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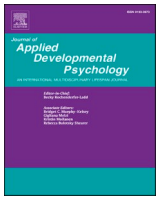

Direct and indirect intergroup contact are related to American children's attitudes about immigrant groups

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ABSTRACT

This study drew on intergroup contact theory to investigate relations between both direct and indirect intergroup contact with immigrants and self-identified American children's (ages: 8 to 12 years; $N = 379$, 53 % girls, 51 % white) attitudes and intended behavior towards immigrant peers, assessing the role of indirect contact in this context for the first time. Children who experienced more positive indirect contact (e.g., overheard conversations that made immigrants seem nice) liked immigrants more, felt closer to this perceived outgroup, and had stronger intentions to affiliate (e.g., play). Findings were consistent for indirect contact with immigrants from Mexico, China, or Egypt, and emerged over and above the positive effects of direct contact (e.g., classmates). The nature of children's indirect contact matters: positive exposure may positively predispose American children to accept and include immigrant peers, a behavior of increasing importance for the wellbeing of both groups in this increasingly diverse country.

Positive direct intergroup contact (e.g., friendships) can reduce prejudice and support intergroup inclusion (Tropp et al., 2022). However, children's immediate social environments vary in diversity and many children piece together their attitudes about outgroups based not on direct face-to-face interactions but on myriad forms of indirect third hand exposure to information or others' attitudes (Turner & Cameron, 2016). For instance, in many countries around the world, children whose friends are friends with immigrants and children who read books with positively portrayed immigrant characters report more positive attitudes about immigrants themselves than children who do not have these indirect contact experiences (Jones & Rutland, 2018). Although American children's *direct* contact with immigrants (e.g., as neighbors) is known to shape their views on peer social inclusion (Gönültaş & Mulvey, 2019), the effects of *indirect* intergroup contact (e.g., exposure through books, overheard conversations, posts online, etc.) on American children's attitudes about immigrants have not been assessed.

Understanding how direct *and* indirect intergroup processes shape U. S. children's attitudes about immigrants is important for two main reasons. Theoretically, the consistent associations between indirect contact and children's attitudes about immigrant groups in other countries raise the question of whether these effects also generalize to the U.S., and operate over-and-above the effects of direct intergroup contact on the same attitudes (Jones & Rutland, 2018). Practically, changing immigration patterns in the U.S. today mean that some American children have ample opportunities for face-to-face encounters with immigrant peers (e.g., at school), while others are likely forming views based on third hand exposure (e.g., social media) and only recently burgeoning opportunities to apply those views in direct interactions with immigrants in their communities as immigrants' destinations within the U.S. shift (Ward & Batalova, 2023). To begin to address these theoretical and practical questions, this study investigated how both direct *and* indirect intergroup contact with immigrants related to 8- to 12-year-old self-identified American children's attitudes and intended behaviors with immigrant peers.

Direct intergroup contact and American children's attitudes about immigrants

The U.S. is home to the largest immigrant population in the world; over 18 million children, 26 % of the child population, are immigrants or

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children of immigrants (Ward & Batalova, 2023). Yet, children's attitudes about immigrants have traditionally received less attention in the U.S. relative to other countries around the world. We do know that the national identity of American matters to American children by at least late childhood (Brown, 2011; Brown et al., 2017; Rodriguez et al., 2016). In fact, one recent study found that 90 % of a sample of 6- to 12-year-old U.S. children selected "American" as the group identity that was most important to their sense of self (Hazelbaker & Mistry, 2022).

We also know that native-born American children tend to view immigrants as outgroup members (Brown, 2011; Brown et al., 2017; DeJesus et al., 2018; Sierksma et al., 2022; Sodhi & Liberman, 2024). For instance, one study with a predominantly white sample of 5- to 11-year-old U.S. children found that participants considered themselves "very American" on average but considered Latino immigrants to be only "a little American" (Brown, 2011).

Finally, by late childhood, American children's intergroup attitudes about immigrants tend to center on either avoidance or dislike of differences in language, culture, and lifestyle (Brown et al., 2017; Brown & Lee, 2015). For instance, one study with a predominately white sample of U.S. 7- to 11-year-olds found that children perceived that immigrants looked different from Americans and liked different things than Americans liked (Brown & Lee, 2015).

Across many intergroup contexts, positive and constructive interactions between children and adolescents from different backgrounds, such as playing together or working on a project together, can reduce prejudice and anxiety about outgroups, particularly among those from more privileged social group backgrounds (Allport, 1954; Tropp et al., 2022). In the context of immigrant-national relations in the U.S. as well, native-born American children who experience more positive direct intergroup contact with immigrants tend to have more positive attitudes (e.g., lower prejudice) and behaviors (e.g., inclusion) with immigrant peers (Brown et al., 2017; Gönültaş & Mulvey, 2021; Hitti et al., 2023). For example, one recent study with a racially and ethnically diverse sample of 13- to 15-year-olds found that participants who had more direct contact with immigrants (e.g., as classmates) were more likely to say they would personally intervene to stop someone from bullying a Latine immigrant peer (Hitti et al., 2023).

Critically, immigrant children and adolescents fare better socially, emotionally, and academically when they are accepted and included (rather than excluded) by their peers (Suárez-Orozco et al., 2018). Overall, when it is positive and constructive, direct (in person) intergroup contact supports these positive intergroup attitudes and behaviors.

Does indirect intergroup contact inform American children's attitudes about immigrants?

A clear challenge in the U.S. and many other countries around the world today is that children's and adolescents' neighborhoods, schools, and other social environments vary in diversity, and not everyone has ample opportunities for face-to-face intergroup contact. In these cases, young people may form attitudes based on indirect intergroup contact, or third hand exposure to information or attitudes about an outgroup (White et al., 2021). There are many different forms of indirect contact (e.g., extended contact, vicarious contact, e-contact). When it is positive and constructive, indirect intergroup contact can also reduce prejudice and intergroup anxiety and increase inclusion intentions (e.g., wanting to befriend outgroup peers), particularly among children from more privileged social groups (Turner & Cameron, 2016).

In the specific intergroup context of immigration, evidence from Finland, Germany, Ireland, Italy, Norway, Sweden, and the U.K. indicates that, when children with these national identities experience indirect intergroup contact that frames immigrants to their countries in a positive light, they personally report more positive attitudes about immigrants themselves (Jones & Rutland, 2018). For example, in one study Italian 8- to 11-year-olds whose own best friends had befriended immigrant peers personally reported stronger interests in having immigrants as neighbors, classmates, and friends (Vezzali et al., 2017). In other words, Italian children in late childhood picked up positive attitudes towards immigrants third hand, by knowing about their ingroup best friends' cross-group friendships (i.e., extended contact; Zhou et al., 2019).

In addition to naturally occurring associations, indirect intergroup contact has also served as the basis for several short-term interventions. For example, in one study 5- to 11-year-old predominantly white British children who spent six weeks reading about positive friendships between refugee and white British peers subsequently felt closer to refugees (i.e., inclusion of the other in the self) and expressed stronger intentions to include refugee peers (e.g., invite them to their house) relative to a control group (Cameron et al., 2006). In other words, British youth in from early to late childhood picked up positive attitudes towards refugees third hand, by observing positive intergroup peer interactions (i.e., vicarious contact; Vezzali et al., 2014).

Potential implications of shifting direct and indirect contact with immigrants in the U.S.

Although not yet tested in the context of the U.S., this evidence from other countries suggests that more positive indirect intergroup contact (e.g., reading positive things in books or seeing positive things online) should likewise be beneficial for American children's attitudes and intended behaviors with their immigrant peers. Moreover, the role of indirect intergroup contact, in particular, for shaping American children's attitudes about immigrants may currently have increasingly impactful implications for youth from both backgrounds.

In past decades, immigration to the U.S. has been relatively regionally stratified, with over half of new immigrants settling in just four large coastal states (Budiman, 2020). This suggests that many American children and adolescents outside those regions have likely been forming their attitudes about immigrants based primarily on indirect intergroup contact experiences (in the absence of many local opportunities for direct contact). Yet, in the past several years immigrants' destinations have been shifting, generating relatively rapid increases in community diversity in some less traditional receiving regions of the country (Ward & Batalova, 2023). This means that many American youth who previously had little direct contact with immigrant peers may soon be able to translate their established attitudes into inclusive or exclusive behaviors during face-to-face interactions. In short, in light of these shifting demographic patterns, positive indirect intergroup contact may be able to "set the stage" for successful direct intergroup contact (Turner & Cameron, 2016), or discourage it, if the messages received third hand are hostile.

At the same time, researchers in this area have argued that indirect contact is not just a substitute for the "real thing" (i.e., direct, face-to-face contact); instead, indirect intergroup contact is an everyday part of people's lives and contributes to intergroup attitudes even when direct contact is high (White et al., 2021). For instance, an American child may have several immigrant friends from Mexico, but may also overhear others making disparaging remarks about this "outgroup" and these remarks may, in turn, alter their attitudes about future interactions (Patterson et al., 2019). Moreover, if they hear negative remarks from multiple sources (e.g., teachers, parents, media), the cumulative indirect contact exposure may be particularly negatively impactful on their attitudes. Or, more optimistically, observing even a few ingroup peers befriending new immigrant classmates may help a child feel open to trying the same themselves (Vezzali et al., 2017). Thus, even for American children in very diverse communities with high potential direct intergroup contact, indirect exposure likely still matters for intergroup attitudes and behavior.

The current study

Drawing on intergroup contact theory (Allport, 1954; Tropp et al., 2022), this study had two main aims. First, we investigated naturally occurring associations between 8- to 12-year-old self-identified American children's *direct* intergroup contact (e.g., classmates) and *indirect* intergroup contact (e.g., school materials) with immigrants and their attitudes and intended behaviors towards immigrant peers. There are well-established measures of direct intergroup contact in the literature (e.g., Crystal et al., 2008), including direct contact with immigrants (e.g., Gönültaş & Mulvey, 2021). Current measures of indirect intergroup contact, however, are quite diverse, as indirect contact itself has numerous forms and mediums and uses a wide variety of methodologies, from assessments of naturally occurring cross-group friendships (Zhou et al., 2019) to intervening on attitudes with videos depicting cross-group interactions (Vezzali et al., 2014) to experimentally manipulating overheard conversations about outgroups (Girouard-Hallam & Norris, 2024). In this study, we asked about indirect contact online, in books, in school lessons, and in overheard conversations, aiming for a breadth of potential indirect exposure opportunities relevant to late childhood including some of the more commonly researched forms (books and school lessons) and some of the less commonly considered forms (online exposure and overhearing conversations). Likewise, although the vast majority of studies on intergroup contact in childhood and adolescence focus on positive interactions, negative contact also happens and, at least for direct contact, is known to exacerbate intergroup hostilities among adults (Paolini et al., 2024). Thus, we assessed both the frequency (none to a lot) and the valence (negative to positive) of 8- to 12-year-old children's indirect intergroup contact. For our indices of attitudes and intended behaviors, we used three well-established measures that have been associated with direct and indirect contact experiences among children at this age in prior studies outside the U.S. (Jones & Rutland, 2018): social preferences, inclusion of the other in the self, and affiliation intentions.

Our second main aim was to explore if the strength of associations between intergroup contact and intergroup attitudes might differ or be comparable across three between-subjects conditions involving immigrants from Mexico, China, or Egypt. Immigrants to the U.S. are diverse, arriving from almost 200 countries of origin (Ward & Batalova, 2023). To select which immigrant groups would be most relevant to children, we focused on three distinct groups children might have varying degrees of exposure to. According to analyses of children's media (Terán & Conroy, 2024), beyond white (59.5 %) and Black (21.5 %) characters, the three most commonly represented ethnicities are Latinx (8.8 %), followed by Asian (5.9 %), followed by Middle Eastern/North African (3.4 %) characters. Among those three broad groups, Mexico sends the largest number of Latinx immigrants to the U.S. (nearly 11 million, or 23 % of total immigrants as this study was being conducted in 2023); China sends the largest number of Asian immigrants to the US (nearly three million, or 6 % of total immigrants, in 2023, considerably fewer than from Mexico); and Egypt sends the largest number of Middle Eastern/North African immigrants (far fewer than from Mexico or China, at about 225,000, or 0.5 %, in 2023) (Ward & Batalova, 2023). Thus, Mexico, China, and Egypt were selected as the three immigrant countries of origin for this study, because they would be (a) reasonably recognizable to children in middle childhood but (b) different in the likelihood of direct and indirect contact. These three between-subjects conditions allowed us to test whether associations between contact and attitudes might be stronger or weaker for more or less familiar immigrant groups. In other words, we expected the same basic pattern of results to generalize across conditions: more contact would be associated with more positive attitudes and behaviors. Yet, including three between-subjects groups –immigrants from Mexico, China, and Egypt– allowed us to test whether those associations were stronger for groups with which participants were (likely) more familiar. Even if we did not find condition differences, including three immigrant groups would still provide useful information about generalizability, i.e., associations between contact and attitudes are *not* unique to immigrants of one specific national background.

Developmental considerations

Intergroup contact is relevant across the lifespan, however, we focused on late childhood (ages 8 to 12 years) specifically for this study because meta-analytic evidence suggests that the effects of both direct and indirect intergroup contact on attitudes and behavior may be most impactful during this period (Beelmann & Heinemann, 2014). As detailed above, by late childhood, children have clearly identified most of their ingroups and outgroups, including national ingroups and outgroups (Barrett & Oppenheimer, 2011), and they are increasingly selective about the peers with whom they spend their time (Ellis & Zarbatany, 2017). However, older children's intergroup attitudes, including attitudes about immigrants, are still fluctuating and not as fully differentiated as they become later in adolescence (Crocetti et al., 2021). Therefore, the current study centered on 8- to 12-year-olds, given that this is a key developmental period for the formation of intergroup attitudes. The goal was not to track developmental changes, but rather to experimentally focus on one critical period in the development of intergroup attitudes.

Hypotheses

We expected that American children with more positive *direct* intergroup contact with immigrants (e.g., friendships) would report stronger social preferences for immigrants (e.g., like them more), feelings of closeness with immigrants, and intentions to affiliate with immigrants (e.g., play or hang out). Over and above the effects of direct intergroup contact, we also expected that American children with more *positive indirect* intergroup contact with immigrants (e.g., read things that made immigrants seem nice) would also report stronger social preferences, feelings of similarity, and intentions to affiliate with immigrants. We explored whether or not the strength of observed relations further differed when participants had, on average, some, a little, or almost no direct contact with the immigrant group in question (i.e., from Mexico, China, or Egypt).

Method

Participants

A priori power analyses in G*Power (Faul et al., 2009) based on the most complex models described in the Analysis Plan below indicated that a sample size of approximately 360 participants would be necessary to detect medium effects ($\eta_p^2 = 0.06$) with α at 0.05 and power at 0.80. We recruited and tested participants at 23 community sites in Indiana and North Carolina between the summer of 2023 and spring of 2024: community centers ($n = 8$), after-school programs and classes ($n = 7$), public parks and markets ($n = 3$), museums ($n = 3$), and libraries ($n = 2$). We described the study topic as "how American kids think about kids from immigrant backgrounds." We initially enrolled 392 participants, and later excluded 13 due to excessive inattentiveness or parental interference.

The final analytic sample was $N = 379$ children ages 8 to 12 years, including 53 % girls, 51 % white, 69 % third-generation+, and subjective social status (SSS) $M = 6.92$. Table 1 provides complete sample demographics. Age, gender, race or ethnicity, generational status, and SSS are by child report; education and income are by parent report.

Procedure

The study was approved by the Institutional Review Board at Purdue University, study ID 2023–242, with a reliance agreement in place at

Table 1
Sample Demographics.

	n	Proportion		*n*	Proportion
Child Age in Years			Parent Educational Attainment		
8	115	0.30	Some high school	9	0.02
9	109	0.29	High school degree or equivalent	46	0.12
10	68	0.18	Some college	39	0.10
11	58	0.15	Technical or vocational degree	12	0.03
12	23	0.06	Two-year college or associates degree	41	0.11
Not specified	6	0.01	Four-year college or bachelors degree	104	0.27
Child Gender			Masters degree	68	0.18
Girl	199	0.53	Doctorate degree	23	0.06
Boy	164	0.43	Not specified	37	0.10
Non-binary	4	0.01	Family Annual Income		
Another identity	6	0.01	< $15 K	14	0.04
Not specified	6	0.01	$15 K – $25 K	16	0.04
Child Race or Ethnicity			$25 K – $50 K	57	0.15
Black	51	0.14	$50 K – $75 K	41	0.11
White	180	0.48	$75 K – $100 K	48	0.13
Asian	15	0.04	$100 K – $150 K	63	0.17
Latino/ Hispanic	22	0.06	$150 – $200 K	48	0.13
Indigenous	2	0.00	$200 K – $250 K	17	0.04
Middle Eastern	6	0.01	$250 K – $500 K	18	0.04
Multiracial/ Multiethnic	42	0.11	> $500 K	5	0.01
Another identity	32	0.08	Not specified	52	0.14
Not specified	29	0.08			
Child Generational Status					
First-generation	26	0.07			
Second-generation	52	0.14			
Third-generation +	260	0.69			
Not specified	40	0.10			
Child Subjective Social Status					
1	2	0.00			
3	1	0.00			
4	17	0.05			
5	66	0.17			
6	73	0.19			
7	82	0.22			
8	57	0.15			
9	33	0.09			
10	40	0.11			
Not specified	8	0.02			

Note. Data collection locations: Indiana $n = 274$, North Carolina $n = 105$.

North Carolina State University, and conducted in accordance with the ethical principles of the American Psychological Association. The research team obtained active parent consent and child assent for all participants, at the community site locations, prior to testing/data collection. Participants took an average of 20 min to complete the measures below using iPads, with assistance from members of the research team. All measures were presented in a random order. Each participant received a small toy in compensation.

Introduction

After a brief warm-up chat with a member of the research team, participants were asked: "What do you think it means to be an immigrant?" to start the study. The introduction then proceeded with a simple definition: "Immigrants are people who were born in one country and then moved to another country and live there now. So immigrants to the US were born in another country but moved to the US and live here now. Sometimes people immigrate to the US when they are adults, and other times kids immigrate, usually with their family."

Then, participants were randomly assigned to a between-subjects condition and the research team member told them that they would be talking "about kids who were born in [Mexico or China or Egypt] but now live in the US. When they were little, these kids lived in [Mexico or China or Egypt], but then they immigrated with their families and they live in the US now." A between-subjects design was chosen to reduce fatigue on children and to reduce carryover effects. An illustration accompanied this introduction and all subsequent measures; illustrations are available on OSF: https://osf.io/mx54z/

Measures

All measures are summarized below, and complete details are available on OSF: https://osf.io/mx54z/

Intergroup contact

Direct intergroup contact frequency. Children completed six items measuring direct contact at school, in the neighborhood, and friendships, from 0 = *none* to 3 = *a lot*; e.g., "How many students in your school are from [Mexico or China or Egypt] but now live in the US?" (Gönültaş & Mulvey, 2021). Across six items, $\alpha = 0.69$, $\omega = 0.71$, and inter-item correlations from $r = 0.21$ to $r = 0.51$, all $ps < 0.01$. We created a sum score for analyses ranging from 0 to 18.

Additionally, we tested for measurement invariance across the three conditions (direct contact with immigrants from Mexico, China, or Egypt) using a multi-group CFA. In these tests, the configural model allows factor loadings and intercepts to vary across conditions (χ^2 (27) = 49.36, $p = .005$), the metric model constrains loadings to be equal across conditions (χ^2 (37) = 58.82, $p = .01$), and the scalar model constrains both loadings and intercepts to be equal across conditions (χ^2 (47) = 69.70, $p = .02$). Both factor loadings (metric vs. configural, χ^2 (10) = 9.46, $p = .49$) and intercepts (scalar vs. metric, $\chi 2$ (10) = 10.88, $p = .37$) were equivalent, indicating that direct contact with immigrants was measured comparably across conditions.

Indirect intergroup contact frequency. Children completed four items measuring indirect contact online, in books, in school lessons, and overheard conversations, from 0 = *never* to 3 = *often*; e.g., "When you're online, how often do you see things about kids who are from [Mexico or China or Egypt] but now live in the US?" Across four items, $\alpha = 0.59$, $\omega = 0.59$, and inter-item correlations from $r = 0.20$ to $r = 0.33$, all $ps < 0.001$. We created a sum score for analyses ranging from 0 to 12.

Additionally, we used the same approach as above to test for measurement invariance; configural: χ^2 (36) = 2.95, $p = .82$; metric: χ^2 (30) = 3.86, $p = .99$; scalar: χ^2 (24) = 20.63, $p = .29$. For indirect intergroup contact frequency, factor loadings were equivalent across conditions (metric vs. configural: χ^2 (6) = 0.91, $p = .99$) but intercepts were not (scalar vs. metric: χ^2 (6) = 16.78, $p = .01$).

Indirect intergroup contact valence. Children completed four items measuring the valence of indirect contact as above, from −1 = *mean* to 2 = *really nice*; e.g., "When you read books with characters who are from [Mexico or China or Egypt] who now live in the US, what are those characters like?" Across four items, $\alpha = 0.35$, $\omega = 0.44$, and inter-item

correlations from $r = -0.04$ to $r = 0.27$, all $ps < 0.05$ for online, books, and conversations, but valence for school lessons was not significantly corelated with any of the other items. We created a sum score for analyses ranging from −4 to 8.

Finally, we tested for measurement invariance; configural (χ^2 (36) = 5.50, $p = .48$); metric (χ^2 (30) = 20.88, $p = .05$); scalar (χ^2 (24) = 32.45, $p = .02$). For indirect intergroup contact valence, factor loadings were not equivalent across conditions (metric vs. configural: χ^2 (6) = 15.37, $p = .02$) but intercepts were (scalar vs. metric: χ^2 (6) = 11.57, $p = .07$).

Notably, the reliability indices for indirect intergroup contact frequency and valence were low, and strict invariance across conditions was not achieved. This may be interpreted in light of children reporting different frequencies of exposure (never to often) and different valences (mean to really nice) from different sources of indirect intergroup contact (online, books, school, and conversations) with different immigrant groups (from Mexico, China, or Egypt). With this in mind, our sum score approach generated cumulative indices of indirect intergroup contact frequency and the negative, neutral, or positive valence of these messages. Although reliability indices and invariance testing for direct contact with the same immigrant groups were acceptable, for analyses, we opted to use a sum score approach with this measure as well for consistency across our direct and indirect intergroup contact measures. We weigh the strengths and limitations of this sum score approach, and the implications for future research on self-reported indirect intergroup contact in particular, in the Discussion.

Attitudes and intended behaviors

Social preference. Children responded to three items, from 1 = *really don't like* to 5 = *really like*; e.g., "How much do you like kids who are from [Mexico or China or Egypt] and now live in the US?" (Brown, 2011). Across three items, α = 0.72, ω = 0.73, and inter-item correlations from $r = 0.52$ to $r = 0.42$, all $ps < 0.001$. We created an average score for analyses ranging from 1 to 5.

Inclusion of the other in the self. Children responded to a single item, "How close do you feel to kids from [Mexico or China or Egypt] who now live in the US?" from 1 = no overlap to 5 = *complete overlap* (Vezzali et al., 2012).

Affiliation intentions. Children responded to four items measuring affiliation from casual (e.g., "say hello") to more intimate ("invite them to your house"), from 1 = *really don't want to* to 5 = *really want to*; e.g., "Imagine you're at the park one day and you meet another kid who has just moved to your town from [Mexico or China or Egypt]. How much would you want to play or hang out with them?" (Cameron et al., 2006). Across four items, α = 0.78, ω = 0.78, and inter-item correlations from $r = 0.54$ to $r = 0.43$, all $ps < 0.001$. We created an average score for analyses ranging from 1 to 5.

Additional information

American identification. Children answered four items, from 1 = *not at all* to 4 = *very*; e.g., "How important is it to you that you're American?" (Barrett & Oppenheimer, 2011). Across four items, α = 0.80, ω = 0.80, and inter-item correlations from $r = 0.63$ to $r = 0.40$, all $ps < 0.001$. We created an average ranging from 1 to 4.

Immigrants as an outgroup. Children answered a single item, "In your opinion, how American are people who were born in [Mexico or China or Egypt] but now live in the US?" from 1 = *not at all* to 4 = *very* (Brown, 2011).

Indirect intergroup contact trust. Children answered four items measuring how much they believed their indirect contact as above, from 1 = *not at all* to 4 = *completely*; e.g., "How much do you believe the things you hear people say about people from [Mexico or China or Egypt] who now live in the U.S.?" Across four items, α = 0.35, ω = 0.32, and inter-item correlations from $r = 0.02$ to $r = 0.24$, *ps* from 0.75 to <0.001 We created an average score ranging from 1 to 4.

Analysis plan

We used generalized linear models to test the effects of direct and indirect intergroup contact on attitudes and intended behavior as potentially moderated by between-subjects condition. For each of the three models below (social preferences, inclusion of the other in the self, and affiliation intentions), we proceeded in five steps. Step 1: we included all demographic covariates. Step 2: we added an effect for between-subjects condition (immigrants from Mexico, China, or Egypt). Step 3: we added effects for direct intergroup contact frequency and its interaction with condition. Step 4: we added effects for indirect intergroup contact frequency and its interaction with condition. Step 5: we added effects for indirect intergroup contact valence and its interaction with condition.

Missing data were rare; < 1 % for social preferences, inclusion of the other in the self, and affiliation intentions. For all models, likelihood ratio (LR) $\chi 2$ tests are indices of model fit, standard errors (SEs) and 95 % confidence intervals (CIs) are indices of point estimate precision, and η_p^2 are indices of effect size. All follow-up comparisons were conducted with Bonferroni correction for multiple comparisons. Analyses were conducted in IBM SPSS 28.

Transparency and openness

We report how we determined our sample size (power analyses, above), all data exclusions (participants section, above), and we follow APA JARS. We do not have permission to share the data from this study, but we have provided extensive descriptives for all measures and all study stimuli and measures are available on OSF: https://osf.io/mx54z/ This study design and analyses were not preregistered.

Results

Descriptives

As outlined in Table 2, on average, participants reported relatively low frequencies of direct intergroup contact, moderate frequencies of indirect intergroup contact, and the valence of that indirect intergroup contact was neutral. As anticipated, participants in the Mexico condition reported more frequent direct intergroup contact ($M = 4.98$, $SE = 0.31$) than participants in the China condition ($M = 3.79$, $SE = 0.30$) who, in turn, reported more frequent direct contact than participants in the Egypt condition ($M = 2.54$, $SE = 0.28$), $F(2, 371) = 17.06$, $p < .001$, $\eta_p^2 = 0.08$. Similarly, participants in the Mexico condition reported more frequent indirect intergroup contact ($M = 5.27$, $SE = 0.24$) than participants in the Egypt condition ($M = 4.18$, $SE = 0.22$), with participants in the China condition falling in between ($M = 4.54$, $SE = 0.23$), $F(2, 372) = 5.80$, $p = .003$, $\eta_p^2 = 03$. Indirect intergroup contact valence did not differ significantly across conditions, $M = 2.44$, $SE = 0.10$, $F(2, 345) = 3.22$, $p = .31$, $\eta_p^2 = 01$. Although direct and indirect contact frequency were positively associated, neither was associated with child age; that is, children who had more direct interactions with immigrants (e.g., at school) also had more indirect exposure (e.g., saw more about immigrants online), but neither experience was more or less common for older or younger children in this sample.

Overall social preferences were relatively positive, inclusion of the other in the self indicated about half/partial closeness with immigrants, and affiliation intentions were relatively positive; see Table 2. Neither social preferences nor affiliation intentions differed significantly across conditions; $F(2, 374) = 0.19$, $p = .83$, $\eta_p^2 = 0.00$ and $M = 3.90$, $SE = 0.04$,

Table 2
Descriptives and correlations for all model variables.

	M	*SD*	Min	Max	Age	Gender	Race Ethnicity	Gen Status	SSS	Location	Cond = Mexico	Cond = China	Cond = Egypt	Direct Contact Frequency	Indirect Contact Frequency	Indirect Contact Valence	Social Preference	Inclusion of Other in Self
Age	9.37	1.24	8	12														
Gender	0.44	0.50	0	1	0.06													
Race Ethnicity	0.51	0.50	0	1	0.00	0.04												
Gen Status	0.77	0.42	0	1	−0.07	0.00	0.36**											
SSS	6.92	1.74	1	10	−0.12*	−0.11*	−0.04	−0.02										
Location	0.72	0.45	0	1	−0.06	−0.04	−0.10	0.00	0.05									
Cond = Mexico	0.31	0.47	0	1	−0.02	0.03	0.11	−0.05	0.10	0.00								
Cond = China	0.32	0.47	0	1	−0.01	−0.03	−0.15**	−0.11*	0.11*	−0.03	−0.47*							
Cond = Egypt	0.36	0.48	0	1	0.03	0.00	0.04	0.16**	−0.20**	0.03	−0.51**	−0.52**						
Direct Contact Frequency	3.71	3.47	0	16	0.04	−0.03	−0.08	−0.06	0.17**	0.06	0.25**	0.02	−0.26**					
Indirect Contact Frequency	4.64	2.58	0	12	0.09	−0.06	−0.06	0.02	0.12*	0.05	0.16**	−0.03	−0.13*	0.47**				
Indirect Contact Valence	2.44	1.80	−2	8	0.04	−0.02	0.00	0.00	0.07	0.00	0.08	−0.05	−0.03	0.27**	0.44**			
Social Preference	4.10	0.69	1	5	0.10*	−0.04	0.05	0.07	−0.11*	−0.07	0.03	−0.02	−0.01	0.12*	0.10	0.32**		
Inclusion of Other in Self	3.19	1.23	1	5	0.03	0.01	−0.06	−0.11*	0.08	0.06	0.03	0.14**	−0.16**	0.20**	0.19**	0.28**	0.26**	
Affiliation Intentions	3.91	0.75	1	5	−0.09	−0.03	−0.02	0.06	−0.05	0.02	−0.01	−0.05	0.05	0.11*	0.04	0.36**	0.59**	0.27**

Note. Gender 1 = boy, 0 = any other identity; Race Ethnicity 1 = white, 0 = any other identity; Generational Status 1 = third-gen+, 0 = first or second gen; SSS = subjective social status; Location 1 = IN, 0 = NC.

$F(2, 372) = 0.57$, $p = .57$, $\eta_p^2 = 0.00$, respectively. Participants in the China condition reported higher inclusion of the other in the self ($M = 3.43$, $SE = 0.11$) than participants in the Egypt condition ($M = 2.93$, $SE = 0.10$), with participants in the Mexico condition falling in between ($M = 3.24$, $SE = 0.11$), $F(2, 373) = 5.78$, $p = .003$, $\eta_p^2 = 0.03$. Importantly, both direct intergroup contact frequency and indirect intergroup contact valence were positively correlated with social preferences, inclusion of the other in the self, and affiliation intentions, see Table 2.

Additionally, participants identified as "pretty American" on average, $M = 3.25$, $SD = 0.70$, and saw immigrants as "a little American," $M = 2.70$, $SD = 0.76$, confirming that the sample perceived this expected ingroup/outgroup distinction. Overall, participants "mostly" believed what they learned indirectly about immigrants, $M = 2.54$, $SD = 0.63$, offering some initial evidence that this indirect exposure should matter for their attitudes about immigrant groups.

Main analyses: social preferences, inclusion of the other in the self, and affiliation intentions

As detailed in Tables 3, 4, and 5, participants who reported more frequent *direct* intergroup contact with immigrant groups had stronger social preferences for those groups, felt closer to those groups, and had stronger intentions to affiliate with those groups; see Fig. 1.

Although indirect intergroup contact frequency was not a significant predictor of any intergroup attitudes over and above the effects of direct contact, the *valence* of indirect contact did matter. As anticipated, participants who reported more positive indirect intergroup contact with immigrant groups also had stronger social preferences for those groups, felt closer to those groups, and had stronger intentions to affiliate with those groups; see Fig. 2.

Condition was not a significant moderator in any models; see Tables 3, 4, and 5. That is, relations between intergroup contact experiences and attitudes and intended behavior were comparable regardless of whether the immigrant group in question was from Mexico, China, or Egypt.

No demographic covariates were significant in any models. These included child age (8 to 12 years), gender (where 1 = boys and 0 = any other identity), race or ethnicity (where 1 = white and 0 = any other identity), generational status (where 1 = third-generation and beyond and 0 = first or second generation), SSS (1 to 10 scale), and data collection location (where 1 = IN and 0 = NC).

Finally, to inform future work in this area, the Supplementary Materials contain the results of two alternative modeling approaches: the same models run separately for each of the three conditions (Mexico, China, Egypt) and the same models run separately for each source of indirect intergroup contact (online, books, school, conversations).

Table 3
Results for Social Preference.

	b (SE)	[95 % CI]	*p*	η_p^2	LR $\chi 2$, *p*
Step 1					10.91 (6), $p = .09$
Age	0.05 (0.03)	[−0.02, 0.11]	0.17	0.01	
Gender	−0.09 (0.08)	[−0.25, 0.07]	0.25	0.00	
Race Ethnicity	0.03 (0.08)	[−0.14, 0.20]	0.74	0.00	
Generational Status	0.10 (0.10)	[−0.10, 0.30]	0.33	0.00	
SSS	−0.04 (0.02)	[−0.08, 0.01]	0.11	0.01	
Location	−0.16 (0.09)	[−0.33, 0.02]	0.08	0.01	
Step 2					12.34 (8), $p = .14$
Condition (Mexico, China, Egypt)	0.12 (0.10)	[−0.08, 0.32]	0.24	0.01	
Step 3					26.73 (11), $p = .005$
Direct Contact Frequency	0.07 (0.02)	[0.03, 0.11]	< 0.001	0.02	
Direct Contact Frequency x Condition	0.06 (0.03)	[0.00, 0.12]	0.06	0.01	
Step 4					28.73 (14), $p = .01$
Indirect Contact Frequency	0.00 (0.03)	[−0.07, 0.07]	0.99	0.00	
Indirect Contact Frequency x Condition	−0.04 (0.04)	[−0.13, 0.05]	0.36	0.01	
Step 5					68.88 (17), $p < .001$
Indirect Contact Valence	0.15 (0.04)	[0.06, 0.23]	< 0.001	0.13	
Indirect Contact Valence x Condition	−0.01 (0.06)	[−0.13, 0.11]	0.89	0.00	

Note. Gender 1 = boy, 0 = any other identity; Race Ethnicity 1 = white, 0 = any other identity; Generational Status 1 = third-gen+, 0 = first or second gen; SSS = subjective social status; Location 1 = IN, 0 = NC.

Table 4
Results for Inclusion of the Other in the Self.

	b (SE)	[95 % CI]	*p*	η_p^2	LR $\chi 2$, *p*
Step 1					7.03 (6), $p = .32$
Age	0.03 (0.06)	[−0.08, 0.14]	0.55	0.00	
Gender	0.11 (0.14)	[−0.16, 0.38]	0.44	0.00	
Race Ethnicity	−0.04 (0.15)	[−0.33, 0.26]	0.79	0.00	
Generational Status	−0.27 (0.18)	[−0.61, 0.08]	0.13	0.01	
SSS	0.06 (0.04)	[−0.02, 0.14]	0.12	0.01	
Location	0.12 (0.16)	[−0.19, 0.42]	0.47	0.00	
Step 2					15.41 (8), $p = .05$
Condition (Mexico, China, Egypt)	0.32 (0.17)	[−0.02, 0.66]	0.07	0.03	
Step 3					36.98 (11), $p < .001$
Direct Contact Frequency	0.14 (0.03)	[0.07, 0.21]	<0.001	0.05	
Direct Contact Frequency x Condition	0.05 (0.05)	[−0.06, 0.15]	0.39	0.02	
Step 4					43.46 (14), $p < .001$
Indirect Contact Frequency	0.11 (0.06)	[0.00, 0.22]	0.05	0.01	
Indirect Contact Frequency x Condition	0.03 (0.08)	[−0.02, 0.18]	0.10	0.01	
Step 5					61.83 (17), $p < .001$
Indirect Contact Valence	0.17 (0.08)	[0.02, 0.31]	0.03	0.06	
Indirect Contact Valence x Condition	−0.04 (0.11)	[−0.25, 0.17]	0.73	0.01	

Note. Gender 1 = boy, 0 = any other identity; Race Ethnicity 1 = white, 0 = any other identity; Generational Status 1 = third-gen+, 0 = first or second gen; SSS = subjective social status; Location 1 = IN, 0 = NC.

Table 5
Results for Affiliation Intentions.

	b (SE)	[95 % CI]	*p*	η_p^2	LR $\chi 2$, *p*
Step 1					7.60 (6), *p* = .27
Age	−0.06 (0.03)	[−0.12, 0.10]	0.10	0.01	
Gender	−0.06 (0.08)	[−0.22, 0.11]	0.52	0.00	
Race Ethnicity	−0.08 (0.09)	[−0.26, 0.10]	0.38	0.00	
Generational Status	0.12 (0.11)	[0.09, 0.33]	0.26	0.00	
SSS	−0.04 (0.02)	[−0.09, 0.01]	0.08	0.01	
Location	−0.06 (0.09)	[−0.24, 0.13]	0.56	0.00	
Step 2					8.03 (8), *p* = .43
Condition (Mexico, China, Egypt)	−0.04 (0.11)	[−0.24, 0.17]	0.73	0.00	
Step 3					17.82 (11), *p* = .09
Direct Contact Frequency	0.06 (0.02)	[0.02, 0.10]	0.004	0.02	
Direct Contact Frequency x Condition	0.03 (0.03)	[−0.03, 0.09]	0.42	0.01	
Step 4					22.14 (14), *p* = .08
Indirect Contact Frequency	−0.05 (0.04)	[−0.12, 0.02]	0.18	0.00	
Indirect Contact Frequency x Condition	−0.09 (0.05)	[−0.19, 0.00]	0.05	0.01	
Step 5					78.56 (17), *p* < .001
Indirect Contact Valence	0.19 (0.04)	[0.11, 0.28]	< 0.001	0.17	
Indirect Contact Valence x Condition	0.02 (0.06)	[−0.10, 0.15]	0.72	0.00	

Note. Gender 1 = boy, 0 = any other identity; Race Ethnicity 1 = white, 0 = any other identity; Generational Status 1 = third-gen+, 0 = first or second gen; SSS = subjective social status; Location 1 = IN, 0 = NC.

Discussion

This study drew on intergroup contact theory to investigate relations between both direct and indirect contact with immigrants and 8- to 12-year-old self-identified American children's attitudes and intended behavior towards immigrant peers, testing the role of indirect intergroup contact in this context for the first time. As expected, children who experienced more frequent *direct* intergroup contact with immigrants (e.g., as friends) reported more positive attitudes and intended behaviors towards immigrants. Importantly, over and above the effects of direct contact, children who experienced more *positive indirect* contact with immigrants (e.g., heard things that made them seem nice) also had stronger social preferences for immigrants (e.g., liked them more), felt closer to this perceived outgroup (i.e., more inclusion of the other in the self), and had stronger intentions to affiliate with them (e.g., play or hang out). These associations were consistent for attitudes and intended behavior with immigrants from Mexico, China, and Egypt, even though children had, on average, more frequent direct and indirect intergroup contact with some of those groups than with others. Overall, the most important conclusion from this study is that indirect intergroup contact matters, even above and beyond direct contact, and can positively inform American children's views about immigrants in late childhood.

The findings of the current study are theoretically consistent with findings from other countries (Jones & Rutland, 2018). The results are also practically useful: although many American children currently rely on indirect intergroup contact to form their views about immigrants, as immigration destinations change, these children will likely have increasing opportunities to put those attitudes into in-person action with immigrant peers in their schools, neighborhoods, and communities (Ward & Batalova, 2023).

Notably, these positive effects of indirect intergroup contact on 8- to 12-year-old children's attitudes and intended behavior emerged in a sample that identified as "pretty American" and reported low rates of direct intergroup contact with immigrants. In fact, even children reporting on contact with immigrants from Mexico (who had the highest rates on average) were far from the scale maximum ($M = 4.98$ on a 0 to 18 scale). Also notably, across all three conditions, children on average reported relatively neutral indirect intergroup contact with immigrant groups, with a wide standard deviation ($M = 2.44$ and $SD = 1.80$ on a scale from −4 to 8). That is, the things that children saw or heard tended to portray immigrants as neither very "nice" nor very "mean" across the sample overall, but some children were exposed to more "nice" things while other children were exposed to more "mean" things. Finally, across the board, participants generally believed what they saw or heard about immigrants from Mexico, China, or Egypt.

Thus, in theory, the effects of indirect intergroup contact could have been either harmful or beneficial for intergroup attitudes in this sample of older American children. In practice, children's indirect intergroup contact experiences tended to be associated with either neutral or positive views: children with more negative/neutral indirect contact experiences generally liked immigrants, felt somewhat close to them, and maybe wanted to affiliate with them (i.e., relatively neutral views), and children with more positive/neutral indirect contact experiences clearly liked immigrants, felt more close than distant from them, and wanted to affiliate with them (i.e., relatively positive views).

The results of this study are cautiously encouraging for the future of intergroup relations between American and new immigrant children. As it does for their peers in several other countries (Jones & Rutland, 2018), indirect intergroup contact can support positive intergroup interactions in late childhood for children in the U.S. as well. The findings from this study also underscore a broader conceptual point from intergroup contact theory concerning the nature of contact experiences. Specifically, previous research has shown that direct intergroup contact is most successful at reducing prejudice and improving intergroup behavior when both of the groups involved engage with each other cooperatively, view each other as having equal status, pursue shared goals, and have support from authority figures (Allport, 1954; Tropp et al., 2022). In other words, children's intergroup interactions, however frequent, will not change attitudes unless they clearly and genuinely convey positivity, trust, and respect. Similarly, in this study, it was not the frequency of children's indirect intergroup contact (e.g., how often they learned about immigrants from Mexico, China, or Egypt in school) but the *valence* of that indirect contact –positive or negative– that mattered for children's attitudes and intended behavior towards immigrants from those countries.

Applied implications

For caregivers, educators, and others, the practical implications of these findings are twofold. First, indirect intergroup contact can often "set the stage" for successful direct intergroup contact by preparing both groups, and particularly the more privileged group, with positive expectations, emotions, and norms going in to face-to-face encounters (Turner & Cameron, 2016). Given that traditional immigration patterns in the U.S. are shifting, bringing more immigrants to regions of the country where their peers may be less accustomed to this type of intergroup contact (Ward & Batalova, 2023), the results of this study likewise suggest that positive prior indirect contact experiences may help facilitate positive direct contact experiences if opportunities arise as American children meet new immigrant peers in their schools,

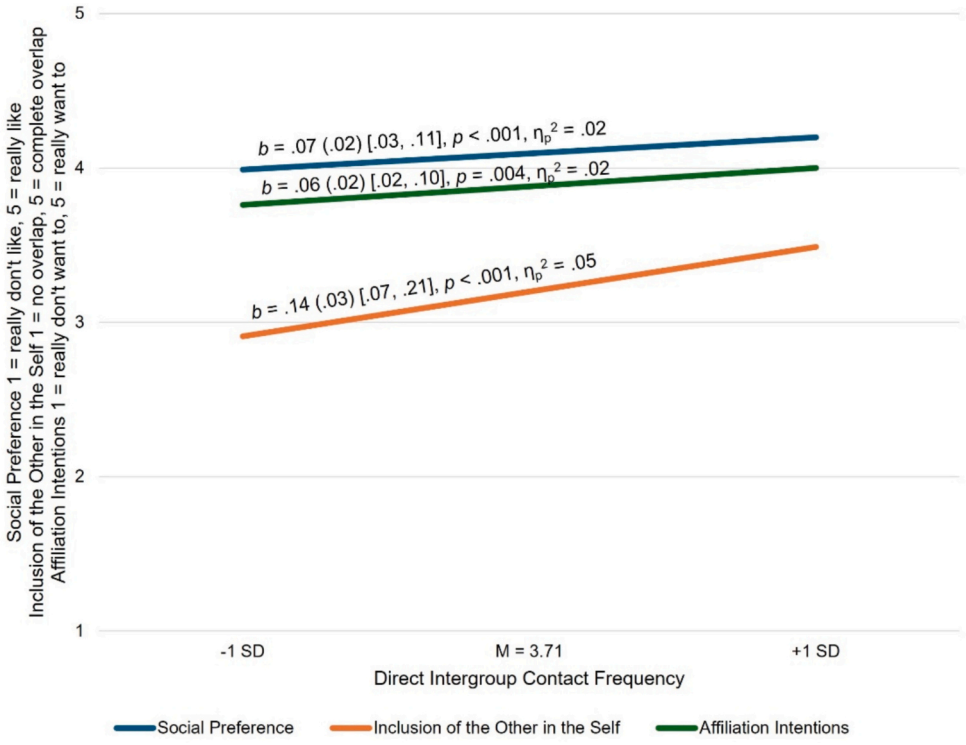

Fig. 1. Direct Intergroup Contact Frequency and Three Intergroup Attitudes and Intended Behaviors.

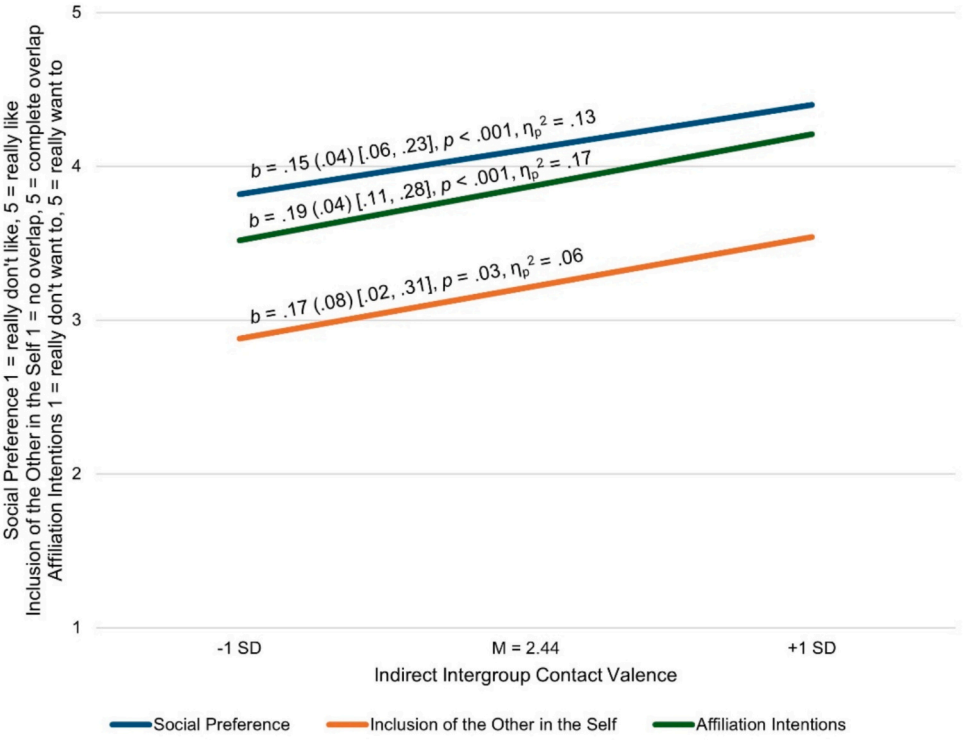

Fig. 2. Indirect Intergroup Contact Valence and Three Intergroup Attitudes and Intended Behaviors.

neighborhoods, and communities.

Second, this study found positive effects for indirect contact in late childhood over and above the role of direct contact. That is, even when 8- to 12-year-old children had direct experiences (e.g., classmates) with immigrants from Mexico, China, or Egypt, they still evidenced stronger social preferences, closeness, and affiliation intentions when they reported positive indirect exposure (e.g., online) as well. This suggests that indirect contact can operate not only as a primer for future direct interactions, it also has the potential to improve intergroup relations in its own right (White et al., 2021). For children in areas of the U.S. with more opportunities for direct contact with immigrants, third hand exposure that frames this "outgroup" in a positive light (e.g., shows that

other Americans also enjoy spending time with immigrant neighbors) likely still makes a difference for peer social inclusion. Thus, policies that encourage indirect contact (such as having books featuring positive contact with immigrants in the libraries or including opportunities for students to discuss their experiences with immigrant peers in the classroom) can be leveraged to improve intergroup relations at key developmental periods including late childhood (McKeown et al., 2025).

Limitations and future directions

Building on the point above, future studies of direct and indirect intergroup contact may benefit from a more fine-grained assessment of the extent to which these experiences reflect (or do not reflect) the four optimal conditions for direct intergroup contact, i.e., cooperation, equal status, shared goals, and authority support, both in late childhood and beyond. Short-term interventions employing indirect intergroup contact opportunities, usually via vicarious contact, have often leveraged these conditions to increase effectiveness, for instance by making sure that the stories about intergroup friendships that children read during an intervention convey these points (Turner & Cameron, 2016). However, few studies of naturally occurring direct or indirect intergroup contact have taken this step to disentangle frequency and valence that would help to pinpoint exactly how, or under what conditions, both forms (but especially indirect) intergroup contact are most effective at promoting positive attitudes and intended behaviors.

On a related note, future studies may benefit from assessing the joint and separate effects of different sources of indirect intergroup contact on children's intergroup attitudes. The current study assessed indirect contact with immigrants online, in books, at school, and overheard conversations, and our sum score approach was effective at generating a holistic approximation of the negative, neutral, or positive valence of these indirect messages in late childhood. However, indices of reliability indicated low internal consistency for intergroup contact valence in particular (see the Method section), and although the valence scores for most sources (online, books, and conversations) were positively correlated with each other, the valence of messages from school lessons was uncorrelated with the other items in the measure. Considered together with the stronger α, ω, and *rs* for indirect contact frequency (how often), these discrepancies for indirect contact valence (how mean/nice) suggest that there may be important within-child variability in the valence of indirect intergroup contact from different sources, with some sources conveying more positive or more negative messages than other sources. This point is further explored in the Supplementary Materials for this paper.

Disentangling source (e.g., social media, children's literature, formal lessons, overheard conversations), frequency (e.g., never exposed to very frequently exposed), and valence (e.g., very hostile to very positive) of indirect intergroup contact is both a methodological and a conceptual question. Traditionally, indirect intergroup contact research has assessed some forms as naturally occurring, for instance, extended contact entails personally observing actual ingroup members' cross-group friendships (Zhou et al., 2019). In contrast, other forms have more often been used as a means of intervening on attitudes, for instance, vicarious contact usually entails exposure to researcher-designed fictional positive cross-group interactions in books or videos (Vezzali et al., 2014). Other forms of indirect contact, such as overhearing others' conversations about outgroups are more rarely assessed (Girouard-Hallam & Norris, 2024).

Our measures for the current study are a good first step, demonstrating the cumulative effects of multiple indirect messages on American 8- to 12-year-old children's attitudes about immigrants. However, given the range of possible sources and likely divergence in the valence of exposure, both at this age and later in development, future studies would benefit from expanding on this initial correlation to develop more fine-grained assessments of the nature of indirect contact. For instance, additional measures of valence could address how messages received third-hand may convey stereotypes (e.g., about competence) or social norms including culture and lifestyle factors that are known to influence children's attitudes (Brown et al., 2017; Brown & Lee, 2015) in addition to the implications about interpersonal warmth (i.e., mean or nice) assessed in the current study. This approach may also better illuminate potential differences in the valence of children's indirect exposure to attitudes about immigrants from different national origins, including Mexico, China, and Egypt (as tested here) but additional countries as well.

Finally, from a developmental perspective, we focused on late childhood (ages 8 to 12 years) for this study because meta-analytic evidence suggests that the effects of intergroup contact on attitudes and behavior may be most impactful during this period (Beelmann & Heinemann, 2014). However, additional research that examines how these processes unfold over time, and as contact experiences broaden (e.g., Bobba et al., 2024), is critical. Although positive indirect intergroup contact is thought to prime successful direct intergroup contact (Turner & Cameron, 2016), few studies actually continue to track participants as they experience their first in-depth direct intergroup interactions in order to determine the strength of these relations.

Likewise, this was a correlational study, so although the results suggest that direct and indirect intergroup contact with immigrants from Mexico, China, and Egypt played an important role in shaping American children's attitudes about these groups, no direct causal claims can be made. In fact, recent longitudinal evidence questions whether experiences of intergroup contact do indeed cause changes to (adults') levels of prejudice, or whether it is actually people with low levels of prejudice who seek out more intergroup contact than their more biased peers (Hodson & Meleady, 2024). Future longitudinal research from a developmental perspective, tracking direct and indirect intergroup contact experiences across childhood and adolescence, are needed to answer these questions. It may be that causal effects differ at different points in development, with children who experience more positive contact acquiring more inclusive intergroup attitudes that subsequently motivate them to seek out new intergroup interactions and friendships as adults, or even by adolescence (e.g., Friehs et al., 2024).

Conclusions

This study assessed the role of indirect intergroup contact in 8- to 12-year-old American children's attitudes about immigrants. We found, for the first time in a U.S. context, that children in late childhood who experienced more positive indirect intergroup contact with immigrants also expressed more positive attitudes and intended behaviors towards immigrant peers. These findings were consistent for indirect contact with immigrant groups from Mexico, China, or Egypt, and emerged over and above the positive effects of prior direct intergroup contact with the same groups. Overall, the most important conclusion is that the nature of children's indirect exposure to immigrants matters. Positive experiences may be able to positively predispose American children to accept and socially include their immigrant peers, a behavior of increasing importance for the wellbeing of both U.S.-national and first-generation children in this increasingly diverse country.

Author note

All stimuli and measures are available on Open Science Framework: https://osf.io/mx54z/

CRediT authorship contribution statement

Laura Elenbaas: Writing – review & editing, Visualization, Validation, Supervision, Resources, Project administration, Methodology, Funding acquisition, Formal analysis, Conceptualization. **Kelly Lynn Mulvey:** Writing – review & editing, Visualization, Validation, Supervision, Resources, Project administration, Methodology, Funding

acquisition, Formal analysis, Conceptualization. **Christia Spears Brown:** Writing – review & editing, Visualization, Validation, Supervision, Methodology, Formal analysis, Conceptualization. **Jane Singman:** Writing – review & editing, Validation, Project administration, Methodology, Investigation, Data curation. **Megan N. Norris:** Writing – review & editing, Validation, Methodology, Investigation, Data curation.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.appdev.2025.101841.

Data availability

Data will be made available on request.

References

Allport, G. W. (1954). *The Nature of Prejudice*. Addison-Wesley.

Barrett, M., & Oppenheimer, L. (2011). Findings, theories, and methods in the study of children's national identifications and national attitudes. *The European Journal of Developmental Psychology, 8*(1), 5–24. https://doi.org/10.1080/17405629.2010.533955

Beelmann, A., & Heinemann, K. S. (2014). Preventing prejudice and improving intergroup attitudes: A meta-analysis of child and adolescent training programs. *Journal of Applied Developmental Psychology, 35*(1), 10–24. https://doi.org/10.1016/j.appdev.2013.11.002

Bobba, B., Miniati, A., & Crocetti, E. (2024). When ethnic minorities hit the headlines: The longitudinal associations between news features and adolescents' ethnic prejudice. *Journal of Research on Adolescence*. https://doi.org/10.1111/jora.13013

Brown, C. S. (2011). American elementary school children's attitudes about immigrants, immigration, and being an American. *Journal of Applied Developmental Psychology, 32*(3), 109–117. https://doi.org/10.1016/j.appdev.2011.01.001

Brown, C. S., Ali, H., Stone, E. A., & Jewell, J. A. (2017). U.S. children's stereotypes and prejudicial attitudes toward Arab Muslims. *Analyses of Social Issues and Public Policy, 17*(1), 60–83. https://doi.org/10.1111/asap.12129

Brown, C. S., & Lee, C. A. (2015). Impressions of immigration: Comparisons between immigrant and nonimmigrant children's immigration beliefs. *Analyses of Social Issues and Public Policy, 15*(1), 160–176. https://doi.org/10.1111/asap.12067

Budiman, A. (2020). *Key Findings About U.S. Immigrants*. Pew Research Center. https://www.pewresearch.org/fact-tank/2020/08/20/key-findings-about-u-s-immigrants/.

Cameron, L., Rutland, A., Brown, R., & Douch, R. (2006). Changing children's intergroup attitudes toward refugees: Testing different models of extended contact. *Child Development, 77*(5), 1208–1219. https://doi.org/10.1111/j.1467-8624.2006.00929.x

Crocetti, E., Albarello, F., Prati, F., & Rubini, M. (2021). Development of prejudice against immigrants and ethnic minorities in adolescence: A systematic review with meta-analysis of longitudinal studies. *Developmental Review, 60*, Article 100959. https://doi.org/10.1016/j.dr.2021.100959

Crystal, D. S., Killen, M., & Ruck, M. (2008). It is who you know that counts: Intergroup contact and judgments about race-based exclusion. *The British Journal of Developmental Psychology, 26*(1), 51–70. https://doi.org/10.1348/026151007x198910

DeJesus, J. M., Hwang, H. G., Dautel, J. B., & Kinzler, K. D. (2018). "American = English speaker" before "American = White": The development of children's reasoning about nationality. *Child Development, 89*(5), 1752–1767. https://doi.org/10.1111/cdev.12845

Ellis, W. E., & Zarbatany, L. (2017). Understanding processes of peer clique influence in late childhood and early adolescence. *Child Development Perspectives, 11*(4), 227–232. https://doi.org/10.1111/cdep.12248

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41*(4), 1149–1160. https://doi.org/10.3758/BRM.41.4.1149

Friehs, M.-T., Bracegirdle, C., Reimer, N. K., Wölfer, R., Schmidt, P., Wagner, U., & Hewstone, M. (2024). The between-person and within-person effects of intergroup contact on outgroup attitudes: A multi-context examination. *Social Psychological and Personality Science, 15*(2), 125–141. https://doi.org/10.1177/19485506231153017

Girouard-Hallam, L. N., & Norris, M. N. (2024). Overheard and understood: A systematic review of children's learning from overhearing. *Translational Issues in Psychological Science.*. https://doi.org/10.1037/tps0000399

Gönültaş, S., & Mulvey, K. L. (2019). Social-developmental perspective on intergroup attitudes towards immigrants and refugees in childhood and adolescence: A roadmap from theory to practice for an inclusive society. *Human Development, 63*(2), 90–111. https://doi.org/10.1159/000503173

Gönültaş, S., & Mulvey, K. L. (2021). The role of immigration background, intergroup processes, and social-cognitive skills in bystanders' responses to bias-based bullying toward immigrants during adolescence. *Child Development, 92*(3), e296–e316. https://doi.org/10.1111/cdev.13476

Hazelbaker, T., & Mistry, R. S. (2022). Negotiating whiteness: Exploring White elementary school-age children's racial identity development. *Social Development, 31*(4), 1280–1295. https://doi.org/10.1111/sode.12602

Hitti, A., Gönültaş, S., & Mulvey, K. L. (2023). What motivates adolescent bystanders to intervene when immigrant youth are bullied? *Journal of Research on Adolescence, 33*, 603–617. https://doi.org/10.1111/jora.12829

Hodson, G., & Meleady, R. (2024). Replicating and extending Sengupta et al. (2023): Contact predicts no within-person longitudinal outgroup-bias change. *The American Psychologist, 79*(3), 451–462. https://doi.org/10.1037/amp0001210

Jones, S., & Rutland, A. (2018). Attitudes toward immigrants among the youth. *European Psychologist, 23*(1), 83–92. https://doi.org/10.1027/1016-9040/a000310

McKeown, S., Vezzali, L., & Stathi, S. (2025). Understanding and harnessing intergroup contact in educational contexts. *The British Journal of Social Psychology, 64*(2), Article e12876. https://doi.org/10.1111/bjso.12876

Paolini, S., Gibbs, M., Sales, B., Anderson, D., & McIntyre, K. (2024). Negativity bias in intergroup contact: Meta-analytical evidence that bad is stronger than good, especially when people have the opportunity and motivation to opt out of contact. *Psychological Bulletin, 150*(8), 921–964. https://doi.org/10.1037/bul0000439

Patterson, M. M., Bigler, R. S., Pahlke, E., Brown, C. S., Hayes, A. R., Ramirez, M. C., & Nelson, A. (2019). Toward a developmental science of politics. *Monographs of the Society for Research in Child Development, 84*(3), 7–185. https://doi.org/10.1111/mono.12410

Rodriguez, V. C., Gillen-O'Neel, C., Mistry, R. S., Brown, C. S., Chow, K. A., & White, E. S. (2016). National and racial-ethnic identification: What it means to be American among early adolescents. *Journal of Early Adolescence, 36*(6), 807–839. https://doi.org/10.1177/0272431615589348

Sierksma, J., Brey, E., & Shutts, K. (2022). Racial stereotype application in 4-to-8-year-old White American children: Emergence and specificity. *Journal of Cognition and Development, 23*(5), 660–685. https://doi.org/10.1080/15248372.2022.2090945

Sodhi, S., & Liberman, Z. (2024). Children's expectations of nationality-based behaviors differ for immigrants and nonimmigrants. *Child Development*. https://doi.org/10.1111/cdev.14210

Suárez-Orozco, C., Motti-Stefanidi, F., Marks, A., & Katsiaficas, D. (2018). An integrative risk and resilience model for understanding the adaptation of immigrant-origin children and youth. *The American Psychologist, 73*(6), 781–796. https://doi.org/10.1037/amp0000265

Terán, & Conroy, M. (2024). *See Jane 2024: How Has On-Screen Representation in Children's Television Changed from 2018 to 2023?* The Geena Davis Institute. https://geenadavisinstitute.org/research/see-jane-2024-how-has-on-screen-representation-in-childrens-television-changed-from-2018-to-2023/.

Tropp, L. R., White, F., Rucinski, C. L., & Tredoux, C. (2022). Intergroup contact and prejudice reduction: Prospects and challenges in changing youth attitudes. *Review of General Psychology, 26*(3), 342–360. https://doi.org/10.1177/10892680211046517

Turner, R. N., & Cameron, L. (2016). Confidence in contact: A new perspective on promoting cross-group friendship among children and adolescents. *Social Issues and Policy Review, 10*(1), 212–246. https://doi.org/10.1111/sipr.12023

Vezzali, L., Hewstone, M., Capozza, D., Giovannini, D., & Wölfer, R. (2014). Improving intergroup relations with extended and vicarious forms of indirect contact. *European Review of Social Psychology, 25*(1), 314–389. https://doi.org/10.1080/10463283.2014.982948

Vezzali, L., Hewstone, M., Capozza, D., Trifiletti, E., & Bernardo, G. A. D. (2017). Improving intergroup relations with extended contact among young children: Mediation by intergroup empathy and moderation by direct intergroup contact. *Journal of Community and Applied Social Psychology, 27*(1), 35–49. https://doi.org/10.1002/casp.2292

Vezzali, L., Stathi, S., & Giovannini, D. (2012). Indirect contact through book reading: Improving adolescents' attitudes and behavioral intentions toward immigrants. *Psychology in the Schools, 49*(2), 148–162. https://doi.org/10.1002/pits.20621

Ward, N., & Batalova, J. (2023). *Frequently Requested Statistics on Immigrants and Immigration in the United States*. Migration Policy Institute. https://www.migrationpolicy.org/article/frequently-requested-statistics-immigrants-and-immigration-united-states.

White, F. A., Borinca, I., Vezzali, L., Reynolds, K. J., Blomster Lyshol, J. K., Verrelli, S., & Falomir-Pichastor, J. M. (2021). Beyond direct contact: The theoretical and societal relevance of indirect contact for improving intergroup relations. *Journal of Social Issues, 77*(1), 132–153. https://doi.org/10.1111/josi.12400

Zhou, S., Page-Gould, E., Aron, A., Moyer, A., & Hewstone, M. (2019). The extended contact hypothesis: A meta-analysis on 20 years of research. *Personality and Social Psychology Review, 23*(2), 132–160. https://doi.org/10.1177/1088868318762647