (*extremely*). By aggregating these items, we obtained reliable warmth ($\alpha = .92 - .97$), competence ($\alpha = .90 - .96$), and morality scales ($\alpha = .93 - .97$) for each group.

Culture Adoption. For each group, participants indicated the extent to which they found it important to adopt its culture in six domains using a 6-item scale from Kunst, Ozer, et al. (2023; e.g., "How important is it to you to adopt the values of [group name] people in the UK?" $\alpha = .97 - .98$). The domains included the way of living, traditions, values, culture centrality, belonging, and contact.

It is crucial to note that individuals less familiar with literature on acculturation might contend that the dimensions of cultural adoption and stereotyping are conceptually overlapping. Therefore, it was important to establish that they were factorially different. A confirmatory factor analysis with four distinct factors supported this, showing a very close fit to the data, $\chi^2/df = 17.56$, $p < .001$, $CFI = 0.956$, $RMSEA = 0.077$, $sRMR = 0.025$.

Additionally supporting the distinctiveness between the constructs, the stereotype factors were only weakly related to the cultural adoption factor, $r_s < .37$, $p_s < .001$.

Culture Maintenance. On a 6-item scale by Kunst, Ozer, et al. (2023) matching the domains of the culture adoption measure, participants indicated how important they saw it to maintain the majority-group culture (e.g., "How important is it to you to live in accordance with British values?"; $\alpha = .97$). All items were rated from 1 (*not important at all*) to 7 (*very important*).

Attention Checks. A seventh item in the culture maintenance instrument asked participants to select the fourth response option to show that they paid attention. In addition, they were asked to select “blue” out of a list of colors in the demographics section. None of the participants failed both attention checks (our pre-registered exclusion criterion). Thus, all participants were included in the analyses.

Analyses

The analyses in this and the remaining studies were conducted using multi-level modeling where target groups were nested within participants in R 4.2.2 (R Core Team, 2022) using the lme4 (Bates, 2010), lmerTest (Kuznetsova et al., 2016), and jtools (Long, 2019b) packages. Effects were visualized using ggplot2 (Wickham et al., 2016), ggeffects (Lüdtke, 2018), interplot (Solt et al., 2021), and the interactions package (Long, 2019a).

Results

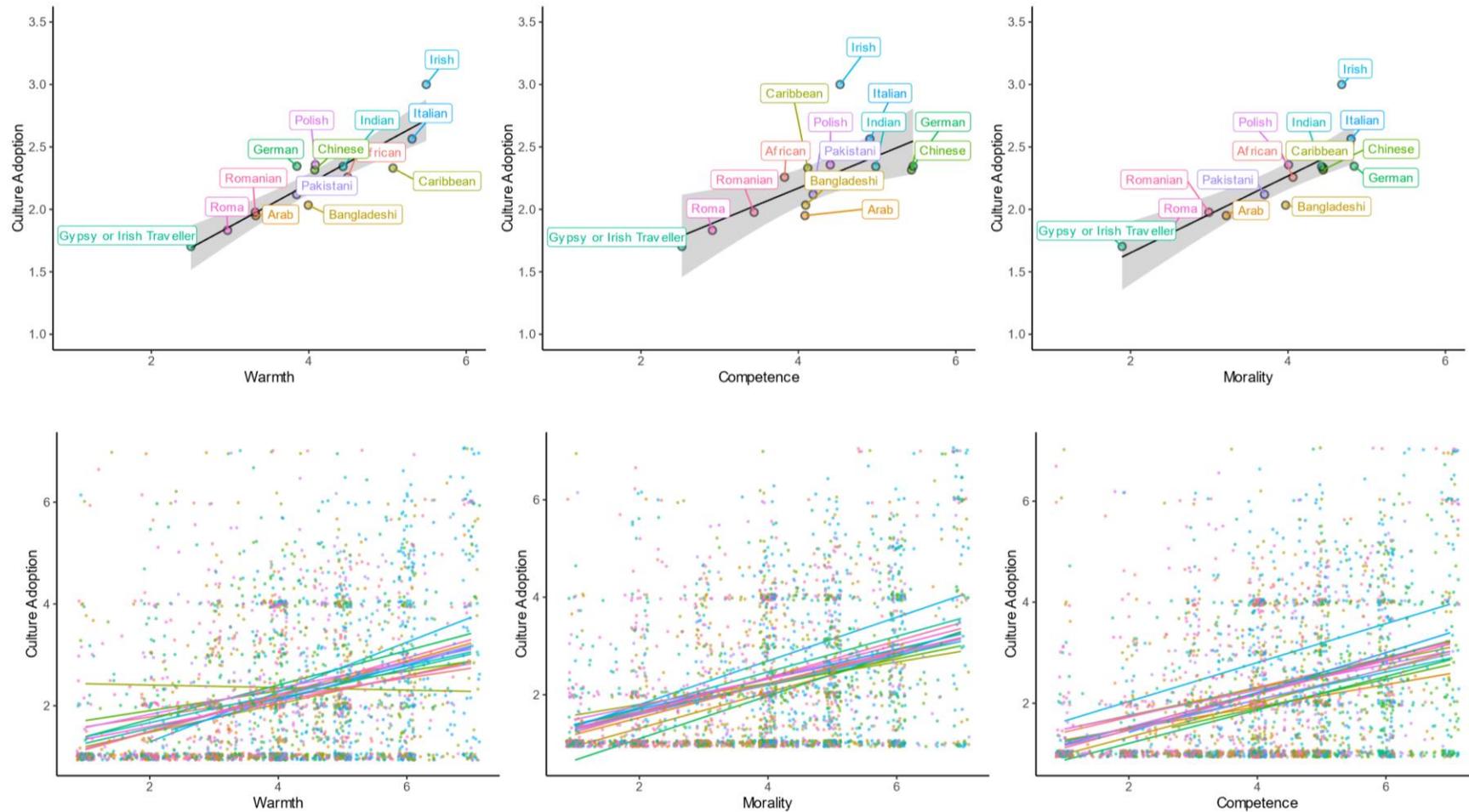
Across the target groups, warmth was positively correlated with competence, $r(2797_{\text{trials}}) = .63, p < .001$, $r(201_{\text{subjects}}) = .53, p < .001$, and morality, $r(2794) = .78, p < .001$, $r(201_{\text{subjects}}) = .69, p < .001$. Competence and morality were also positively correlated, $r(2787) = .79, p < .001$, $r(201_{\text{subjects}}) = .67, p < .001$ (see SOM for all correlations for all studies). Please note that multicollinearity cannot be assessed in the typical ways in multi-level models as for single-level regressions. However, the presence of both fixed and random effects can absorb some of the variance, potentially mitigating the impact of multicollinearity. Nevertheless, we address this issue empirically by experimentally manipulating the dimensions in Study 2.

To maximize descriptive insights into the data, we visualized the correlations between each rating dimension and participants' adoption of the groups' culture at the aggregate target group and individual response level (see Figure 1). Although culture adoption was generally

low, the warmer, more competent, and moral a group was perceived to be, the more participants reported adopting its culture.

Figure 1

Association of Intergroup Perceptions and Culture Adoption Between (Top Panel) and Within Immigrant Groups (Bottom Panel) in Study 1



Note. On the top panel, ribbons represent 95% confidence intervals.

Next, we set out to test our hypotheses. As predicted in H1, H2, and H4, warmth, competence, and morality were each uniquely associated with more culture adoption in our first model, R^2 (fixed effects) = 0.07, R^2 (total) = 0.72 (see Table 2, Model 1).

Table 2

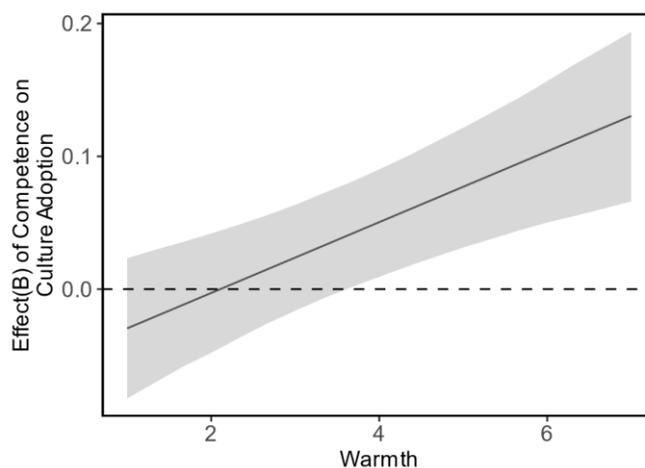
Linear Mixed Model Results Testing Main (Step 1) and Quadratic (Step 2) Associations with Cultural Adoption in Study 1

	<i>B</i>	<i>95% CI</i>		<i>t</i>	<i>df</i>	<i>p</i>
Model 1						
(Intercept)	1.16	0.90	1.42	8.84	30.20	<.001
Warmth	0.12	0.07	0.17	4.42	15.38	<.001
Competence	0.04	0.00	0.07	2.04	118.65	.043
Morality	0.11	0.06	0.15	4.58	21.68	<.001
Model 2						
(Intercept)	1.54	1.22	1.87	9.37	49.37	<.001
Warmth	0.01	-0.07	0.08	0.13	67.58	.896
Competence	-0.06	-0.12	0.01	-1.73	135.54	.086
Morality	0.10	0.06	0.15	4.39	27.05	<.001
Warmth x Competence	0.03	0.01	0.04	3.73	470.39	<.001

Next, competence and warmth interacted significantly (see Table 2, Model 2), supporting H3, R^2 (fixed effects) = 0.07, R^2 (total) = 0.72. As displayed in Figure 2, the association between competence and culture adoption was non-significant when warmth was low but became increasingly positive the warmer the target group was perceived to be. We explored interactions of morality with warmth ($p = .685$) and with competence ($p = .070$), but these effects did not reach statistical significance. In an extended model, the three-way interaction between the three stereotype dimensions was also statistically non-significant, $p = .354$.

Figure 2

Association of Competence with Culture Adoption at Different Levels of Warmth in Study 1



Note. Ribbons represent 95% confidence intervals.

We then tested our two competing hypotheses. The first hypothesis predicted that culture adoption would be the highest when immigrants were scored higher than the in-group on the three dimensions of intergroup perceptions (H5a). We tested this prediction using linear moderation analyses, yet none of the moderations reached significance (see Table 3, Model 1). The second competing hypothesis predicted that culture adoption would be the highest when a group is rated similarly to the in-group (H5b). We tested this prediction by calculating difference scores between the own and out-group ratings for each dimension and

testing their curvilinear influence. Following this procedure, the highest level of culture adoption should be observed when the difference score is 0 (i.e., indicating that the in- and out-groups are rated the same). No evidence for this prediction was found, R^2 (fixed effects) = 0.07, R^2 (total) = 0.75 (see Table 3, Model 2). The non-significant results were also replicated when using piece-wise regression instead of difference scores.

Table 3

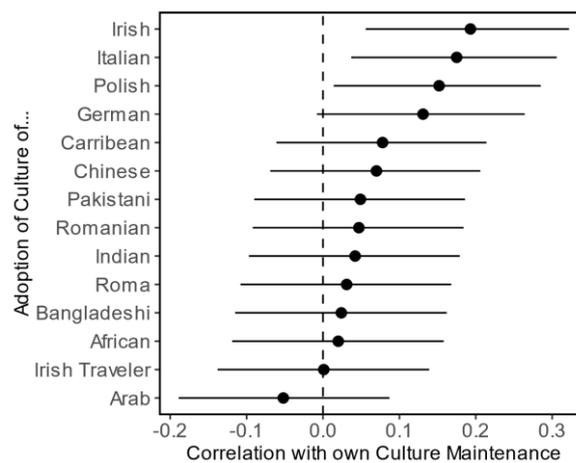
Mixed Model Results Testing Whether the Ratings of One's Own Group Linearly (Model 1) or Curvilinearly (Model 2) Moderate the Effects of the Intergroup Perception Dimensions on Culture Adoption

	<i>B</i>	<i>95% CI</i>		<i>t</i>	<i>df</i>	<i>p</i>
Model 1						
(Intercept)	0.15	-0.90	1.20	0.28	350.54	.779
Warmth	0.12	-0.01	0.24	1.84	423.58	.066
Competence	0.14	0.02	0.27	2.22	2342.41	.027
Morality	-0.01	-0.16	0.14	-0.11	1398.99	.915
Own Warmth	0.05	-0.16	0.26	0.43	280.26	.668
Own Competence	0.24	0.02	0.47	2.13	289.18	.030
Own Morality	-0.10	-0.35	0.16	-0.74	270.74	.460
Warmth x Own Warmth	0.00	-0.02	0.02	0.06	2604.25	.950
Competence x Own						
Competence	-0.02	-0.04	0.00	-1.73	2586.84	.080
Morality x Own Morality	0.02	-0.01	0.05	1.55	2607.75	.120
Model 2						
(Intercept)	2.22	2.04	2.40	24.04	158.60	<.001
Warmth Difference	10.80	6.42	15.17	4.84	27.32	<.001
Morality Difference	9.56	4.95	14.18	4.06	28.87	<.001
Competence Difference	2.73	-0.95	6.42	1.46	62.89	.150
Warmth Difference ²	1.66	-0.81	4.13	1.32	685.44	.188
Morality Difference ²	-1.29	-3.72	1.14	-1.04	888.40	.298
Competence Difference ²	2.24	-0.09	4.58	1.89	1570.69	.059

Furthermore, we estimated and visualized the correlation between participants' own culture maintenance and their adoption of the culture from each target group. As displayed in Figure 3, participants' own culture maintenance was positively associated with adopting Irish, Italian and Polish immigrants' culture and marginally with German immigrants' culture. However, the correlation was statistically non-significant for the remaining target groups and, notably, trended negatively only in terms of Arab immigrants.

Figure 3

Correlations Between Own Culture Maintenance and Adoption of the Culture of Various Immigrant Groups in Study 1



Note. The point estimates reflect the Pearson correlation coefficients. Error bars represent 95% confidence intervals.

We tested whether the dimensions of intergroup perception would moderate this correlation as predicted in H6. Indeed, morality statistically significantly moderated the effects, but against expectations, not warmth and competence (see Table 4). As visualized in Figure 4, the association between own culture maintenance and other culture adoption became more positive the more moral the target group was perceived to be. However, the

confidence intervals included zero at each level of the morality moderator, indicating that the results should be interpreted with caution.

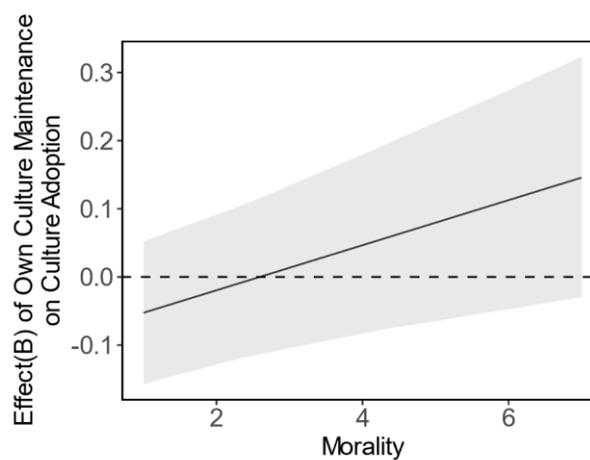
Table 4

Linear Mixed Model Results Testing Whether the Association Between own Culture Maintenance and Other Culture Adoption was Moderated by the Intergroup Perception Dimensions in Study 1

	<i>B</i>	95% <i>CI</i>		<i>t</i>	<i>df</i>	<i>p</i>
Intercept	1.57	1.04	2.10	5.76	268.76	<.001
Own Culture Maintenance	-0.09	-0.19	0.02	-1.62	347.42	.107
Warmth	0.07	-0.02	0.16	1.48	148.99	.142
Competence	0.07	-0.02	0.16	1.54	1349.82	.123
Morality	-0.05	-0.15	0.06	-0.84	512.06	.404
Own Culture x Warmth	0.01	-0.01	0.03	1.16	2453.54	.245
Own Culture x Competence	-0.01	-0.03	0.01	-0.86	2570.27	.391
Own Culture x Morality	0.03	0.01	0.05	3.10	2517.52	.002

Figure 4

Effect of Own Culture Maintenance on Other Culture Adoption at Different Levels of Morality



Note. Ribbons represent 95% confidence intervals.

Preliminary Discussion

As expected, the warmer, more competent, and moral majority-group members perceived immigrants to be, the more important they found it to adopt their culture. This pattern was observed at the individual and group levels, explaining why culture adoption was higher for immigrant groups that typically have higher status (e.g., Irish, German, Italian, Chinese) than those with typically lower status (e.g., Gypsy or Irish Traveller, Roma, Romanian, Arab). As expected, the interaction between competence and warmth was significant, such that competence predicted higher levels of culture adoption only when groups were perceived as warm as well. This finding aligns well with the interactive nature of intergroup perceptions in producing social outcomes (Fiske, 2018; Fiske et al., 2002) and suggests that warmth offsets the potential threat that competent immigrant groups may elicit.

Against our predictions, we found no evidence for participants' evaluation of their own group moderating the associations of the three intergroup perception dimensions. Thus, whether immigrants are perceived as similar or better than the in-group does not seem to be associated with British majority-group members' culture adoption.

The correlations between majority-group members' culture maintenance and other culture adoption differed depending on the immigrant group. This correlation was positive for immigrants from some Western European countries, whereas it became non-significant for other immigrant groups. However, only the morality dimension seemed to explain some of these differences, tentatively suggesting that the relationship becomes more positive the more moral the out-group is perceived to be.

This first study demonstrated that majority-group acculturation differs depending on the type of immigrant groups and the corresponding group perceptions. However, the study is limited by its cross-sectional nature. Moreover, the three intergroup perception dimensions were relatively strongly positively associated (although factorially distinct), potentially

making it statistically challenging to disentangle their unique effect. Therefore, in the following study, we aimed to replicate the results by separately manipulating the three intergroup perception dimensions in an experimental design. Moreover, we introduced perceptions of identity and economic indispensability (Mepham & Verkuyten, 2017; Verkuyten et al., 2014) as potential mediators.

Study 2

As in Study 1, we hypothesized that the intergroup perception dimensions would predict higher levels of other culture adoption (H1) and expected a significant interaction between warmth and competence (H2). In addition, we introduced perceived economic and identity indispensability as potential mediators. We predicted that the three intergroup perception dimensions would directly inform perceptions of indispensability, with immigrant groups rated as warmer, more competent, and moral being rated as more indispensable (H3). We explored whether the effects would differ depending on the type of indispensability in question. For instance, it could be that warmth plays more of a role in identity indispensability, whereas competence may play more of a role in economic indispensability for the reasons outlined in the main introduction. We further expected perceptions of indispensability to be associated with more other culture adoption (H4).

Methods

Participants

A pre-registered power simulation using the SIMR package (Green & MacLeod, 2016) suggested that we needed approximately 150 participants with each five responses (i.e., 750 trials) to achieve more than 90% power to detect a small to medium-sized two-way interaction ($d = .25$) at a .05 significance level. Thus, 150 participants from the U.S. were recruited via Prolific ($M_{age} = 44.27$; $SD_{age} = 14.97$). The sample was gender-balanced (48.7% women, 50.8% men, 0.7% non-binary/other) and close to politically representative of the

U.S. according to polls at the time of data collection (30% Republicans, 30.7% Democrats, 38.7% Independents; cf. Gallup, 2023). As we were interested in the responses of White, non-immigrant majority-group members, two respondents who did not indicate their race and four who were born abroad were omitted from analyses, resulting in a final sample of 144 participants. None of them failed both attentions checks that asked them to select a certain response (mix into two of the measures). Thus, as pre-registered, all participants were included in the analyses.

Procedure

The present study was pre-registered at https://osf.io/pufs8/?view_only=dfed321a244841cb883f3075a5ef0bc2. Participants were told that they would be presented with information about how the U.S. population perceives five different immigrant groups in terms of three dimensions: competence, warmth, and morality. They then completed five trials. In each trial, they saw bar charts with percentage estimates that indicated how U.S. Americans perceived the unnamed group of immigrants. The names of the immigrant groups were not specified to mitigate the potential influence of preconceived notions on the assessments. The bar chart contained the nine traits we assessed in the first study. Thus, each three corresponded to competence (i.e., intelligent, competent, skilled), morality (i.e., honest, sincere, trustworthy), and warmth (i.e., likable, friendly, warm). Notably, the estimates presented were randomized following a conjoint design. Specifically, the competence, morality, and warmth clusters were separately assigned a random value from 5% to 95% for each trial. This value was then assigned to the three traits within the cluster with a random margin of +/- 2% to create some variation, as would be the case in polls while ensuring that the trait ratings within each cluster were consistent. The bars were colored from red (0%) through yellow (50%) to green (100%). The three clusters were presented in random order. See SOM for an example trial.

After reading how the U.S. population perceived the respective immigrant groups, participants were asked questions about the perceived identity indispensability (i.e., “To what extent do you think the immigrant group is indispensable for the cultural identity of the USA?”; 1 *not at all* – 5 *very much*) and economic indispensability (i.e., “To what extent do you think the immigrant group is indispensable for the economic functioning of the USA?”; 1 *not at all* – 5 *very much*) adopted from Fluit et al. (2023). Finally, they were asked to imagine that there were many immigrants from this group living in their neighborhood and asked how they would relate to the group’s culture on the 6-item other culture adoption scale from Study 1 ($\alpha = .96 - .97$). A CFA provided support for a three-factor solution in which the two indispensability dimensions were distinct from the cultural adoption dimension, $\chi^2/df = 135.18$, $p < .001$, $CFI = 0.946$, $RMSEA = 0.123$, $sRMR = 0.038$; but note that the RMSEA value was above the recommended thresholds.

Analyses

The same analytic approach as in Study 1 was followed. Given the broad response scale for the independent variables (0-100 for the intergroup perception dimensions) relative to the other variables, these were z-scored to achieve model convergence. Initially, we had pre-registered to test for mediation using the mediation R package (Tingley et al., 2014), but we changed to multi-level structural equation modeling in lavaan (Rosseel, 2012) after facing challenges with the mediation package due to lacking support for the data’s multi-level structure. We tested indirect effects using Monte Carlo confidence intervals with 20,000 samples, a method recommended for multilevel mediation (Preacher & Selig, 2012).

Results

We first tested whether warmth, competence, and morality would lead to higher levels of other culture adoption (see Table 5). In the first model testing for the main effects, R^2 (fixed effects) = 0.11, R^2 (total) = 0.77, warmth and morality were associated with higher

other culture adoption, whereas competence fell below the significance threshold, partly supporting H1. Unlike Study 1, and in contrast to H2, the interaction between warmth and competence was non-significant in the second model, R^2 (fixed effects) = 0.11, R^2 (total) = 0.77. We again explored interactions of morality with warmth ($B = 0.10$, $SE = 0.03$, $p = .002$) and competence ($p = .337$). An interactions plot showed that the effect of morality was positive at all levels of warmth but increased as the latter increased. The three-way interaction between the stereotype dimensions was non-significant in a further extended model ($p = .379$).

Table 5

Linear Mixed Model Results Testing Main (Step 2) and Quadratic (Step 2) Effects on Other Cultural Adoption in Study 2

	<i>B</i>	<i>95% CI</i>		<i>t</i>	<i>df</i>	<i>p</i>
Model 1						
(Intercept)	3.23	3.01	3.45	28.53	105.99	<.001
Warmth	0.33	0.27	0.40	10.64	51.05	<.001
Competence	0.14	0.02	0.26	2.37	4.25	.073
Morality	0.38	0.30	0.45	10.20	6.77	<.001
Model 2						
(Intercept)	3.23	3.01	3.45	28.58	109.58	<.001
Warmth	0.34	0.28	0.40	10.73	54.61	<.001
Competence	0.14	0.03	0.25	2.42	4.25	.069
Morality	0.38	0.30	0.45	10.29	6.80	<.001
Warmth x Competence	0.04	-0.02	0.10	1.27	583.65	.205

Next, we tested for the effects on perceived identity indispensability. Both indispensability perceptions were highly correlated, $r(713) = .73$, $p < .001$, in line with previous work (Fluit et al., 2023). Therefore, we first estimated effects across the two indispensability dimensions (added as additional level to the data) and then tested whether the type of indispensability would moderate the effects. To achieve convergence, random slopes

had to be dropped from these models. As seen in the first model in Table 6, each intergroup perception dimension positively predicted indispensability perceptions, supporting H3, R^2 (fixed effects) = 0.12, R^2 (total) = 0.59. In extended models, the two-way and three-way interactions between the dimensions had no statistically significant effect, $ps > .080$.

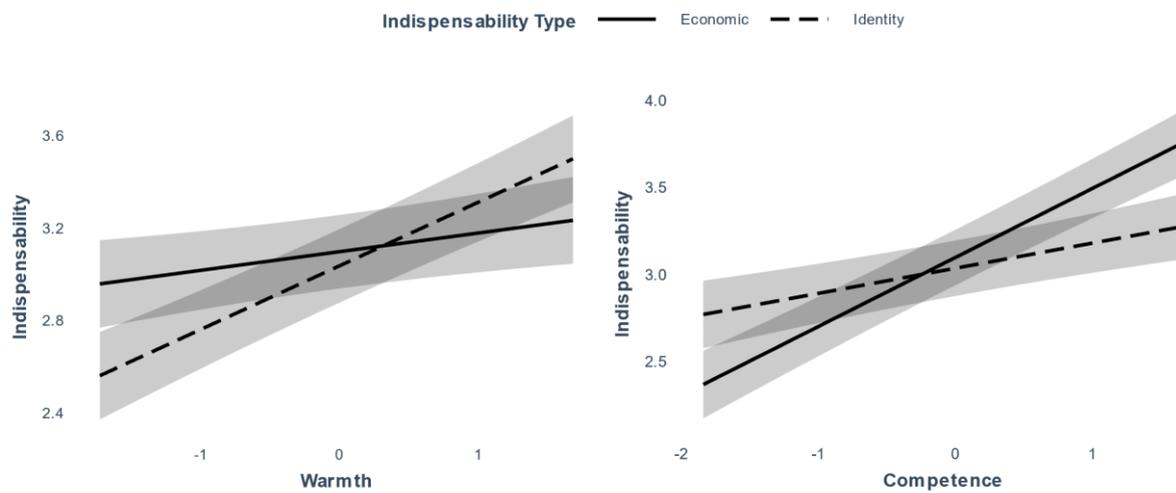
However, in the next step, the interactions between the indispensability type and warmth and between the indispensability type and competence were significant, R^2 (fixed effects) = 0.14, R^2 (total) = 0.61. The effect of warmth was positive and significant for both types of indispensability but was stronger for identity indispensability, $B = 0.28$, $SE = 0.03$, $p < .001$, than for economic indispensability, $B = 0.08$, $SE = 0.03$, $p = .008$, see Figure 5. The opposite pattern was observed for competence, predicting economic indispensability more strongly, $B = 0.40$, $SE = 0.03$, $p < .001$, than identity indispensability, $B = 0.14$, $SE = 0.03$, $p < .001$.

Table 6

Linear Mixed Model Results Testing Main (Step 1) and Moderated (Step 2) Effects on Indispensability in Study 2

	<i>B</i>	<i>95% CI</i>		<i>t</i>	<i>df</i>	<i>p</i>
Model 1						
(Intercept)	3.10	2.94	3.26	38.19	79.89	<.001
Warmth	0.18	0.13	0.22	7.77	1326.27	<.001
Competence	0.27	0.22	0.32	11.44	1340.79	<.001
Morality	0.28	0.24	0.33	12.15	1329.00	<.001
Indispensability type ^a	-0.06	-0.14	0.02	-1.48	1278.89	.139
Model 2						
(Intercept)	3.10	2.94	3.26	38.19	79.88	<.001
Warmth	0.08	0.02	0.14	2.67	1303.04	.008
Competence	0.40	0.34	0.46	12.88	1310.89	<.001
Morality	0.25	0.19	0.31	8.29	1305.23	<.001
Indispensability type ^a	-0.06	-0.14	0.02	-1.52	1275.90	.130
Warmth x Type ^a	0.20	0.12	0.27	4.79	1275.90	<.001
Competence x Type ^a	-0.25	-0.33	-0.17	-6.20	1275.90	<.001
Morality x Type ^a	0.06	-0.02	0.14	1.42	1275.90	.155

Note. ^aEconomic indispensability (1) vs. Identity indispensability (2).

Figure 5*Effect of Warmth and Competence on Economic and Identity Indispensability in Study 2*

Note. Ribbons represent 95% confidence intervals. The variables shown on the x-axis are standardized.

Given that two of three experimental factors predicted identity and economic indispensability differently, we estimated a multi-level mediation model in which both indispensability variables (standardized in addition to the predictors) were considered as parallel mediators (see Figure 6). Please note that standard fit indices are not provided for multi-level SEM models in lavaan. As can be seen, all effects of the intergroup perception dimensions on indispensability were positive and significant, except for the effect of warmth on economic indispensability. Both indispensability variables predicted more other culture adoption in line with H4, and their effects did not differ statistically according to a Wald's test, $p = .300$.

All indirect effects except for the effect of warmth going through economic indispensability reached significance (see Table 7). Wald's difference tests indicated that the indirect effect of warmth going through identity indispensability was significantly different from the corresponding indirect going through economic indispensability. For the other predictors, the indirect effects did not differ significantly.

Figure 6

Mediation Model Tested in Study 2

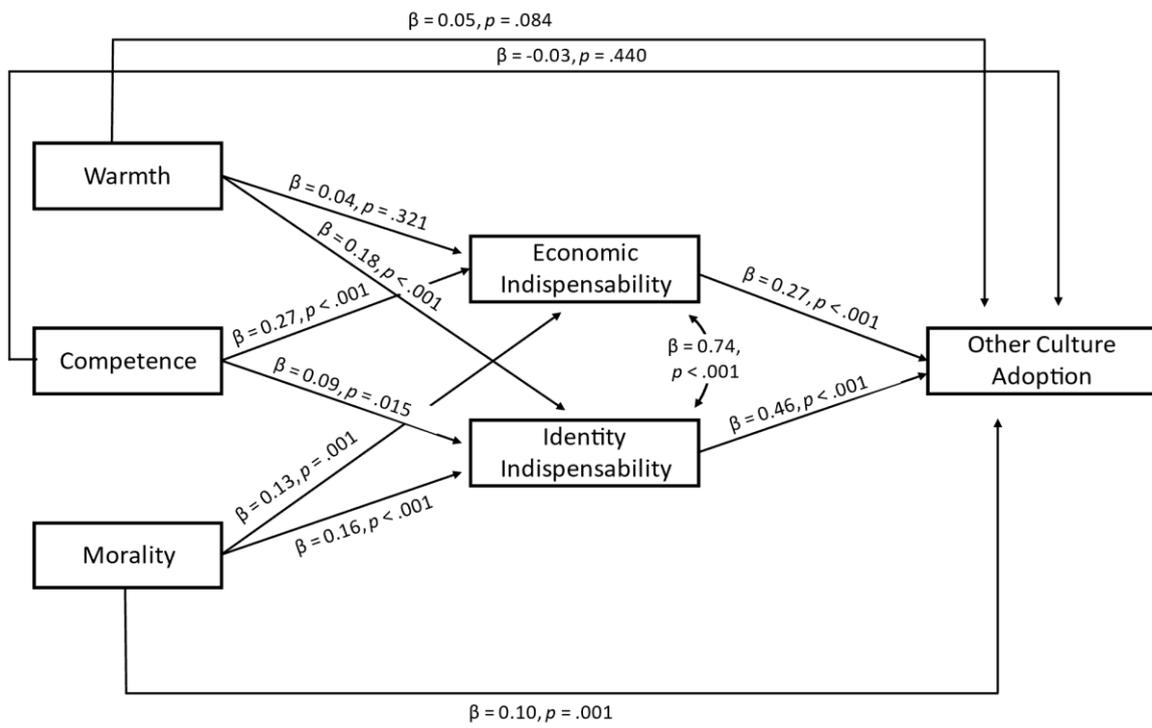


Table 7*Indirect Effects Observed in Study 2*

Predictor / Mediator	β	<i>B</i>	95% MC CI		p^1
			Lower	Upper	
Warmth					
Identity Indispensability	.08	0.005	0.002	0.008	< .001
Economic Indispensability	.01	0.001	-0.001	0.002	.331
<i>Wald's Difference Test</i>					< .001
Competence					
Identity Indispensability	.04	0.003	>0.001	0.005	.017
Economic Indispensability	.07	0.004	0.003	0.007	<.001
<i>Wald's Difference Test</i>					.128
Morality					
Identity Indispensability	.07	0.004	0.002	0.007	< .001
Economic Indispensability	.03	0.001	0.001	0.004	.008
<i>Wald's Difference Test</i>					.065

Note. MC CI = Monte Carlo Confidence Intervals based on 20,000 samples. 1 = p -value before applying Monte Carlo Standard Errors.

Preliminary Discussion

The second study experimentally replicated the findings from the first study. Warmth, competence, and morality each independently made U.S. majority-group members think it is more important to adopt the culture of immigrant groups. Critically extending the previous study, the effects of the intergroup perception dimensions were mediated by perceptions of indispensability. The more favorable immigrant groups were described to be in terms of each intergroup perception dimension, the more indispensable they were perceived to be for the U.S. identity and economy. However, some nuances emerged. Warmth primarily predicted

identity indispensability, whereas competence primarily predicted economic indispensability. Morality seemed to predict both types of indispensability similarly. These findings make sense as competence can signal the immediate utility of immigrants for the labor market (Cuddy et al., 2011), whereas warmth may signal cooperativeness, approachability, and prioritization of the group over personal interests (cf. Cislak & Wojciszke, 2008; Wyszynski et al., 2020). Morality may similarly predict economic and identity indispensability due to its relevance for both domains (Ellemers et al., 2017; Weiss et al., 2021).

Unlike Study 1, we found no significant interaction between warmth and competence. The interplay of warmth and competence may be more pronounced in naturalistic settings (i.e., as with natural immigrant groups in Study 2) than when the effect of both factors is isolated in more internally but less ecologically valid ways.

Study 3

As the mediation in Study 2 was based on one causal path (from intergroup perception on key dimensions to indispensability) and one correlational path (from indispensability to culture adoption), we aimed to obtain evidence for the causal role of indispensability by manipulating it (Spencer et al., 2005). We presented a sample of U.S. participants with five unnamed immigrant groups. In each trial, they were informed how experts evaluated the respective immigrant group regarding its indispensability to the U.S. identity and economy. We then measured the degree to which the participants found it important to adopt the culture of the group. We expected both types of indispensability to have positive effects (H1) but tested whether the impact of identity indispensability would be more pronounced, as the trend suggested in Study 2 (H2). We also tested the prediction that culture adoption would be most pronounced when both types of indispensability are high (H3). Finally, we conducted a pre-registered exploration of whether indispensability moderates the relationship between own culture maintenance and other culture adoption.

Methods

Participants

Following the power simulation from Study 2, we collected 150 U.S. participants ($M_{age} = 39.99$; $SD_{age} = 14.39$) via Prolific who each provided five responses (i.e., 750 trials). Participants from the previous study, also conducted in the U.S., were prevented from participating in this study. The sample was gender-balanced (48.0% women, 50.0% men, 2% non-binary/other) and close to politically representative at the time of data collection (32% Republicans, 30.7% Democrats, 36.0% Independents, 1.3% other; cf. Gallup, 2023). All but one participant identified as White, and all but three participants were born in the U.S. Due to our focus on White, non-immigrant majority-group members, these four responses were excluded from analyses, resulting in a sample of 146.

Procedure

The present study was pre-registered at https://osf.io/5a4cb/?view_only=f5733a2a48d8479080d48bfcfd978051. Participants completed five trials. In each trial, they saw two bar charts with percentage estimates that indicated how a group of experts perceived an unnamed group of immigrants in terms of identity and economic indispensability (please see SOM for the exact wording and instructions to participants). Both dimensions were independently randomized for each trial from 0 to 100% (indispensable) and colored as in Study 2. The order of the two indispensability dimensions was randomized at the participant level. Having read the description, the participants indicated to what extent they wanted to adopt the group's culture ($\alpha = .93 - .93$). After all trials, they were asked to what extent they maintained their own culture ($\alpha = .94$) on the same scales as in Study 1.

Results

To achieve model convergence, we standardized the two experimental predictor variables. Testing the first hypothesis, we estimated a model in which the two indispensability variables had main effects, R^2 (fixed effects) = 0.07, R^2 (total) = 0.74. The intercepts and both slopes were set to random. Both indispensability conditions similarly predicted higher levels of other culture adoption (see Table 8, Model 1) and did not differ significantly when type of indispensability was added as a moderating level, $B = .02$, $SE = .04$, $t(1319) = 0.41$, $p = .683$. Thus, H1 but not H2 was confirmed. In the second model, against H3, the interaction between both factors was non-significant, R^2 (fixed effects) = 0.07, R^2 (total) = 0.74 (see Table 8, Model 2).

Table 8

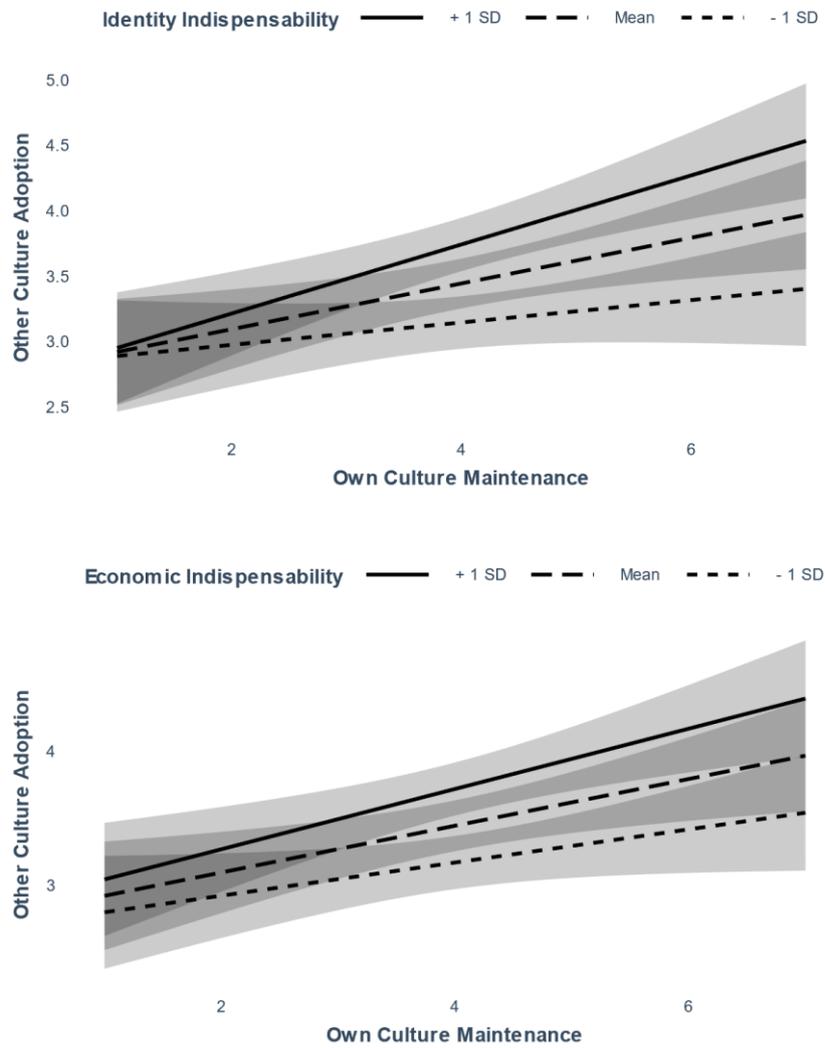
Linear Mixed Model Results Testing Main (Step 1) and Moderated (Step 2) Effects on Other Culture Adoption in Study 3

	<i>B</i>	<i>95% CI</i>		<i>t</i>	<i>df</i>	<i>p</i>
Model 1						
(Intercept)	3.43	3.24	3.63	34.58	144.47	<.001
Identity Indispensability	0.28	0.21	0.36	7.54	3.91	.002
Economic Indispensability	0.26	0.21	0.32	8.89	473.84	<.001
Model 2						
(Intercept)	3.43	3.24	3.63	34.56	144.98	<.001
Identity Indispensability	0.28	0.21	0.36	7.36	3.90	.002
Economic Indispensability	0.27	0.21	0.32	8.94	556.26	<.001
Identity x Economic	-0.04	-0.10	0.02	-1.38	600.86	.167
Model 3						
Intercept	2.75	2.23	3.26	10.45	143.99	<.001
Own Culture Maintenance	0.18	0.05	0.30	2.83	143.98	.005
Identity Indispensability	-0.06	-0.22	0.10	-0.72	97.66	.477
Economic Indispensability	0.07	-0.08	0.22	0.94	552.53	.347
Maintenance x Identity	0.09	0.05	0.13	4.69	597.61	<.001
Maintenance x Economic	0.05	0.02	0.09	2.80	597.79	.005

Next, as pre-registered, we explored whether economic and identity indispensability would moderate the association between own culture maintenance and other culture adoption, R^2 (fixed effects) = 0.12, R^2 (total) = 0.75 (see Table 8, Model 3). Indeed, both interactions were highly significant. As presented in Figure 7, at moderate, $B = 0.17$, $SE = 0.06$, $p = .005$, and especially at high levels of identity indispensability, $B = 0.26$, $SE = 0.06$, $p < .001$, own culture maintenance and other culture adoption were statistically significantly and positively associated, but not at low levels of identity indispensability, $B = 0.09$, $SE = 0.06$, $p = .187$. Similarly, own culture maintenance and other culture adoption were statistically significantly and positively associated at moderate, $B = 0.17$, $SE = 0.06$, $p = .005$, and especially at high levels of economic indispensability, $B = 0.23$, $SE = 0.06$, $p < .001$, but not at low levels of economic indispensability, $B = 0.12$, $SE = 0.06$, $p = .055$.

Figure 7

Association Between Own Culture and Other Culture Maintenance as Moderated by the Indispensability Manipulations in Study 3



Note. Ribbons represent 95% confidence intervals.

Preliminary Discussion

The third study provided further causal support for the mediational model. Manipulating identity and economic indispensability made majority-group members more willing to adopt the culture of immigrants. Moreover, when indispensability was moderate or high, participants' preference for own culture maintenance became positively associated with their motivation to adopt the culture of immigrants. In other words, the more indispensable immigrants were described to be to the U.S. identity or economy, the more the two acculturation orientations become reconcilable.

General Discussion

Whereas the study of majority-group acculturation has started to receive growing attention over the past years (Kunst, Lefringhausen, Sam, et al., 2021), most existing research is limited in that it has treated immigrant cultures as one homogeneous entity. In one correlational and two experimental studies, we therefore investigated how the way different immigrant groups are perceived can influence majority-group members' acculturation in systematic ways.

In the first study, when British majority-group members perceived immigrant groups as warm, competent, and moral, they were more inclined to adopt their culture. The second study experimentally replicated these findings in the U.S. and demonstrated that perceptions of indispensability correlationally mediated the effects of the key intergroup perception dimensions on majority-group acculturation. In the third study, we provided additional support for the mediational model, demonstrating the causal effect of indispensability on majority-group members' adoption of the culture of immigrants.

Together, our studies emphasize the need for majority-group acculturation research to look beyond the adoption or rejection of the culture of immigrants generally if it aims at mapping out the complexities of these processes. Almost all existing studies on the topic have

investigated majority-group members' orientation toward "immigrants" generally (Kunst, Lefringhausen, Sam, et al., 2021). There are valid scenarios for which researchers may be interested in such broader orientations, but our work shows that perceived differences of immigrants systematically influence majority-group members' acculturation.

The present set of studies suggest that the three dimensions of intergroup perceptions predominantly exert independent effects on the culture adoption of majority-group members. Evidence for interactions among the dimensions was limited. Notably, only in the initial study did the dimensions of warmth and competence exhibit the hypothesized interaction (Fiske et al., 2002), wherein the intention to adopt the cultures of immigrants was highest when they were perceived highly in both dimensions. Conversely, in the second study, the influence of warmth on cultural adoption was found to be amplified with an increase in the perception of morality. The results from our second experiment suggest that warmth and morality, when manipulated independently, exert synergistic effects. The perception of a group of immigrants as warm, suggesting cooperativeness and a prioritization of group interests over individual ones (Cislak & Wojciszke, 2008), coupled with a perception of morality, arguably indicating trustworthiness (Weiss et al., 2021), appears to enhance the willingness of majority-group members to adopt the cultural practices of otherwise unspecified groups. However, the absence of such an interaction in the more ecologically valid setting of Study 1, where the three dimensions were highly interrelated, necessitates further replication of this finding. Moreover, it should be noted that the distinction between morality and warmth as separate dimensions, or the consideration of morality as a facet of warmth, remains a subject of debate (Cuddy et al., 2011; Leach et al., 2007).

This research contributes to and expands upon existing literature (Guerra et al., 2015; Mepham & Verkuyten, 2017; Verkuyten & Khan, 2012; Verkuyten et al., 2014), highlighting the potential significance of perceptions of indispensability in shaping not only intercultural

relations but also acculturation orientations. Furthermore, it elucidates the connection between perceptions of groups along key dimensions and the cultural orientations individuals adopt towards these groups. Specifically, perceptions of warmth, competence, and morality initially seem to determine the extent to which immigrants are deemed to make essential contributions upon which society may rely. When such perceptions of indispensability are elevated, majority-group members are arguably more likely to regard these immigrants as qualified prospective members of their society, from whom it is beneficial to learn and with whom social association is deemed valuable. Future research should explore the underlying mechanisms of this linkage and its potential adaptiveness (Kunst & Mesoudi, 2023):

Adopting the culture of a group perceived as indispensable to the societal group identity may serve to enhance one's collective self-esteem through the acquisition of the positively valued traits that facilitated this cultural adoption in the first place. By adopting the culture of economically indispensable groups, individuals may aim to acquire traits that enhance their own economic prospects within society.

Our findings hold significant repercussions for the evolving dynamics of cultural shifts and intercultural interactions over the course of time. It appears that the cultural influence of those immigrant groups that are viewed as less desirable based on key dimensions of intergroup perception and perceived contributions, may be limited in shaping the majority culture. It is crucial to acknowledge that these intergroup perceptions and perceptions of indispensability largely mirror historically entrenched and systemic biases due to inequalities (Caprariello et al., 2009; Haslam et al., 2002) rather than the factual attributes of the groups. Consequently, these intergroup perceptions and the ensuing perceived indispensability can drive majority-group individuals to dismiss the culture of groups already marginalized within society. On a collective scale, this process may inhibit cultural convergence, thereby sustaining intercultural divides (Byrne, 1997; Montoya et al., 2008).

Historically, the processes delineated in our research could affect transcultural dynamics, leading to the amalgamation of certain (higher status) groups, while others remain marginalized. They have significant implications for the extent to which members of low-status and stigmatized groups (for example, asylum seekers, refugees, and Muslims) are permitted to contribute to the cultural development of their host societies.

At the same time, our research underscores the importance of countering negative intergroup perception by framing the characterizations of immigrants around their inherent strengths instead of their perceived weaknesses. This approach may enhance the cultural influence of immigrants, making members of the majority group more receptive to adopting elements from immigrant cultures. Looking ahead, it is essential for future studies to explore actionable, scalable strategies that can be put into place to cultivate these positive dynamics.

Whereas our findings are suggestive, they should be interpreted in light of several constraints on generality (Simons et al., 2017). First, our studies were conducted in two Western settings and with non-random samples. Thus, although the samples were gender-balanced and politically close to representative, future research is needed to establish the generalizability of our findings, especially in non-Western contexts.

The use of single items to measure the indispensability of immigrants in Study 2 may be criticized. Although the two items were adopted from previous research (Fluit et al., 2023) and often showed distinct associations with the other variables, the items correlated highly and it can be debated whether single-item scales as compared to multi-item scales are optimal (Bergkvist & Rossiter, 2007; Diamantopoulos et al., 2012). Although the converging results from the correlational measurement and experimental manipulation of indispensability gives us some confidence in the results, future research may profitably use multi-item indispensability scales such as the one developed by Guerra et al. (2016).

Although we find evidence for key intergroup perceptions influencing perceptions of indispensability, the opposite direction of effects is also plausible. If a group is described as indispensable, this may elicit expectations of specific group attributes, including intergroup perceptions of warmth, competence, and morality. Future research could test these possibly reciprocal processes. Furthermore, subsequent research could incorporate manipulation checks to assess the specificity of the experimental manipulations. Such checks could examine, for example, the extent to which altering one construct (e.g., warmth, economic indispensability) influences another (e.g., warmth, economic indispensability, correspondingly). We would assume these constructs to be interconnected via halo effects, representing an intrinsic challenge in the experimental manipulation of naturally correlated variables. Furthermore, we elected to manipulate the dimensions of social evaluations (Study 2) and identity indispensability (Study 3) by presenting participants with evaluations of groups of immigrants as conducted by either the general population or a select group of experts, respectively. Our consistent findings of effects suggest that this manipulation predictably influenced participants' evaluations of an otherwise unspecified group (that is, this information formed the sole basis of their judgment in the absence of pre-existing beliefs). However, the extent to which the manipulation of each manipulation altered perceptions of the groups may differ and warrants direct examination.

Participants' acculturation orientations were assessed using the conventional methodology prevalent in the field. However, a significant limitation inherent to this widely adopted approach is its failure to account for the extent of participants' actual knowledge about other cultures. Consequently, while acculturation orientations were evaluated across a range of standard domains, including tradition, values, and identity, the precise manner in which participants mentally represented the content within these domains remains unclear. Future research could therefore benefit from efforts to replicate our findings by employing

qualitative methods that incorporate open-ended questions, prompting participants to explicitly detail the specific aspects they adopt from other cultures. Alternatively, quantitative approaches could be devised to rigorously assess participants' knowledge of these cultural aspects as a potential moderator.

For readers who are more versed in the literature pertaining to intergroup contact than acculturation, the integration of a contact domain in the assessment of cultural adoption might appear unconventional. Nonetheless, it is important to recognize that intergroup contact has been a fundamental aspect of acculturation orientations since the inception of Berry's influential theoretical framework (1997). This dimension is a conventional component that acculturation orientation scales include. Moreover, in our research, the item related to contact exhibited consistent factorial alignment with the other cultural adoption items.

We demonstrated the predicted effects using both real groups (Study 1) and hypothetical groups (Studies 2 and 3). However, it is vital to note that the delineation of groups' warmth, competence, and morality in the latter two studies could potentially have primed participants to envision particular immigrant groups that align with these descriptions in their perceptions. In future research, the influence of such pre-existing biases could be limited by using fictional immigrant group names, although these may also make the design less credible.

Finally, it is important to note that intergroup perceptions can be conceptualized in many ways. For instance, a three-factorial model of intergroup perceptions that distinguishes between the factors of agency/socioeconomic success, conservative-progressive beliefs, and communion is well supported by bottom-up, data-driven studies (Koch et al., 2016).

Conclusion

The present research emphasizes the need for research on the acculturation of majority groups to move beyond the adoption of the culture of "immigrants" broadly. Our results

demonstrate that majority-group members are motivated to adopt the culture of immigrants differently based on how they perceive them in terms of warmth, competence, morality, and subsequently indispensability for the mainstream society's identity and economic functioning. This selective cultural adoption has important consequences for cultural dynamics and social equality in evolving culturally diverse societies.

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