Original Article

Context Matters – Social Context Moderates the Association Between Indirect Intergroup Contact and Attitudes Toward Refugees

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Abstract. Based on an integration of socioecological systems and intergroup contact theory, we hypothesized that the context in which intergroup contact takes place moderates its association with attitudes toward refugees. To test this prediction, majority members in Germany reported in three studies (N_{total} = 695) how often they have had positive and negative direct and indirect contact with refugees in different contexts and their attitudes toward refugees. While the association between direct contact and intergroup attitudes was relatively context-independent, the association between indirect contact and attitudes toward refugees strongly depended on context. Indirect contact was more strongly associated with attitudes toward refugees in contexts with close relationships (family and friends) than in contexts with distanced relationships (newspaper and TV).

Keywords: social context, intergroup contact, direct contact, extended contact, vicarious contact, refugees

Context-Specific Contact

Intergroup contact has been identified as an effective measure to reduce prejudice: When people from different groups interact with each other in a positive way, this reduces their negative attitudes toward the respective other group. Such intergroup contact can reduce the prejudice of majority group members toward people with migration backgrounds, members of the Lesbian, Gay, Bisexual, Transgender, and Queer community, and people with mental or physical disabilities (see Lemmer & Wagner, 2015; Pettigrew & Tropp, 2006, for reviews). In addition to these face-to-face interactions (i.e., *direct contact*), contact with out-group members that does not involve personal interactions (i.e., *indirect contact*) such as knowing of in-group members who have out-group friends (i.e., *extended contact*) or observing intergroup contact in the media (i.e., *vicarious contact*) can reduce prejudice as well (see Vezzali et al., 2014; Zhou et al., 2019, for reviews). These effects are restricted to positive and neutral contact experiences – negative direct and indirect contact tends to increase negative attitudes toward the out-group (Schäfer et al., 2021).

In the context of refugee migration, these findings were partly replicated: The frequency and quality of direct contact (Knappert et al., 2021; Kotzur et al., 2019) and positive extended contact (Findor et al., 2021) between refugees and members of the receiving society revealed positive associations with attitudes toward refugees. However, in two longitudinal studies in Germany, prejudice increased with increased contact opportunities (Kotzur & Wagner, 2021). Furthermore, the results for vicarious contact are inconsistent: In a study with Slovak adults, consumption of media reports about refugees was slightly negatively associated with attitudes toward refugees (Findor et al., 2021). In a European survey, the valence of this association differed between public and commercial media (De Coninck, Rodríguez-de-Dios, & d'Haenens, 2021). Furthermore, when studying the causality of this relationship in experiments, negative media presentations of refugees only sometimes increased prejudice (Schemer & Meltzer, 2020). Considering different contexts characterized by differences in closeness and trust may explain these inconsistencies.

Although intergroup contact has been intensely studied, we know comparatively little about how context

influences contact effects. Research on intergroup contact focuses mainly on a context's level of cultural diversity (e.g., Christ et al., 2010; Schmid et al., 2017). However, diversity is only one aspect of context. The model of socioecological systems provides a broader framework for understanding context (Bronfenbrenner, 1977, 2005). According to this model, every person is embedded in various environmental layers, which differ in their psychological closeness. Family and friends are placed in the inner circle of a person's socioecological system because they are assumed to be psychologically closest to the individual. Colleagues and neighbors are located further away as they are less psychologically close. The layers furthest away represent culture and mass media.[1] As these contexts differ in closeness between individuals, they are likely to affect intergroup contact effects.

Closeness is an important predictor for the effects of direct contact. Positive direct contact with close out-group members, such as intergroup friendships, is more effective in reducing prejudice compared to other forms of direct contact (Pettigrew, 1997; Pettigrew & Tropp, 2006; Turner, Hewstone, Voci, et al., 2007). This influence of *relationship closeness* on contact effects may be transferred to *closeness of contexts*: Contact that takes place in contexts characterized by closeness between individuals (e.g., within the family or the circle of friends) might meet Allport's (1954) criteria for optimal contact such as equal status and a common goal better than contact in contexts that are characterized by distance between people (Pettigrew, 1997). Furthermore, familiar contexts might provide the opportunity for more self-disclosure than less familiar contexts (Turner, Hewstone, & Voci, 2007). Hence, positive direct intergroup contact in close contexts may be more strongly associated with prejudice than positive direct intergroup contact in distant contexts.

By contrast, negative contact with close out-group members is less strongly associated with prejudice than negative contact with distant out-group members (Fuochi, Voci, Boin, & Hewstone, 2020; Graf et al., 2020), indicating that intimacy protects against the detrimental effects of negative contact. This protective effect of *relationship intimacy* may generate to *closeness of contexts* as well: Negative contact in close contexts may be less strongly associated with prejudice than negative contact in distant contexts.

Closeness is likely to affect indirect contact effects as well. Close in-group members (i.e., family or friends) are

more likely to be included in the self (i.e., treated similar to the self), and therefore, their relationships with out-group members should be more influential (Wright et al., 2008). More distant in-group members, by contrast, are less easily included in the self, and therefore, their relationships to out-group members should be less influential. Furthermore, people trust close others more than distant others. Trust in the source of information (also referred to as source credibility) is a reliable predictor for persuasion (e.g., Smith et al., 2013). This can be transferred to indirect contact effects: If a person trusts the in-group member who tells about his or her contact with an out-group member, the message about positive or negative contact should be more convincing and thus lead to greater attitude change. Hence, indirect contact communicated by close others should be more strongly associated with prejudice than indirect contact communicated by distant others. In line with this prediction, in a study investigating attitudes between Protestants and Catholics in Northern Ireland, knowing about intergroup contact of family members or friends was more strongly associated with out-group trust than knowing about intergroup contact of neighbors or colleagues (Tausch et al., 2011). However, contact valence was not specified in this study. Hence, to date, it is not clear whether the results replicate for positive and negative extended contact.

Furthermore, knowledge about contact between in-group and out-group members can be acquired in different contexts including not only family, circle of friends, work, and neighborhood but also media. Intergroup contact described or shown in media can be regarded as *vicarious contact* (see Vezzali et al., 2014, for a review). As the media context is characterized by least closeness (Bronfenbrenner, 2005), associations between indirect contact communicated through media and prejudice should be weaker than indirect contact communicated via family, friends, colleagues, or neighbors. However, the different types of indirect contact have not been directly compared in previous research.

The Present Research

The present research was set to fill these gaps by systematically investigating positive and negative direct and indirect contact in a wide range of contexts including

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[1] In addition to distinguishing between different contexts according to closeness among individuals, socioecological system theory differentiates among microsystems, mesosystems, macrosystems, and exosystems: Mircosystems involve direct interactions between individuals. Macrosystems such as culture affect individuals without direct interactions. Connections between different microsystems, such as the relationship between a person's teacher and their parents, are known as mesosystems, and systems that do not involve the focal person at all form the exosystem.

family, circle of friends, work, neighborhood, volunteering, public, and media. Specifically, we advance previous research by a) investigating closeness of contexts rather than closeness of relationships as a potential moderator of direct contact effects, b) identifying the role of contact valence for context-specific indirect contact effects, and c) considering a wider range of social contexts including social networks and media.

We conducted three studies on intergroup contact effects between refugees and majority group members in Germany. In 2016, about 750,000 people requested asylum in Germany, the highest number of refugees ever seen in Germany until then (BAMF, 2018). This increase in people fleeing to Germany motivated thousands of citizens to volunteer in refugee aid (Ahrens, 2016). However, these welcoming acts were accompanied by massive protests against immigrants and by criminal acts against refugee homes (BKA, 2018). In 2022, the number of people who fled to Germany again increased. More than 967,000 refugees from Ukraine were registered in Germany between January and August 2022 (BMI, 2022).

This research was conducted in accordance with the APA Code of Conduct and the Declaration of Helsinki. The local ethical review board approved the studies. We report all data exclusions, all manipulations, and all measures used in the studies. All data are stored in an OSF project (https://osf.io/8cnbk/; Landmann et al., 2022).

Study 1

In Study 1, we tested context effects for the effects of direct and indirect positive and negative contact on students' attitudes toward refugees. To capture different aspects of attitudes toward refugees, we assessed the participants' attitudes toward migration policies, threat elicited by refugees, and estimates of Germany's capacity to host refugees. Threat is one of the most important predictors of prejudice and discrimination (Riek et al., 2006), and intergroup contact is an important measure to reduce threat (Pettigrew & Tropp, 2008; Stephan & Stephan, 2017). As there was a prominent debate in Germany about instituting a cap on refugee admissions at the time the study was conducted, we used an estimate of Germany's hosting capacity as a measure of migration attitudes. Although this measure is framed as a belief about the objective capacity of a country, previous research has shown that participants use the question to express their attitudes about refugee migration (Lalot et al., 2019; Landmann et al., 2019).

We derived different hypotheses for direct and indirect contact from the above reviewed literature. We expected that associations between direct positive contact and positive attitudes toward refugees would be stronger in contexts that are characterized by close relationships (i.e., within one's family or circle of friends), followed by contexts involving less close relationships (i.e., neighborhood, education, work, volunteerism), and weakest in contexts characterized by distant relationships (i.e., public, going out). Reversely, we expected that associations between direct negative contact and negative attitudes toward refugees would be stronger in contexts that are characterized by distant relationships (i.e., public, going out), followed by less distant relationships (i.e., neighborhood, education, work, volunteerism), and weakest in contexts characterized by closeness (i.e., within one's family or circle of friends).

For indirect contact, our hypotheses were as follows: we expected that positive contact experiences communicated by close others (i.e., family members, friends) would be more strongly associated with positive attitudes toward refugees than indirect contact communicated by less close others (i.e., colleagues, neighbors) and positive contact experiences communicated via media would be least strongly associated with positive attitudes toward refugees. Similarly, we expected that negative contact experiences communicated by close others (i.e., family members, friends) would be more strongly associated with negative attitudes toward refugees than indirect contact communicated by less close others (i.e., colleagues, neighbors) and negative contact experiences communicated via media would be least strongly associated with negative attitudes toward refugees.

Power analysis was conducted with G*Power (Faul et al., 2007) to determine sample size. A priori power analysis for the mixed analysis of covariance (F = .10, df = 7, number of groups = 8, number of covariates = 1, $1 - \beta$ = .80, α = .05) revealed required cases of 1,443 to detect small effects. As each participant indicated their contact experiences for each context, these cases could be achieved with N = 181 participants (1,443/8). Based on previous research (Tausch et al., 2011), we further attempted to detect differences of medium size between correlations. A priori power analysis for differences between correlations (z-tests, $R_{differences}$ = .20, $R_{predictors}$ = .40, $1 - \beta$ = .80, α = .05) revealed a required sample size of N = 161.

Method

A total of 202 psychology students at the University of Hagen were recruited via the psychology department's virtual laboratory between August and October 2016. The University of Hagen is a distance learning university characterized by high diversity with respect to students' age, political attitudes, family status, and occupation (Stürmer et al., 2018). University of Hagen students live all across Germany. About 80% are working or self-employed during their studies. They provided

informed consent and participated in this study in exchange for course credit. Seven participants were excluded because they did not pass control questions testing their attention and/or completed the survey in less than 5 min. Eleven participants indicated that they did not live in Germany, and eight participants indicated that they had been refugees themselves. As we were interested in attitudes toward refugees in Germany, these participants were excluded from analysis. The final sample consisted of 176 participants (121 female, 55 male) aged between 18 and 58 years (M_{age} = 32.5, SD = 8.3). The vast majority (96%) were German citizens.

Context-Specific Contact

Participants indicated how often they had had positive and negative direct and indirect contact with refugees in different contexts on scales ranging from 1 (=*never*) to 5 (=*very often*). The contexts were selected on the basis of qualitative studies of everyday intergroup contact (Mazziotta, 2019). The contexts for direct contact covered family ("How often have you had positive [negative] contact with refugees in your family context?"), friends ("in your circle of friends"), neighborhood ("in your neighborhood"), education ("in your education, e.g., school, university"), work ("in your work"), volunteering ("in your voluntary service"), public ("in public, e.g., on the street, in public transport, while shopping"), and going out ("while going out, e.g., spending the evening in a restaurant, cinema, club"). The contexts for indirect contact covered family, friends, neighbors, colleagues, newspapers, TV, and internet (e.g., "How often have you heard of positive [negative] contact with refugees from family members?"). For each context, the frequencies of positive and negative contact were assessed separately.

Support for Restrictive Migration Policies

Support for restrictive migration policies was assessed with statements referring to prominent political discussions concerning refugees and migration, which we developed ourselves (e.g., "There should be an upper limit on refugees"; nine items; α = .89). Participants indicated their agreement with these statements on scales ranging from 1 (=*not at all*) to 5 (=*completely*).

Intergroup Threat

Intergroup threat was assessed with the German translation of the symbolic threat scale by Stephan et al. (2002; Rohmann et al., 2006), which was adapted for refugees (e.g., "Refugees and Germans have very different values"; nine items; α = .91). Participants indicated their agreement with these statements on scales ranging from 1 (=*not at all*) to 5 (=*completely*).

Capacity to Host Refugees

To measure the estimation of Germany's capacity to host refugees, we asked participants "How many refugees can Germany host per year without severe negative consequences?" and the same question for the year 2017. Participants provided a specific number in response to both questions. The mean of respondents' estimates was ranked: The estimates were ordered according to their size and then numbered consecutively beginning with the smallest estimate (the same estimates were assigned the same rank). We chose this transformation because ranking provides a general means to guard against the effects of outliers.

In addition, participants responded to scales concerning general contact, moral values, and authoritarianism as well as an open-ended question about consequences of refugee migration, which we reported in Landmann et al. (2019).

Results and Discussion

Frequencies of Context-Specific Contact

A 2 (type of contact: direct vs. indirect) by 2 (valence of contact: positive vs. negative) repeated-measures ANOVA on contact frequency revealed main effects of contact type, $F(1, 175)$ = 339.33, $p < .001$, η_p^2 = .66, contact valence, $F(1, 175)$ = 12.74, $p < .001$, η_p^2 = .07, and a significant interaction, $F(1, 175)$ = 15.31, $p < .001$, η_p^2 = .30. Positive direct contact was more frequent (M = 2.09, CI_{95} [1.98; 2.20]) than negative direct contact (M = 1.58, CI_{95} [1.48; 1.68]), whereas the frequencies of positive indirect contact (M = 2.41, CI_{95} [2.31; 2.51]) and negative indirect contact (M = 2.49, CI_{95} [2.39; 2.59]) were similar and overall higher than the frequencies of direct contact. Participants learned indirectly about contact with refugees more than they experienced contact directly, and negative indirect contact was more frequent than negative direct contact. Average contact frequencies for each specific context (see Figure 1A, B) suggest that the comparably high levels of negative indirect contact primarily stem from negative reports about refugees in the media.

Correlations Among Context-Specific Contact Experiences

Correlations among context-specific contact experiences are shown in Table E1. To investigate the structure of these correlations, average correlations within and between positive and negative contact experiences were computed. To get a less biased score, we used Fisher's z-transformation before we computed the average correlations and retransformed the average z into r (see Silver & Dunlap, 1987, for discussion of that procedure). Correlations between positive and negative contact experiences were independent ($R_{average}$ = .08, p = .291), but correlations among positive contact experiences ($R_{average}$ = .35, $p < .001$) and among negative contact experiences ($R_{average}$ = .44, $p < .001$) were high. This suggests that individual-level
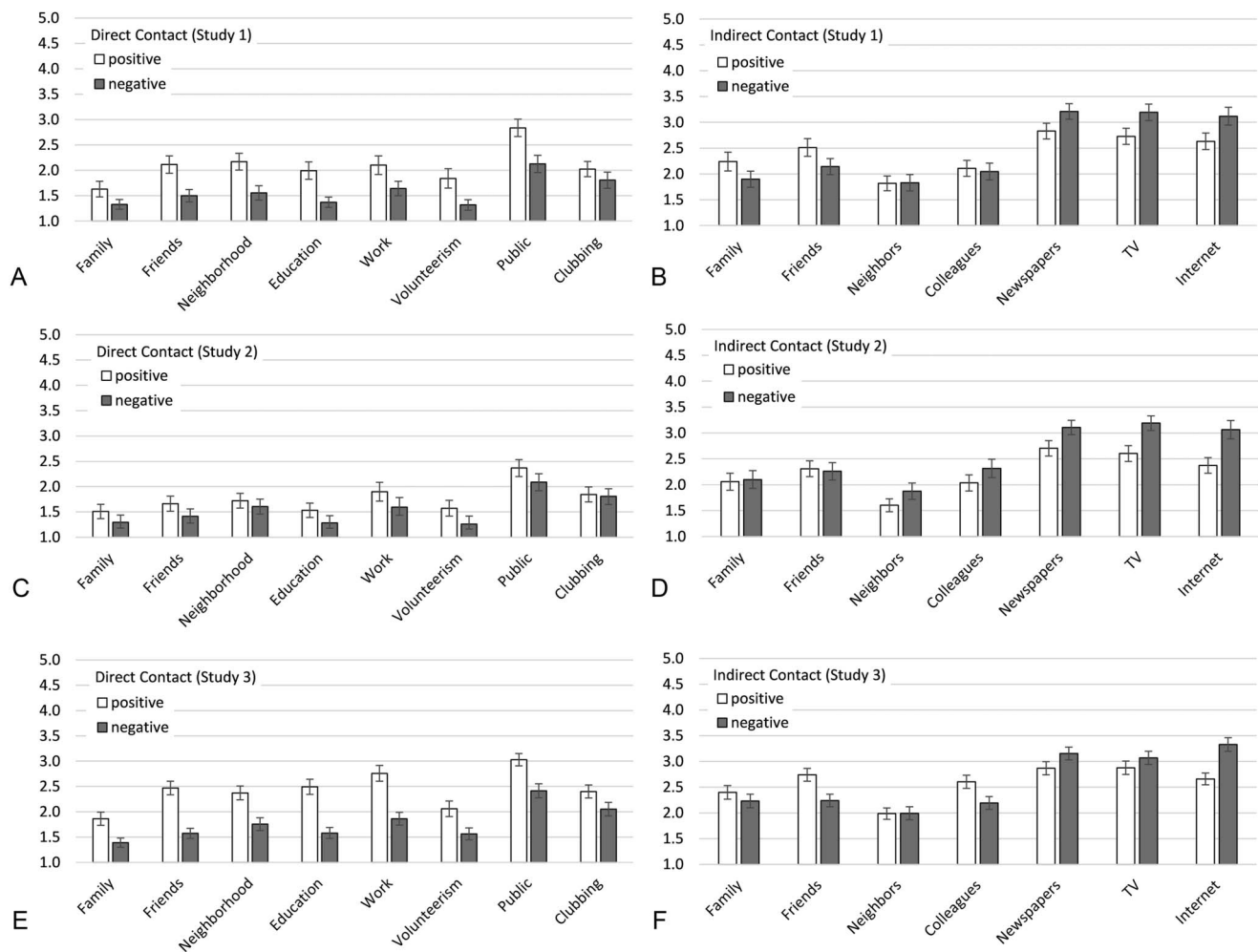
Figure 1. Frequencies of positive and negative direct and indirect contact in different contexts. Means and 95% confidence intervals are depicted. Scales ranged from 1 (*never*) to 5 (*very often*).

factors influence whether contact experiences are (interpreted as) positive or negative.

To rule out the possibility that participants used the context-sensitive contact measure exclusively to express their preexisting attitudes toward refugees without differentiating between the contexts, we conducted K-means cluster analysis with predetermined number of 4 clusters for direct positive contact, direct negative contact, indirect positive contact, and indirect negative contact separately. Mean contact frequencies for each cluster are displayed in ESM 1, Figure E1. The results show that the clusters do not just differ in overall contact frequency but are associated with context-specific pattern of contact frequencies. Hence, the reported contact frequencies were influenced by individual-level factors, but they cannot be reduced to these factors as participants' answers were context-specific.

Context Effects on the Association Between Contact and Attitudes

To test whether context moderates the association between contact and the dependent variables (i.e., support for restrictive migration policies, intergroup threat, and hosting capacity), we conducted mixed-model ANOVAs with contact frequency as a fixed factor and context as a random factor. We conducted the analyses separately for positive and negative direct and indirect contact. The results of the ANOVAs are shown in Table 1. Correlations between context-specific contact and attitudes are depicted in Figure 2.

Strong main effects of positive and negative direct contact emerged. However, the interactions between direct contact and context were small and/or not significant (see Table 1). Positive direct contact was negatively associated with support for restrictive migration policies and

Table 1. Mixed-model ANOVAs (Study 1)

Predictors	df	Restrictive policies		Intergroup threat		Hosting capacity	
		F	η_p^2	F	η_p^2	F	η_p^2
Positive direct contact							
Context	7; 1,392	1.17	.01	0.76	.00	0.66	.00
Contact	1; 1,392	102.22***	.07	48.30***	.03	41.45***	.03
Contact × Context	7; 1,392	0.94	.00	1.03	.01	0.56	.00
Negative direct contact							
Context	7; 1,392	2.99**	.01	2.21*	.01	1.96	.01
Contact	1; 1,392	120.66***	.08	179.52***	.11	62.75***	.04
Contact × Context	7; 1,392	2.19*	.01	1.01	.01	1.86	.01
Positive indirect contact							
Context	6; 1,218	5.94***	.03	4.32***	.02	2.36*	.01
Contact	1; 1,218	52.26***	.04	24.29***	.02	11.38**	.01
Contact × Context	6; 1,218	7.77***	.04	5.25***	.03	2.89**	.01
Negative indirect contact							
Context	6; 1,218	4.18***	.02	2.92**	.01	1.28	.01
Contact	1; 1,218	30.63***	.02	57.97***	.05	13.25***	.01
Contact × Context	6; 1,218	7.06***	.03	5.91***	.03	2.33*	.01

Note. $*p < .05$; $**p < .01$; $***p < .001$.

intergroup threat as well as positively associated with estimates of Germany's capacity to host refugees independently of the context in which contact took place (see Figure 2). Conversely, negative direct contact was positively associated with support for restrictive migration policies and negatively associated with estimates of Germany's hosting capacity in all contexts except volunteering (see Figure 2).

In contrast to that, the interactions between context and positive as well as negative indirect contact were significant in addition to the main effects (see Table 1). In line with our hypotheses, positive indirect contact was more strongly associated with the dependent variables when communicated by friends than when communicated by newspapers or TV and negative indirect contact was more strongly associated with support for restrictive migration and intergroup threat when communicated by friends and family members than when communicated by newspapers, TV, or the internet (see Figure 2). In contrast to our hypotheses, the associations between attitudes and positive indirect contact communicated by family members and the internet did not differ significantly from other contexts. It is possible that the student participants in the present study were highly internet-oriented and felt relatively independent of their families, and hence, family communication about refugees may have been less influential and online communication about positive contact more influential than we expected. Furthermore, the associations between negative indirect contact and hosting capacity did not differ significantly. The associations between this dependent variable and indirect contact were overall

smaller compared to the other two dependent variables (i.e., support for restrictive migration policies and intergroup threat). This indicates that estimating how many refugees Germany can host is less affected by contact experiences than political attitudes or intergroup threat.

All in all, these results partly support our hypotheses for indirect contact but not for direct contact. The associations between indirect contact and attitudes toward refugees were stronger in contexts characterized by close relationships (i.e., circle of friends) than in contexts characterized by distant relationships (i.e., newspapers, TV). In contrast, the associations between direct contact and attitudes were relatively independent of the context in which the contact took place.

Study 2

Study 2 set out to replicate the context-specific contact effects identified in Study 1 with a more balanced sample in terms of education and gender. We focused on intergroup threat measures as dependent variables because threat mediates the association between contact and prejudice (Pettigrew & Tropp, 2008) and may therefore be more closely associated with contact than the other measures. To exclude the explanation that the results depend on the type of threat measure, we considered different aspects of threat: expectations about negative
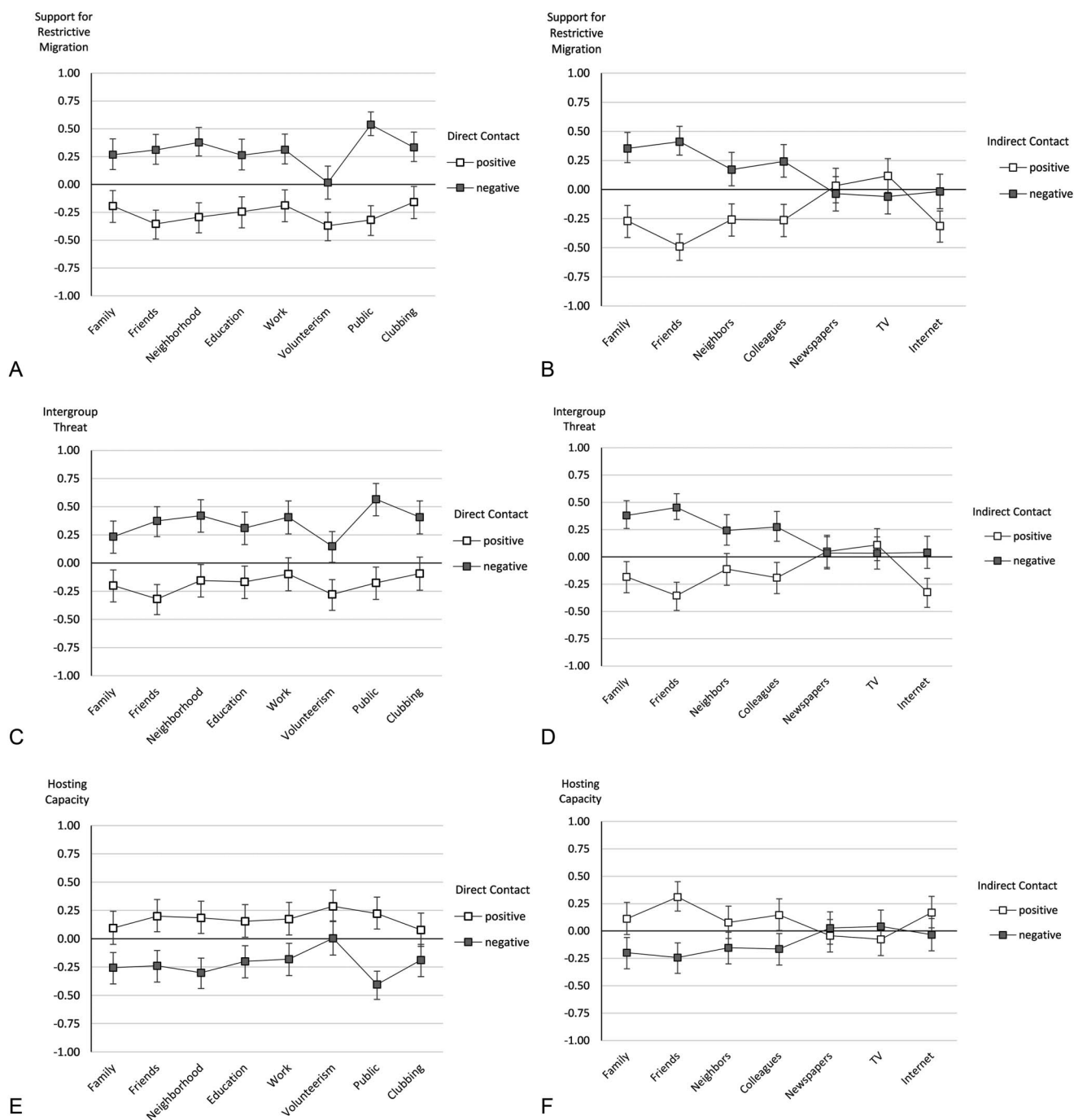
Figure 2. Correlations between context-specific contact and attitudes toward refugees (Study 1, *N* = 176). Error bars indicate confidence intervals.

cultural consequences (symbolic threat), expectations about negative material consequences (realistic threat), and expectations about negative interactions with outgroup members (intergroup anxiety).

For indirect contact, we tested the same hypotheses as in Study 1. As we did not find the hypothesized context effects for direct contact in Study 1, we explored context effects for direct contact in Study 2. The study was pre-registered at https://aspredicted.org/jz968.pdf.

Power analysis for Study 2 was based on the results of Study 1. We calculated mean effect sizes of the mixed analysis of variance. A priori power analysis for analysis of covariance (f = .16, df = 7, number of groups = 8, number of covariates = 1, 1 – β = .80, α = .05) revealed required cases of 597. As each participant indicated their contact experiences in each context, these cases could be achieved with N = 75 (597/8) participants. We further calculated mean correlations between the measures and mean expected differences

between the correlations using Fisher z-transformations. A priori power analysis for differences between correlations (z-tests, $R_{differences}$ = .223, $R_{predictors}$ = .380, 1 − β = .80, α = .05) revealed a required sample size of N = 153.

Method

A total of 179 community members recruited in public places in the greater area of Stuttgart (Germany) completed a paper-and-pencil questionnaire between July and August 2017. Two participants were excluded from the analysis due to more than 30% missing values, and eight participants were excluded because they had been refugees themselves. The final sample consisted of 169 participants (87 female, 82 male) aged between 18 and 86 years (M_{age} = 39.2, SD = 14.9). The vast majority (90.0%) were German citizens, and 75.8% were employed.

Context-specific contact was assessed as in Study 1.

Intergroup threat was assessed with a short measure from Kauff and Wagner (2012; four items, α = .92) adapted for refugees. The items captured realistic threat (i.e., "Refugees who live here threaten the economic situation in Germany"; "Refugees who live here threaten my own financial situation") and symbolic threat (i.e., "Refugees who live here threaten our way of life and our values in Germany"; "Refugees who live here threaten my own way of life and my own values"). Participants indicated their agreement with these statements on scales ranging from 1 (=*not at all*) to 5 (=*completely*).

Intergroup anxiety was assessed by adapting Turner, Hewstone, and Voci's (2007) measure. We asked participants "Please think of how you would feel mixing socially with complete strangers who are refugees." They then indicated the extent to which they would feel *happy* (reverse coded), *awkward*, *self-conscious*, *confident* (reverse coded), *defensive*, and *relaxed* (reverse coded) on scales ranging from 1 (=*not at all*) to 5 (=*very much*; α = .84).

In addition, participants responded to questions about context-specific trust, context-specific closeness, and individual differences in general trust. Due to space restrictions, the results concerning these variables are reported in the Electronic Supplementary Material, ESM 1.

Results and Discussion

Frequencies of Context-specific Contact

A 2 (type of contact: direct vs. indirect) by 2 (valence of contact: positive vs. negative) repeated-measures ANOVA on contact frequency revealed a main effect of contact type, $F(1, 168)$ = 541.13, $p < .001$, η_p^2 = .76, which was qualified by the type by valence interaction, $F(1, 168)$ = 18.40, $p < .001$, η_p^2 = .35. The main effect of contact valence, $F(1, 168)$ = 0.06, $p = .814$, $\eta_p^2 < .01$, was not significant. Positive direct contact was slightly more frequent (M = 1.75, CI$_{95}$ [1.65; 1.86]) than negative direct contact (M = 1.41, CI$_{95}$ [1.31; 1.51]). Conversely, positive indirect contact was less frequent (M = 2.24, CI$_{95}$ [2.15; 2.33]) than negative indirect contact (M = 2.56,

Table 2. Mixed-model ANOVAs (Study 2)

Predictors	Intergroup threat			Intergroup anxiety		
	df	F	η_p^2	df	F	η_p^2
Positive direct contact						
Context	7; 1,336	0.95	.00	7, 1,328	1.30	.01
Contact	1; 1,336	46.92***	.03	1, 1,328	91.00***	.06
Contact × Context	7; 1,336	0.98	.01	7, 1,328	1.05	.01
Negative direct contact						
Context	7; 1,336	2.36*	.01	7, 1,328	3.00**	.02
Contact	1; 1,336	106.99***	.07	1, 1,328	69.00***	.05
Contact × Context	7; 1,336	1.64	.01	7, 1,328	2.44*	.01
Positive indirect contact						
Context	6; 1,169	8.04***	.04	6, 1,162	4.28***	.02
Contact	1; 1,169	7.16**	.01	1, 1,162	18.28***	.02
Contact × Context	6; 1,169	10.03***	.05	6, 1,162	5.96***	.03
Negative indirect contact						
Context	6; 1,169	4.31***	.02	6, 1,162	3.73**	.02
Contact	1; 1,169	46.88***	.04	1, 1,162	27.18***	.02
Contact × Context	6; 1,169	7.51***	.04	6, 1,162	6.30***	.03

Note. *p < .05; **p < .01; ***p < .001.

CI$_{95}$ [2.46; 2.66]). As in Study 1, the high frequency of negative indirect contact primarily stemmed from negative reports about refugees in the media (see Figure 1C, D).

Correlations Between Context-specific Contact Experiences

These are shown in ESM 1, Table E1. Average correlations with Fisher's z-transformations yielded similar results as in Study 1: Correlations between positive and negative experiences were low ($R_{average}$ = .12, p = .120). Correlations among positive contact experiences ($R_{average}$ = .35, p < .001) and among negative contact experiences ($R_{average}$ = .42, p < .001) were high. As in Study 1, cluster analysis revealed that participants' contact ratings do not just differ in overall contact frequency but are associated with context-specific pattern of contact frequencies (see ESM 1, Figure E2).

Context Effects on the Association Between Contact, Intergroup Threat, and Anxiety

To test whether context moderates the association between contact and the dependent variables (i.e., intergroup threat and intergroup anxiety), we followed the same procedure as in Study 1. The results of the mixed-model ANOVAs are shown in Table 2. Correlations between context-specific contact and the dependent variables are depicted in Figure 3.

Strong main effects of positive and negative direct contact emerged, but the interactions between direct contact and context were small and/or not significant (see Table 2). As in Study 1, context did not substantially moderate direct contact effects. Positive direct contact was negatively associated with intergroup threat and intergroup anxiety independently of context (see Figure 3). Conversely, negative direct contact was positively associated with intergroup threat and intergroup anxiety in all contexts except for volunteering.

For indirect positive and indirect negative contact, significant interactions between indirect contact and context emerged in addition to the main effects (see Table 2). As in Study 1, the indirect contact effects were substantially moderated by context. In line with the predictions, associations between indirect contact and
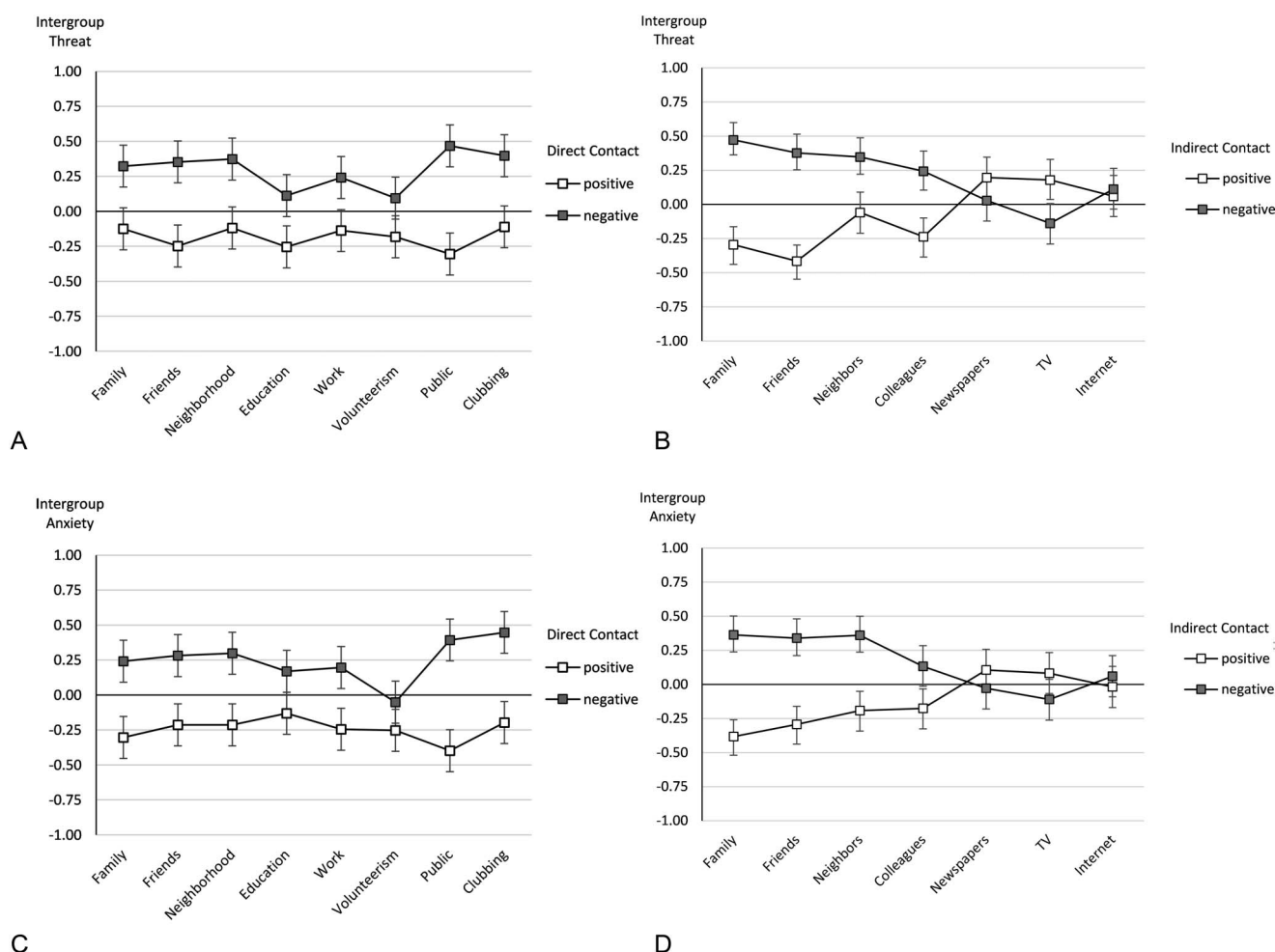
Figure 3. Correlations between context-specific contact and attitudes toward refugees (Study 2, N = 169). Error bars indicate confidence intervals.

the dependent variables were higher when contact was communicated through family members or friends compared to newspaper or TV (see Figure 3). In contrast to Study 1, indirect contact communicated through the internet was not significantly associated with intergroup threat and anxiety, perhaps due to the less internet-affine sample in Study 2. As in Study 1, the associations between the dependent variables and indirect contact communicated by neighbors or colleagues did not consistently differ from other contexts.

In sum, Study 2 largely replicated the context effects identified in Study 1. As in Study 1, context moderated the indirect (but not direct) contact effects.

Study 3

Taken together, the results of Study 1 and Study 2 show that context moderates the association between indirect (but not direct) contact and attitudes toward refugees. This finding was consistent for different samples (i.e., students in Study 1 and members of the community in Study 2) and different dependent variables (i.e., attitudes toward migration policies, estimated hosting capacity, intergroup threat, intergroup anxiety). Both studies were conducted when the public discourse about refugees in Germany focused on young Muslim men who fled from Arab countries to Germany. We conducted a third study, to test whether our results replicate for the refugee situation in Germany in 2022 that is dominated by women and children who fled from war in Ukraine. This study was pre-registered at https://aspredicted.org/j4qf7.pdf.

For Study 3, we took a more conservative approach being able to detect small effects of $f = .10$ and differences between correlations of .20 with more power. A priori power analysis for analysis of covariance ($f = .10$, $df = 7$, number of groups = 8, number of covariates = 1, $1 - \beta = .95$, $\alpha = .05$) revealed required cases of 1,836. As groups were varied within subjects these cases could be achieved with $N = 230$ (1,836/8) participants. Correlations between the predictors were averaged across the two studies using Fisher z-transformations. A priori power analysis for differences between correlations (z-tests, $R_{differences} = .20$, $R_{predictors} = .373$; $1 - \beta = .90$, $\alpha = .05$) revealed a required sample size of $N = 265$.

Method

Participants were recruited via a survey pool organized by the University of Hagen. Members of the community and students at the University of Hagen are free to enroll in the pool and participate on a voluntary basis. A total of 314

persons participated in this study in August 2022. One person indicated that they had not participated seriously, and one person did not agree to use their data. All remaining participants responded correctly to the attention check. A total of 22 participants were excluded from analysis because they indicated that they have been refugees themselves. The age of the remaining 290 participants (134 female, 154 male, 2 nonbinary) was between 16 and 78 years ($M_{age} = 43.8$, $SD = 13.1$). Most of them (90.4%) were enrolled at the University of Hagen (64 participants in psychology and 198 participants in other subjects). The vast majority (94.1%) were German citizens.

We followed the same procedure as in the previous two studies and included all dependent variables from Study 1 and Study 2. Support for restrictive migration policies ($\alpha = .89$), intergroup threat ($\alpha = .93$), and intergroup anxiety ($\alpha = .87$) created reliable scales. As in Study 1, we assessed two estimates of Germany's capacity to host refugees: How many refugees Germany can host each year and how many refugees Germany can host in the year to come. The mean of the two estimates was ranked following the same procedure as in Study 1. In addition, participants responded to scales concerning general contact, moral values, authoritarianism, context-specific trust, context-specific closeness, and individual differences in general trust (see ESM 1).

Results and Discussion

Frequencies of Context-specific Contact

A 2 (type of contact: direct vs. indirect) by 2 (valence of contact: positive vs. negative) repeated-measures ANOVA on contact frequency revealed main effects of contact type, $F(1, 289) = 293.86$, $p < .001$, $\eta_p^2 = .50$, and contact valence, $F(1, 289) = 39.90$, $p < .001$, $\eta_p^2 = .12$, which were qualified by the type by valence interaction, $F(1, 289) = 98.02$, $p < .001$, $\eta_p^2 = .25$. Positive direct contact was more frequent ($M = 2.43$, CI_{95} [2.34; 2.52]) than negative direct contact ($M = 1.77$, CI_{95} [1.68; 1.86]). The frequencies of positive indirect contact ($M = 2.59$, CI_{95} [2.52; 2.66]) and negative indirect contact ($M = 2.60$, CI_{95} [2.52; 2.69]) did not differ significantly (see Figure 1E, F).

Correlations Between Context-Specific Contact Experiences

Those are shown in ESM 1, Table E2. Correlations between positive and negative experiences were low ($R_{average} = .03$, $p = .611$). Correlations among positive contact experiences ($R_{average} = .33$, $p < .001$) and among negative contact experiences ($R_{average} = .47$, $p < .001$) were high. Cluster analysis revealed that participants' contact ratings do not just differ in overall contact frequency but are associated with context-specific pattern of contact frequencies (see ESM 1, Figure E3).

Table 3. Mixed-model ANOVAs (Study 3)

Predictors	df	Restrictive policies		Intergroup threat		Intergroup anxiety		Hosting capacity	
		F	η_p^2	F	η_p^2	F	η_p^2	F	η_p^2
Positive direct contact									
Context	7; 2,304	2.74**	.01	1.60	.00	1.39	.00	2.26*	.01
Contact	1; 2,304	144.99***	.06	91.34***	.04	133.35***	.05	141.09***	.06
Contact × Context	7; 2,304	1.90	.01	1.13	.00	0.74	.00	1.42	.00
Negative direct contact									
Context	7; 2,304	5.12***	.02	4.94***	.01	2.64*	.01	2.97**	.01
Contact	1; 2,304	743.55***	.24	884.46***	.28	183.61***	.07	253.44***	.10
Contact × Context	7; 2,304	1.95	.00	1.84	.01	1.35	.00	1.87	.01
Positive indirect contact									
Context	6; 2,016	22.40***	.06	22.88***	.06	13.22***	.04	18.13***	.05
Contact	1; 2,016	39.74***	.02	17.71***	.01	18.50***	.01	39.89***	.02
Contact × Context	6; 2,016	27.67***	.08	27.70***	.08	16.25***	.05	22.65***	.06
Negative indirect contact									
Context	6; 2,016	12.69***	.04	18.31***	.05	4.77***	.01	7.62***	.02
Contact	1; 2,016	85.69***	.04	94.88***	.04	17.99***	.01	26.07***	.01
Contact × Context	6; 2,016	20.36***	.06	28.44***	.08	7.18***	.02	11.36***	.03

Note. *p* < .05; ***p* < .01; ****p* < .001

Context Effects on the Association Between Contact, Intergroup Threat, and Anxiety

To test whether context moderates the association between contact and the dependent variables, we followed the same procedure as in the previous two studies. The results of the mixed-model ANOVAs are shown in Table 3. Correlations between context-specific contact and the dependent variables are depicted in Figure 4.

As in the previous studies, context moderated the indirect contact effects but did not substantially moderate direct contact effects (see Table 3). In line with our predictions, associations between indirect contact and the dependent variables were higher when contact was communicated through family members, friends, neighbors, or colleagues compared to newspaper, TV, or the internet (see Figure 4). The associations partly even reverse depending on the context such that positive indirect contact via newspaper or TV was associated positively with threat, anxiety, and support of restrictive migration policies and negatively with the estimated hosting capacity.

General Discussion

The present research set out to investigate intergroup contact in different contexts. Positive and negative interactions between majority members and refugees in Germany (i.e., direct contact) were associated with attitudes toward

refugees relatively independently of the context in which the interactions took place. However, whether knowledge about in-group members' positive and negative contact experiences with refugees (i.e., indirect contact) was associated with attitudes toward refugees depended on the context. For instance, contact experiences communicated by friends were strongly associated with attitudes toward refugees, whereas contact experiences communicated by the media was (in most cases) weaker or not significantly associated with attitudes toward refugees. This pattern of results was repeatedly identified in three independent studies with different samples and for different dependent variables – providing consistent evidence for that it matters in which socioecological systems contact experiences take place.

Direct Intergroup Contact in Different Contexts

Context did not affect the association between direct contact and attitudes toward refugees much. Previous research found that intergroup friendship is more strongly associated with positive out-group attitudes compared to other forms of direct contact (Pettigrew, 1997; Pettigrew & Tropp, 2006) whereas negative contact in the context of intimate relationships is less strongly associated with negative out-group attitudes than negative contact experiences in nonintimate relationships (Fuochi, Voci, Boin, & Hewstone, 2020; Graf et al., 2020). In the present study,
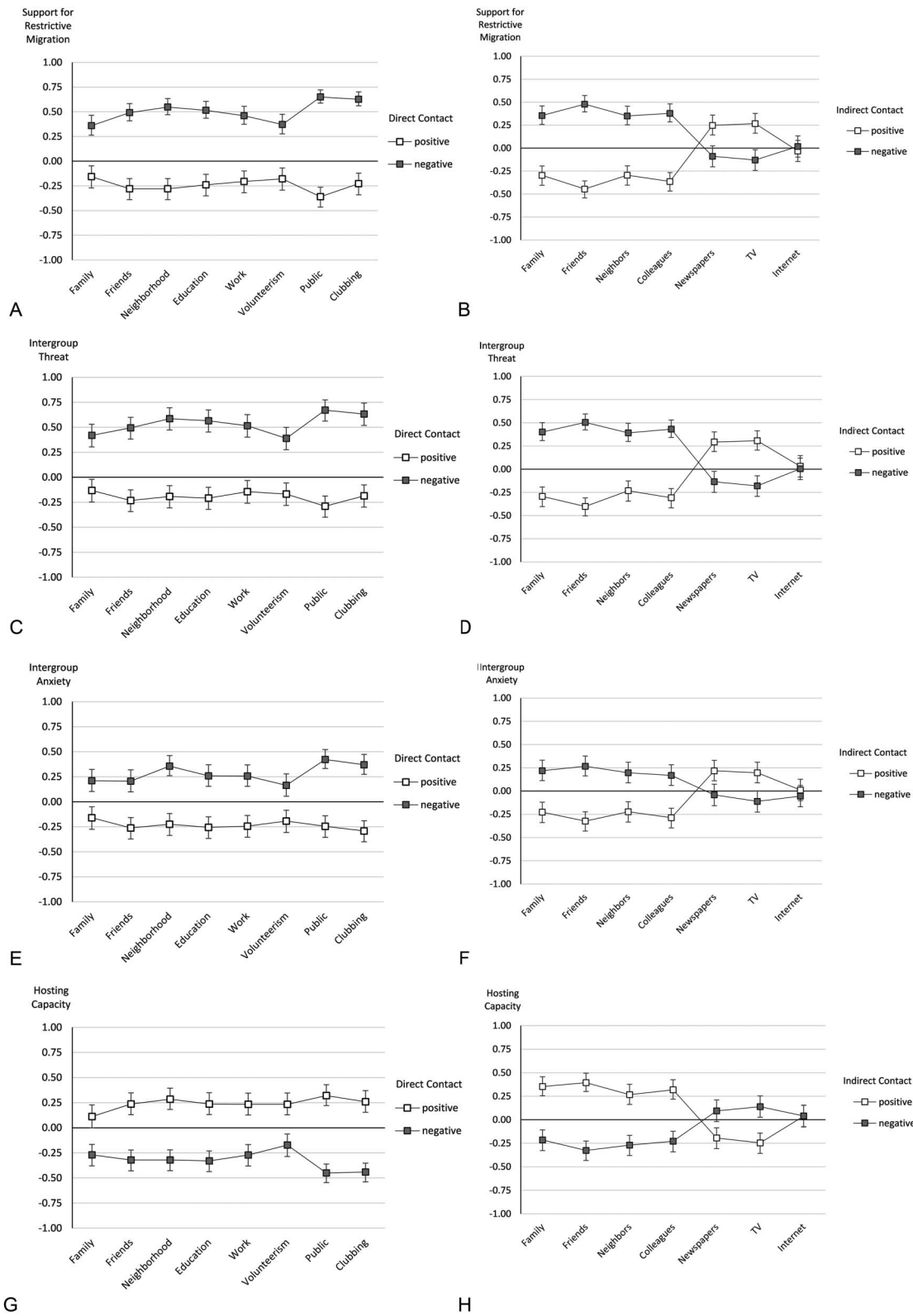
Figure 4. Correlations between context-specific contact and attitudes toward refugees (Study 3, *N* = 290). Error bars indicate confidence intervals.

however, direct contact in the circle of friends was similarly associated with out-group attitudes as direct contact in other contexts. The distinction between *relationship closeness* and *closeness of contexts* may explain these findings. The contexts we selected differ in closeness with friends and family contexts revealing the highest levels of closeness compared to the other contexts (see ESM 1). However, it is possible that intimacy varies within the context of family or friends depending on the specific friend or family member. Furthermore, having contact with a refugee within the family context does not necessarily imply to have a close relationship with this person. The same applies to the context of friends. It seems to be relationship closeness that moderates direct contact effects rather than closeness of the context.

Previous research comparing positive and negative contact effects is mixed. Some studies suggest that negative contact is more strongly associated with prejudice than positive contact (e.g., Barlow et al., 2012; Dhont & Van Hiel, 2009; Graf et al., 2014; Kotzur & Wagner, 2021), whereas other studies revealed similar effects of positive and negative contact (e.g., Mähönen & Jasinskaja-Lahti, 2016; Mazziotta et al., 2015; Árnadóttir et al., 2018). The present findings conform with the latter set of studies revealing similar effect sizes for positive and negative contact. However, the volunteer context differed somewhat from the other contexts. In Studies 1 and 2, negative contact in the context of volunteering was not associated with attitudes toward refugees and migration. The comparably positive attitudes of those who volunteered to help refugees in the first place may have countervailed the effects of negative contact in this context. As this finding was not replicated in Study 3, it seems to be specific for the situation in 2017 in Germany.

Indirect Intergroup Contact in Different Contexts

Our prediction that indirect contact within systems closer to the individual was more strongly associated with attitudes toward the out-group than contact within systems, which are further away, was partly supported: Contact experiences communicated by friends (or family members) were strongly associated with attitudes toward refugees. The associations between contact experiences communicated by neighbors or colleagues and attitudes toward refugees were slightly – although not significantly – lower. Associations with contact experiences communicated via newspaper and TV (or the internet) were lowest. These findings expand previous research on the role of context for indirect contact effects. In contrast to Tausch et al. (2011), we considered not only positive but also negative indirect contact showing that context affects both

types of contact similarly. Furthermore, we considered vicarious contact in addition to the forms of extended contact covered by Tausch et al. (2011), showing that contact experiences communicated by close others are more persuasive than contact experiences communicated by the media.

Positive contact communicated by the media (i.e., vicarious or mass-mediated contact) usually decreases prejudice, whereas negative contact via the media increases prejudice (see Banas et al., 2020; Schiappa et al., 2005 for reviews) – direct contact can buffer these effects (Fuochi, Voci, Veneziani, et al., 2020). However, across the present studies, positive and negative experiences with refugees communicated via newspaper or TV were not significantly – or even reversely – associated with attitudes toward refugees. Whether and how often participants were confronted with positive or negative accounts about refugees in the media was irrelevant or counterproductive for their attitudes toward refugees and migration – at least to the extent they could correctly self-report their reception of positive and negative news and their own attitudes. This finding adds to the so far mixed evidence concerning mass-mediated contact and attitudes toward refugees (De Coninck et al., 2021; Findor et al., 2021; Schemer & Meltzer, 2020). Taken together, media effects seem to be particularly inconsistent in the context of refugee migration. This may be attributed to increased media scepticism in the context of refugee migration. Since 2014, right-wing groups in Germany have frequently accused established newspapers and TV newscasts of lying – especially on the subject of refugees and migration (Vollmer & Karakayali, 2018).

Situation Evocation, Situation Selection, and Confirmation Bias

Strong correlations among positive contact experiences and among negative contact experiences and negative correlations between positive and negative contact experiences indicate that individual factors influence whether contact experiences are (perceived as) positive (or negative). *Situation evocation*, *situation selection* (Jackson & Poulsen, 2005), and *confirmation bias* (Nickerson, 1998) may explain these results. People with pre-existing positive attitudes toward refugees may be more friendly when interacting with refugees, and these interactions may therefore be more positive overall (situation evocation). Moreover, they may choose friends with similar opinions and consume media that supports their opinion (situation selection). This form of situation evocation may explain the correlations among direct contact experiences. Furthermore, people with positive attitudes toward refugees may be biased toward interpreting a situation as positive, whereas people which negative attitudes

toward refugees are biased toward interpreting the same situation as negative (confirmation bias).

Limitations and Future Research

Assessing contact in a context-specific way revealed how context moderates indirect contact effects. However, the measures used in the present studies were based on self-reports, and the identified associations between contact and attitudes are based on correlational data. Furthermore, we did not investigate participants' identification with the national in-group. Research reveals that identification with in-group members moderates extended and vicarious contact effects (see Brown & Paterson, 2016, for a review). Future research should investigate whether the identified associations can be replicated in experiments and whether context-specific contact experiences are relevant for actual behavior controlling for in-group identification.

The studies were conducted with participants diverse with regard to employment, age, and gender. Still, they cannot be assumed to be representative of the German population with regard to education, income, and political orientation. Furthermore, our studies could detect differences between correlations of $R_{\text{differences}}$ = .20 or larger with power of .80 (Studies 1 and 2) and .90 (Study 3). To detect smaller differences between correlations and potential influences of socioeconomic status and political orientation, large representative surveys would be necessary.

The present research set out to investigate context-specific contact between refugees and members of the majority in Germany. Some findings might generalize. For instance, contact reports from family members and friends may strongly affect intergroup attitudes in other societal challenges as well. However, some findings may be relevant to refugee migration only. For instance, media scepticism may be particularly strong for information related to refugee migration.

Practical Implications

Intimate encounters across ethnic groups are rare: Individuals tend to choose friends who are similar (i.e., homophily; Kossinets & Watts, 2009), and they tend to segregate from people who are different (i.e., informal segregation; Dixon & Durrheim, 2003). Hence, determining if more trivial encounters are still beneficial for intergroup relations provides considerable applied potential for policy makers. The present research suggests – on the basis of correlational data – that closeness of the context does not affect direct contact effects. Furthermore, direct contact experiences with refugees were more frequently perceived as positive than negative by members of the receiving society. Hence, it seems to be beneficial for intergroup relations to enhance contact opportunities between groups whenever and wherever possible.

Furthermore, communication with close others such as friends and family members seems to be highly relevant for attitudes toward refugees – to the extent that participants' self-reports are valid and reliable. Importantly, positive direct contact experiences were more frequent than negative direct contact experiences overall. Hence, talking about one's own contact experiences with relatives, friends, neighbors, and colleagues may substantially contribute to reducing prejudice toward refugees.

Electronic Supplementary Material

The electronic supplementary material is available with the online version of the article at https://doi.org/10.1027/1864-9335/a000505

ESM 1. Correlations for Studies 1, 2, and 3. Cluster analysis. Additional scales.

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