

Stereotypes in the face of reality: Intergroup contact inconsistent with group stereotypes changes attitudes more than stereotype-consistent contact

Group Processes & Intergroup Relations

2021, Vol. 24(8) 1284–1305

© The Author(s) 2020

Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/1368430220946816

journals.sagepub.com/home/gpi



Tibor Zingora,¹  Loris Vezzali²  and Sylvie Graf¹ 

Abstract

In a longitudinal two-wave study we examined the effects of positive and negative intergroup contact on outgroup attitudes in participants who perceived positive, negative, or ambivalent group stereotypes. We focused on stereotype-consistent contact, occurring when the valence of participants' contact matches the valence of the perceived group stereotype (e.g., negative–negative), and on stereotype-inconsistent contact, occurring when the valence of contact contradicts the valence of the group stereotype (e.g., positive–negative). In relations of the Czech majority ($N = 890$) with two distinctly stereotyped minorities, the Roma and the Vietnamese, stereotype-inconsistent contact predicted changes in attitudes better than stereotype-consistent contact. In the case of negatively stereotyped groups, positive intergroup contact is a viable way to improve attitudes. For positively stereotyped groups, negative contact can worsen attitudes, while positive contact does not have any attitude-improving effect. Interventions aimed at improving outgroup attitudes need to be applied with caution, considering the valence of group stereotypes.

Keywords

intergroup contact, outgroup attitudes, stereotype, stereotype-consistent contact, stereotype-inconsistent contact

Paper received 2 December 2019; revised version accepted 10 July 2020.

Negative attitudes toward social minorities represent an obstacle to the harmonious coexistence of different groups in society. One of the most prominent interventions for improving outgroup attitudes is intergroup contact, if positive (for a meta-analysis, see Pettigrew & Tropp, 2006). Negative intergroup contact, in contrast, worsens

¹Czech Academy of Sciences, Institute of Psychology

²University of Modena and Reggio Emilia, Italy

Corresponding author:

Tibor Zingora, Czech Academy of Sciences, Veveří 97, Brno, 602 00, Czech Republic.

Email: Tibor.Zingora@psu.cas.cz

outgroup attitudes (Aberson, 2015; Árnadóttir et al., 2018; Barlow et al., 2012; Bekhuis et al., 2013; Graf et al., 2014; Hayward et al., 2017; Zingora & Graf, 2019). Intergroup exchanges unravel in the context of a larger societal environment that contains widespread beliefs about group characteristics—group stereotypes (Fiske et al., 2002). Group stereotypes provide salient cues for intergroup interactions and thus are likely to influence whether attitudes towards a certain group change after intergroup contact. Yet, no study has so far considered the interaction between direct intergroup contact and group stereotypes in changing outgroup attitudes—the aim of our research. We examined the interplay between the valence of past intergroup contact (i.e., positive vs. negative) and the valence of group stereotypes (i.e., positive vs. negative) in shaping attitudes following (a) *stereotype-consistent contact*, when the valence of contact matches the valence of the group stereotypes (e.g., a negative encounter with a member of a negatively stereotyped group), and (b) *stereotype-inconsistent contact*, when the valence of the contact experience contradicts the valence of the group stereotypes (e.g., a negative encounter with a member of a positively stereotyped group), using a longitudinal design. By doing so, we extend the scope of past research that usually focused on contextual and personal moderators of the intergroup contact–attitudes link (cf. Paluck et al., 2018) to moderators related to group characteristics, focusing on group stereotypes.

Formation of Outgroup Attitudes in the Context of Group Stereotypes

Stereotypes about different groups shared in society are an important source of normative information about outgroups that guides perceptions and actions toward their members (group norm theory: Crandall et al., 2002; Kelman, 1958; shared reality theory: Hardin & Conley, 2001). Group stereotypes represent a lens through which people perceive their interactions with outgroup members. According to the continuum

model of impression formation, stereotypes create expectations about interactions with outgroup members that in turn shape impression formation (Fiske, 1980; Fiske & Neuberg, 1990). Stereotypes elicit expectations about intergroup interactions before contact actually occurs (Fiske et al., 1999; Hamilton et al., 1990), creating an initial frame in which contact with outgroup members then takes place. During contact, stereotypes influence the course of intergroup interactions, for example, by facilitating certain types of behaviors (Bargh et al., 1996; Seibt & Förster, 2004). Stereotypes are at work also after contact, when a person interprets the intergroup encounter in light of group stereotypes (Fiske et al., 1999). Consequently, stereotypes represent an influential source of information about outgroups that can modulate the effects of intergroup contact on outgroup attitudes.

Group stereotypes subsume characteristics that differentiate members of one group from other groups. The stereotype content model (SCM; Cuddy et al., 2008; Fiske et al., 2002) offers a nuanced theory about group stereotypes that can be described based on two dimensions: (a) warmth, which refers to intentions (positive or negative) of an outgroup toward the ingroup, and (b) competence, defined as the capacity of outgroup members to fulfil these intentions. The combination of the two stereotypical dimensions yields four qualitatively different stereotypes. Stereotypes defined by high competence and high warmth are positive, while stereotypes defined by low competence and low warmth are negative (Cuddy et al., 2008; Cottrell & Neuberg, 2005). Groups perceived as warm but incompetent, or cold but competent are represented by ambivalent stereotypes (Fiske et al., 2002).

In line with the stereotype content model (Fiske et al., 2002), we focused on stereotypes as they are perceived in society (i.e., on the societal vs. the individual level). We assume that stereotypes spread in society represent strong normative cues that can shape the contact experience and alter the effect of direct contact on outgroup attitudes. The moderating role of initial—individually held—stereotypes has been previously established

in effects of indirect intergroup contact. Extended intergroup friendships improved stereotypical outgroup perception particularly for participants who initially held negative group stereotypes. Contrarily, in participants who initially held positive stereotypes, extended intergroup friendships were related to a less favorable stereotypical outgroup perception (Munniksma et al., 2013). Similarly, initial stereotypes had an effect on the link between yet another form of indirect intergroup contact and stereotypical perceptions again employed as outcome variable. Positive imagined contact improved the perception of warmth and competence of negatively or ambivalently stereotyped groups, unless the individually held outgroup stereotype was already positive (Brambilla et al., 2012). Both studies, however, employed stereotypes as moderator and outcome variable at the same time. A study employing outgroup attitudes as an outcome variable determined that the effect of direct intergroup contact on outgroup attitudes depends on initial levels of outgroup attitudes, such that people with more negative initial attitudes profit from intergroup contact more than those with initially more positive attitudes (Hodson et al., 2017). However, in this study, outgroup attitudes represented both a moderator and an outcome variable.

Hypotheses on when intergroup contact brings changes in attitudes were initially formulated by Gordon Allport (1954), stating that contact would reduce prejudice only when optimal conditions (cooperation, common goals, equal status, institutional support) were present (cf. Pettigrew, 1998). Although these conditions facilitate contact effects, they were shown not to be essential for contact to improve attitudes (Pettigrew & Tropp, 2006). With our approach, we focus on the moderating role of group stereotypes in the effect of contact on attitudes, a topic so far missing in the literature.

Intergroup Contact in Face of Stereotypes

Group stereotypes spread in society provide information about a person based on his/her group

membership, but these expectations can either support or contradict actual contact experiences. The (mis)match between the valence of the group stereotypes and the valence of the contact experience can have an impact on whether attitudes change following positive and/or negative intergroup contact. On the one hand, stereotype-inconsistent contact may be more influential in shaping outgroup attitudes than stereotype-consistent contact. Perceivers direct their attention and give importance to cues that are most informative (Fiske, 1980). All available cues about a person are weighed, meaning that they are given differential importance, and the more useful information is, the more weight it attains (Anderson, 1971). In this light, stereotype-inconsistent contact provides novel and thus more useful information about an outgroup in comparison to stereotype-consistent contact (Clark & Kashima, 2007; Fiske, 1980). For example, negatively stereotyped groups are expected to behave negatively; thus, negative contact does not contribute any additional information about these groups. In contrast, positive contact is stereotype-inconsistent and thus possibly attracts more attention and is given more weight. Interventions that prompted participants to think of counterstereotypical individuals were shown to reduce stereotyping (Gocłowska & Crisp, 2013) or implicit preference for White over Black Americans (Dasgupta & Greenwald, 2001). Stereotype-inconsistent and expectation-incongruent information is processed more thoroughly, receives greater attention, is associated with greater perceptual encoding, and is better encoded into memory than stereotype-consistent and expectation-congruent information (Dijksterhuis & van Knippenberg, 1995; Erber & Fiske, 1984; Macrae et al., 1993; Sherman & Frost, 2000; Stangor & McMillan, 1992). If people invest more cognitive resources into processing information inconsistent with stereotypes rather than into information consistent with stereotypes, the contrast between the valence of intergroup contact and stereotypes may be a stronger catalyst for a change in outgroup attitudes in comparison to contact consistent with stereotypes. Consequently, intergroup contact that is

inconsistent with stereotypes may be more influential in shaping outgroup attitudes than contact that is consistent with stereotypes.

According to this evidence, we formulated stereotype-refutation hypotheses on the effect of contact on outgroup attitudes when the valence of contact mismatches the valence of the stereotype:

H1a: Negative contact will deteriorate attitudes more than positive contact will improve them when individuals perceive positive group stereotypes in society (i.e., marked by high competence and/or high warmth).

H1b: Positive contact will improve attitudes more than negative contact will deteriorate them when individuals perceive negative group stereotypes in society (i.e., marked by low competence and/or low warmth).

On the other hand, there is contrasting evidence that intergroup contact may have a stronger impact on outgroup attitudes when the valences of stereotypes and contact match. Outgroup members who behave consistently with their group stereotypes are perceived as more typical of the outgroup (Brown et al., 1999). Group member typicality is a marker of category salience that enhances the generalization of contact experiences with outgroup members to the outgroup as a whole (Brown et al., 2007; Brown & Hewstone, 2005). Consequently, the match between the valences of intergroup contact and of group stereotypes can enhance the effect of intergroup contact on outgroup attitudes. Another reason why stereotype-consistent contact can have a stronger effect on outgroup attitudes relates to the fact that stereotype-consistent information is given more weight when forming impressions about a group (Munro & Ditto, 1997). A group member who does not fulfill expectations based on group stereotypes can be subtyped and excluded from attitude formation or change (Fiske & Neuberg, 1990; Richards & Hewstone, 2001). For example, a member of a negatively stereotyped outgroup can be perceived as a “white crow” unrepresentative of the

outgroup after positive contact that contradicts the initial negative stereotype. Moreover, stereotype-consistent information is more important for trait inferences than stereotype-inconsistent information (Wigboldus et al., 2003). Meta-analytical evidence indicates that expectation-consistent negative contact with stigmatized outgroups is generally more strongly associated with outgroup attitudes than positive contact, and similarly, that expectation-consistent positive contact with admired outgroups is more strongly associated with outgroup attitudes than negative contact (Paolini & McIntyre, 2019). Thus, it is possible that stereotype-consistent contact changes the attitude toward an encountered person and, consequently, toward the outgroup as a whole, whereas stereotype-inconsistent contact is discarded as a merely contextual experience or an experience with an atypical outgroup member that does not apply to the outgroup as whole.

These considerations lead us to formulate contrasting stereotype-confirmation hypotheses on the effect of contact on attitudes when the valence of contact matches the valence of stereotypes:

H2a: Negative contact will deteriorate attitudes more than positive contact will improve them when individuals perceive negative group stereotypes in society (i.e., marked by low competence and/or low warmth).

H2b: Positive contact will improve attitudes more than negative contact will deteriorate them when individuals perceive positive group stereotypes in society (i.e., marked by high competence and/or high warmth).

Although we can identify when contact is stereotype (in)consistent in the case of positive (i.e., marked by high competence and/or warmth) and negative stereotypes (i.e., marked by low competence and/or warmth), many social groups face ambivalent stereotypes. According to the stereotype content model (Cuddy et al., 2007), people who perceive ambivalent group stereotypes in society—marked by low competence and high warmth or vice versa—have qualitatively different

emotions and perform qualitatively different actions than people who perceive positive or negative stereotypes. In contrast to positive and negative stereotypes, ambivalent stereotypes are not fully (in)consistent with positive and negative contact. Since the literature does not offer a clear prediction on what will happen when positive or negative contact interacts with group stereotypes that have mixed valence (i.e., ambivalent), we do not make specific hypotheses for ambivalent stereotypes but explore their potential role.

The Present Study

In order to address the gaps in the understanding of the effects of direct contact on outgroup attitudes, which have been previously studied without considering group characteristics, we focus on the interaction between the valence of intergroup contact and the valence of group stereotypes in shaping outgroup attitudes. To this end, we examine how change in positive and negative contact from T1 to T2 influences outgroup attitudes at T2. Testing the effect of change in one variable between T1 and T2 on a second variable at T2 is considered a rigorous estimation of a causal effect (Finkel, 1995). Apart from estimating the causal effect of contact on attitudes, this design enabled us to record intergroup contact in the context of prevailing stereotypes. Since group stereotypes were measured at the same time (T1) as we started to estimate the change in contact (T1–T2), they can unfold their function as lens through which participants evaluate their subsequent encounters with members of the given group. In other words, we were able to determine which stereotypes participants perceived when change in contact took place, addressing the dynamic nature of relationships between variables.

In order to examine the effect of stereotype-consistent contact (with matching valence) and stereotype-inconsistent contact (with mismatching valence) on outgroup attitudes, we define stereotypes as positive, negative, or ambivalent based on the specific combinations of the two stereotypical dimensions identified by Fiske et al.

(2002). Positive stereotypes are represented by high competence and/or warmth, negative stereotypes by low competence and/or warmth, and ambivalent stereotypes by a combination of high and low dimensions at the same time (for details on the operationalization of stereotype valence, see the Analysis section).

We conducted the study in the Czech Republic, examining the relationship of Czechs with two minorities—the Roma and the Vietnamese. The Roma are one of the least liked groups. Only 15% of Czechs would *not* have a problem with having Roma people as their neighbors (STEM, 2016). The estimated population of Roma people in the Czech Republic is about 300,000—representing about 2.8% of the population. The Roma are perceived to be linked with crime and abuse of the social system (Rowe & Goodman, 2014), traits that correspond to low competence and low warmth, and thus negative stereotypes in the SCM (Fiske et al., 2002). The Vietnamese are perceived more positively than the Roma in the Czech Republic, being associated with competence (Zingora, 2014). The estimated population of Vietnamese people in the Czech Republic is 100,000—representing about 1% of the population. The Vietnamese minority is relatively new to the Czech Republic; the Vietnamese started immigrating to the Czech Republic in the second half of the 20th century. The Vietnamese community concentrates in some regions of the Czech Republic more than in others, thus, the frequency of intergroup contact depends on the place of residence. Including two distinct minorities into the design of our study provides a more solid evidence that the effect of contact on outgroup attitudes is not minority-specific. Moreover, it enabled us to capture the relationship between contact and outgroup attitudes in the context of more diverse stereotypes because both groups are likely to be associated with different characteristics.

Method

Participants. Two thousand four hundred and seven Czech university students responded to an

online survey in two separate data collections. We kept only participants with no missing values on independent (i.e., change in intergroup contact) and dependent variables (i.e., outgroup attitudes; $n = 968$). Because immigration background could influence intergroup contact and attitudes (Tropp & Pettigrew, 2005), we removed participants whose parents were born outside of the Czech Republic ($n = 78$). The final sample consisted of 890 participants (28% men; $M_{\text{age}} = 24.91$, $SD = 6.31$).

Procedure. Participants were asked to complete an online questionnaire that was disseminated via email at universities in the Czech Republic. We used financial incentives to motivate respondents to participate—a lottery with three monetary prizes. We counterbalanced the order of presentation of the two target groups, the Roma and the Vietnamese. Data were collected in two separate surveys; participants responded in the first wave between February 2015 and January 2016 (first survey: February 2015 to June 2015; second survey: October 2015 to January 2016). The second wave of data was collected between 6 to 12 months after the first wave (first survey: November 2015 to February 2016; second survey: September 2016 to December 2016). Items used in both surveys are presented in what follows (see Table C1 in online Appendix C, supplemental material).

Measures

Stereotypes. Perceived group stereotypes were measured along two dimensions—warmth and competence. Items were adapted from Cuddy et al. (2007) and assessed on a 5-point scale (1 = *not at all*, 5 = *very*). Competence was assessed using one item that asked how capable the Roma ($M = 1.86$, $SD = 0.94$) and the Vietnamese ($M = 4.14$, $SD = 0.76$) were according to most people. The stereotypical warmth of the Roma and the Vietnamese was captured by two items asking how friendly and good-hearted were the Roma (first item: $M = 2.15$, $SD = 1.03$; second item: $M = 2.05$, $SD = 0.98$, $r = .74$, $p < .001$) and the Vietnamese (first item: $M = 3.48$, $SD = 0.89$;

second item: $M = 3.29$, $SD = 0.86$, $r = .65$, $p < .001$) according to most people. Ratings were combined into two composite variables—warmth of the Roma and the Vietnamese—and each was divided by 2, resulting in scores ranging from 1 to 5. See Figure 1 for the distribution of competence and warmth of the Roma and of the Vietnamese among respondents.

Change in positive and negative intergroup contact. At both time points, respondents were asked how often they had positive/negative and pleasant/unpleasant contact with the outgroup. Responses were measured on 5-point Likert scales (1 = *never*, 5 = *very often*). Since we were interested in the change in frequency of positive and negative intergroup contact between T1 and T2, we subtracted intergroup contact at T1 from intergroup contact at T2, separately for positive and for negative contact. Positive scores indicate that contact (either positive or negative) had increased from T1 to T2, whereas negative scores indicate a decrease in contact of the given valence from T1 to T2; zero indicates that the amount of contact did not change from T1 to T2. Items were aggregated to create two indices: change in positive contact (the Roma: $\alpha = .69$, $M = 0.13$, $SD = 0.67$; the Vietnamese: $\alpha = .65$, $M = 0.05$, $SD = 0.77$) and change in negative contact (the Roma: $\alpha = .69$, $M = -0.11$, $SD = 0.85$; the Vietnamese: $\alpha = .65$, $M = 0.04$, $SD = 0.70$).

Outgroup attitudes. Participants indicated their feelings toward the Roma and the Vietnamese on feeling thermometers (Haddock et al., 1993) ranging from 0 (*cold*) to 100 (*warm*).

Controls. We inquired about age, gender, identification with Czechs (“I am glad to be Czech”; 1 = *absolutely disagree*, 5 = *absolutely agree*), political orientation (“Mark your political orientation on the scale”; 1 = *Left*, 5 = *Right*). Since data were collected in two separate surveys, one control variable represents the version of the survey.

Analysis. First, we inspected the distributions of perceived stereotypes of the Roma and

the Vietnamese. The distribution of perceived competence and warmth indicated which stereotypes were more frequently present in the sample and, consequently, which estimates associated with stereotypes were more or less reliable. If the value on warmth or competence exceeded the midpoint of the scales, we considered it a positive stereotype. If the value on warmth or competence was lower than the midpoint, we considered it a negative stereotype. Ambivalent stereotypes are characterized by low competence (lower than the midpoint) and high warmth (higher than the midpoint) or high competence and low warmth (see what follows, where we explain how we decomposed significant interactions in order to assess moderation by positive, negative, or ambivalent stereotypes).

We applied the conditional change-score model (Berrington, Smith & Sturgis, 2006; Finkel, 1995) and subtracted positive intergroup contact at T1 from positive intergroup contact at T2, and negative contact at T1 from negative contact at T2. Afterwards, we regressed outgroup attitudes at T2 on change in intergroup contact (T2–T1), simultaneously controlling for the effect of outgroup attitudes at T1. Thus, we tested how change in contact predicts change in outgroup attitudes.

In order to test how change in contact with the outgroup influenced change in outgroup attitudes in the context of perceived stereotypes, we conducted a moderation analysis. We estimated longitudinal paths from change in positive and negative contact, competence, and warmth at T1 to outgroup attitudes at T2. In order to control for the auto-regressive path, we included the path from outgroup attitudes at T1 to outgroup attitudes at T2 in each model. Finally, we tested two three-way interactions separately for change in positive contact and change in negative contact. The three-way interactions featured change in contact, stereotypical warmth, and stereotypical competence, plus all lower level interactions (for the list of all effects, see Figures 2 and 3).

Afterwards, we decomposed all significant interaction effects. In case of a significant three-way interaction, we estimated the effects within four groups characterized by (a) low competence and low warmth (i.e., negative stereotype); (b) high competence and high warmth (i.e., positive

stereotype); (c) high competence and low warmth; and (d) low competence and high warmth (i.e., ambivalent stereotypes). In case of a significant two-way interaction between change in contact and competence *or* warmth, we calculated the effects within two groups: (a) low competence or low warmth (i.e., negative stereotype), and (b) high competence or high warmth (i.e., positive stereotype). The decomposed effect represents an effect found on relevant levels of competence or warmth. When we predicted the effect of contact on attitudes for low competence and/or warmth, we used values below the midpoint of the scale: 1 and 2. When we predicted the effect of contact on attitudes for high competence and/or warmth, we used values above the midpoint of the scale: 4 and 5.

As a robustness check, we compared effect sizes of stereotype-consistent and stereotype-inconsistent contact on outgroup attitudes *within* participants who perceived the same group stereotype, that is, the same level of competence and/or warmth. This robustness check had another advantage. We expected that certain stereotypes will prevail and, consequently, will be associated with more reliable estimates than less prevalent stereotypes. Comparison of estimates coming from a group of participants who perceived prevalent stereotypes should be more reliable than comparison of estimates coming from a group of participants who perceived less frequent stereotypes.

Before running the moderation analysis, all independent variables were scaled. To estimate the models, we ran Bayesian regression models. We used the *rstanarm* package (Goodrich et al., 2018) implemented in R. We used one chain and 10,000 iterations. We report estimated effects and uncertainty intervals, that is, the given probability that the effect will be found in a given interval. To identify potential outliers, we used the *loo* package (Vehtari et al., 2019). With respect to missing data, observations with missing values were excluded.

In the preliminary analysis, we tested which variables predicted outgroup attitudes at T2, and we included variables with significant effects in the consequent analyses.

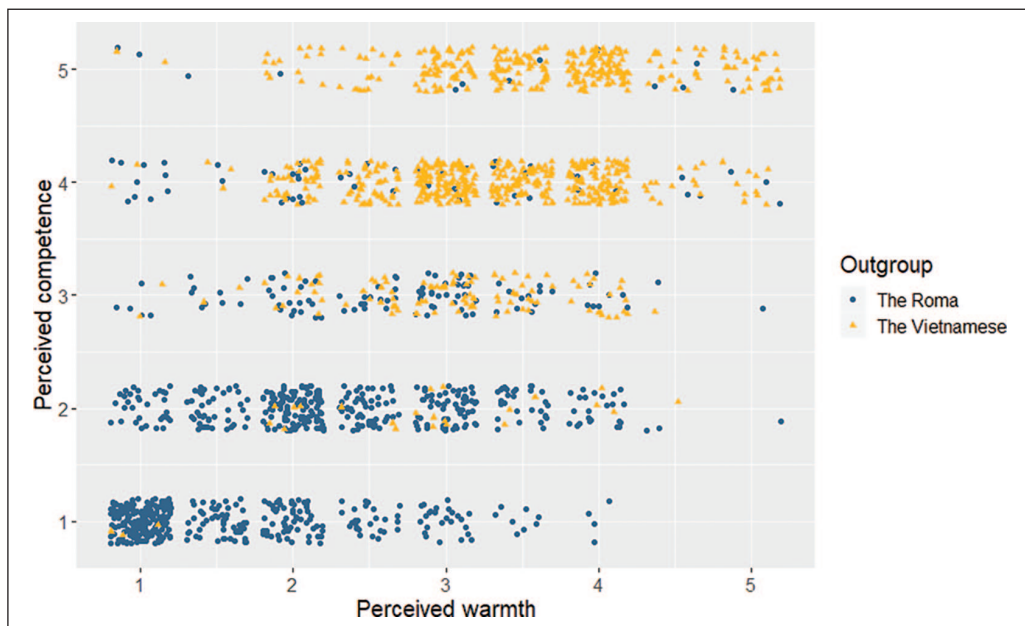


Figure 1. Distribution of perceived stereotypes of the Roma and the Vietnamese.

Note. The plot was jittered for a clearer presentation of distributions.

We conducted a post hoc power analysis for the model, in which we focused on the required sample size to estimate three-way and lower level interactions between change in contact and stereotypes (i.e., competence and warmth). The expected effect size was small due to the estimation of two three-way interactions and all lower level interactions at the same time. Specific information used for this analysis is as follows: $f^2 = .02$, $\alpha = .05$, total sample size = .890, number of tested predictors: 12, number of effects of interest: six. Using G*Power (Faul et al., 2007), we calculated that the estimated power was .90 (the script and data are publicly available at <https://osf.io/y7zwt>).

Results

Preliminary data analyses. First, we examined the distribution of perceived stereotypes among participants. The majority of participants shared a similar perception of stereotypes spread in society (see Figure 1), implying low variability and highly skewed distribution of both stereotypical dimensions. High agreement among participants

indicates that there are normative stereotypes present in society, and participants were able to identify them. In the case of the Roma, the vast majority perceived negative stereotypes. In the case of the Vietnamese, the vast majority of participants perceived positive stereotypes. The largest difference between the stereotypical perception of the Roma and the Vietnamese was on the competence dimension, where virtually nobody indicated that society perceives the Roma as competent and the Vietnamese as incompetent. Due to the low variability of the stereotypical perception, estimates of contact effects on outgroup attitudes for the few participants who indicated that the most common Roma stereotype was positive and the Vietnamese stereotype negative should be interpreted with caution.

No control variables predicted attitudes towards the Roma and the Vietnamese at T2 while we controlled for attitudes at T1. Thus, we did not control for any variables.

Means, standard deviations, and correlations for the whole sample are presented in Tables 1 and 2. Correlations between the variables were

Table 1. Means, standard deviations, and correlations between variables relating to the Roma.

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
1. Perceived warmth	2.12	0.95									
2. Perceived competence	1.89	0.95	.44**								
3. Change in positive contact	0.13	0.78	-.03	.04							
4. Change in negative contact	-0.10	1.01	.02	.00	-.24**						
5. Attitudes at T1	35.01	22.25	.34**	.21**	-.04	.11**					
6. Attitudes at T2	36.00	21.30	.33**	.18**	.09**	-.01	.69**				
7. Positive contact at T1	1.99	0.88	.36**	.19**	-.41**	.16**	.53**	.53**			
8. Positive contact at T2	2.11	0.91	.33**	.22**	.47**	-.05	.54**	.59**	.61**		
9. Negative contact at T1	3.28	1.27	-.25**	-.14**	.07	-.46**	-.59**	-.55**	-.51**	-.44**	
10. Negative contact at T2	3.18	1.21	-.25**	-.14**	-.13**	.36**	-.53**	-.58**	-.40**	-.50**	.66**

Note. Range of competence, warmth, positive contact, and negative contact: 1–5. Range of attitudes: 0–100. Range of change in contact: -4 to 4.
p* < .05. *p* < .01.

Table 2. Means, standard deviations, and correlations between variables relating to the Vietnamese.

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
1. Perceived warmth	3.36	0.79									
2. Perceived competence	4.18	0.76	.32**								
3. Change in positive contact	0.04	0.94	-.03	-.02							
4. Change in negative contact	0.04	0.80	.10**	.09**	-.15**						
5. Attitudes at T1	61.16	16.85	.37**	.18**	-.12**	.13**					
6. Attitudes at T2	60.99	16.79	.29**	.12**	.02	-.02	.59**				
7. Positive contact at T1	3.31	0.99	.30**	.15**	-.52**	.09**	.47**	.40**			
8. Positive contact at T2	3.35	0.94	.29**	.14**	.45**	-.06	.38**	.44**	.53**		
9. Negative contact at T1	1.83	0.77	-.20**	-.15**	.11**	-.57**	-.37**	-.25**	-.29**	-.20**	
10. Negative contact at T2	1.86	0.73	-.10**	-.05	-.06	.50**	-.25**	-.29**	-.21**	-.28**	.42**

Note. Range of competence, warmth, positive contact, and negative contact: 1–5. Range of attitudes: 0–100. Range of change in contact: -4 to 4.
p* < .05. *p* < .01.

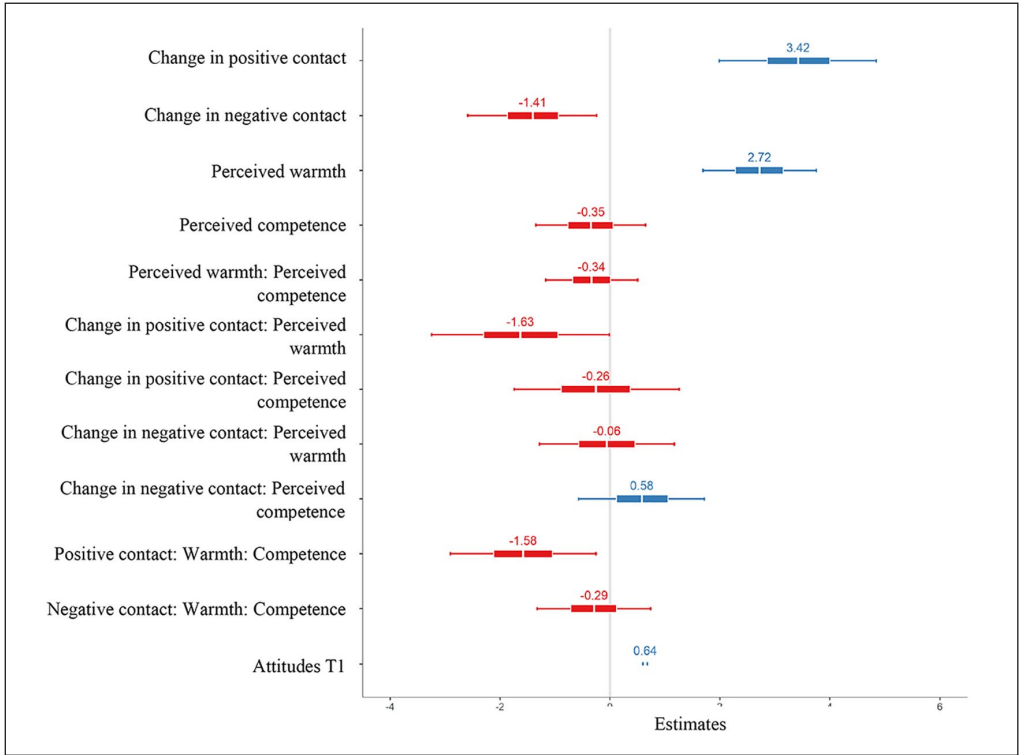


Figure 2. Effects of independent variables and their interactions on outgroup attitudes towards the Roma at T2.

Note. Outgroup attitudes ranged from 0 to 100. The central thick box represents the effect estimated with 50% CI; lines on the side of the boxes represent the effect estimated with 90% CI. In each box, the central white line represents the mean effect. In this plot, all independent variables were z -scored to make the effects comparable.

not very high, indicating that all variables represent independent constructs. Furthermore, either competence or warmth did not strongly correlate with change in contact or with outgroup attitudes, indicating that participants with positive or negative stereotypes did not differ on change in contact or on outgroup attitudes.

The effect of stereotype-consistent and stereotype-inconsistent contact on outgroup attitudes

Perceived stereotypes of the Roma. First, we estimated the effect of change in contact in the context of group stereotypes on attitudes towards the Roma (see Figure 2). The diagnostic of the model revealed one extreme outlier, which was removed. The auto-regressive path from attitudes towards the Roma at T1 to attitudes towards the Roma at T2 was significant, $b = 0.64$, $SE = 0.02$, 95% CI

[0.59, 0.69]. Paths from change in positive contact, $b = 3.42$, $SE = 0.86$, 95% CI [1.73, 5.11]; from change in negative contact, $b = -1.41$, $SE = 0.71$, 95% CI [-2.85, -0.02]; and from warmth at T1, $b = 2.72$, $SE = 0.63$, 95% CI [1.51, 3.95] were also significant. The effect of perceived competence at T1 on outgroup attitudes at T2 was not significant, $b = -0.35$, $SE = 0.63$, 95% CI [-1.56, 0.86].

In order to compare the effects of stereotype-consistent versus stereotype-inconsistent contact on attitudes, we performed a moderation analysis to determine whether change in contact depended on stereotypes of the Roma. The three-way interaction between change in positive contact, competence, and warmth predicted change in outgroup attitudes, $b = -1.58$, $SE = 0.80$, 95% CI [-3.18, -0.02], indicating that both stereotypical

Table 3. Simple effects of the three-way interaction between change in positive contact, competence, and warmth of the Roma.

	<i>n</i>	Change in negative contact		Change in positive contact	
		B	95% CI	b	95% CI
Low competence, low warmth	554	-1.66	[-3.53, 0.28]	4.14	[1.63, 6.64]
Low competence, high warmth	66	-1.49	[-6.10, 3.19]	1.10	[-5.00, 7.01]
High competence, low warmth	34	0.62	[-4.71, 5.88]	6.29	[-0.29, 12.94]
High competence, high warmth	26	-1.80	[-8.55, 5.10]	-11.01	[-20.63, -1.65]

Note. Perceived competence and warmth ranged from 1 to 5; low competence and warmth included values 1 and 2; high competence and warmth included values 4 and 5; *n* represents all participants who indicated low (below midpoint of the scale) and/or high (above midpoint of the scale) values of competence and warmth. Based on these combinations, each effect was estimated four times and then averaged, that is, low competence and warmth equals 1 and 2, high competence and warmth equals 4 and 5. Combinations that involved neutral values (3) were not included in the decomposition. Significant effects are boldfaced.

dimensions mutually moderated the effect of change in positive contact on outgroup attitudes. The decomposition of the interaction effect showed that participants who perceived negative stereotypes of the Roma (participants whose scores of competence and warmth were lower than the midpoint: equal to 1 or 2 on a scale from 1 to 5) were affected by change in positive, $b = 4.14$, 95% CI [1.63, 6.64], but not in negative contact, $b = -1.66$, 95% CI [-3.53, 0.28] (see Table 3). The interaction shows that outgroup attitudes of participants who perceived negative stereotypes were more affected by change in positive contact than attitudes of participants who perceived positive stereotypes. The effect of change in positive contact (i.e., stereotype-inconsistent contact) was stronger than the effect of change in negative contact (i.e., stereotype-consistent contact) also when we compared these effects within participants who perceived negative stereotypes (robustness check; see Table 3). The comparison of effects of stereotype-consistent and stereotype-inconsistent contact on change in outgroup attitudes is graphically presented in Figure 5. We plotted the predicted values of attitudes at T2 based on change in positive (stereotype-inconsistent) and negative (stereotype-consistent) contact. Increase or decrease in positive contact had greater impact on attitudes than change in negative contact, as indicated by the steepness of the two slopes.

The stronger effect of stereotype-inconsistent contact in participants who perceived positive

stereotypes (participants whose scores of competence and warmth were higher than the midpoint: equal to 4 or 5 on a scale from 1 to 5) was not replicated. A possible reason might be the low power associated with the low number of participants ($n = 26$) who perceived positive stereotypes of the Roma. Outgroup attitudes towards ambivalently perceived groups were not affected by change in intergroup contact (see Table 3). However, the number of participants who did not perceive negative stereotypes was low (see Table 3) and, consequently, the estimates associated with their stereotypes were unreliable, precluding interpretation.

To summarize, the results showed that participants who perceived negative stereotypes of the Roma were only affected by change in positive, stereotype-inconsistent contact, supporting stereotype-refutation Hypothesis H1b (not H1a; stereotype-confirmation H2 was not supported) that stereotype-inconsistent contact is a stronger predictor of outgroup attitudes than stereotype-consistent contact. The effects associated with other types of perceived stereotypes were either nonsignificant or unreliable.

Perceived stereotypes of the Vietnamese. First, we estimated the effect of change in contact in the context of group stereotypes on attitudes towards the Vietnamese (see Figure 3). We detected and removed one extreme outlier. The auto-regressive path from outgroup attitudes at T1 to outgroup

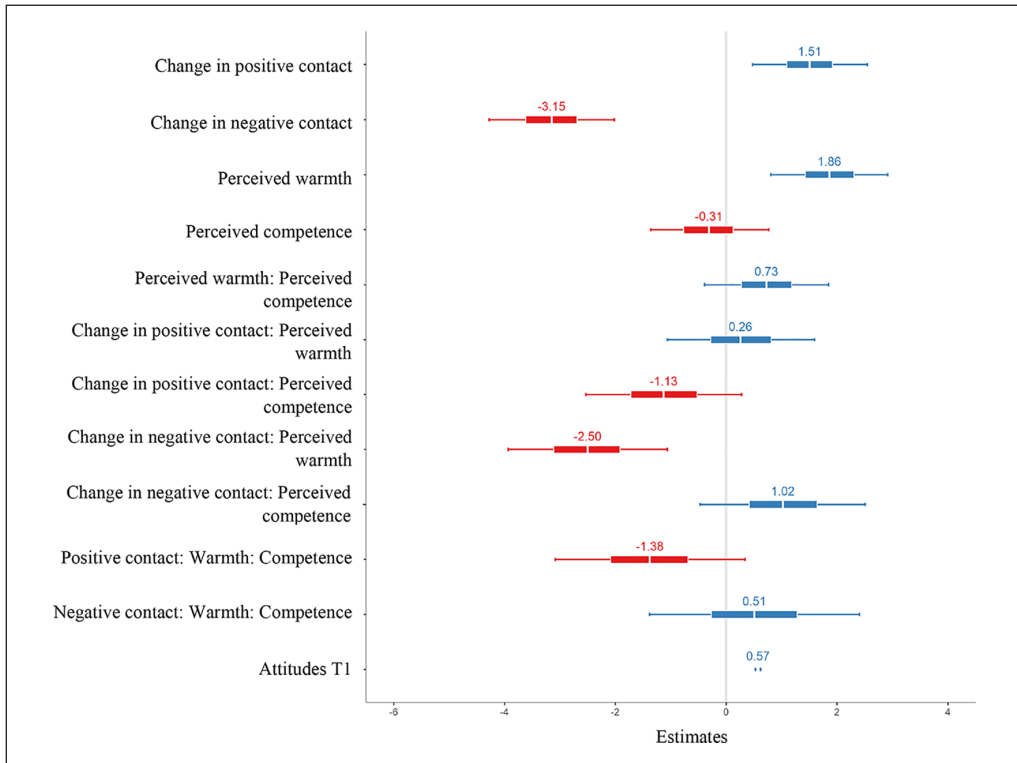


Figure 3. Effects of independent variables and their interactions on outgroup attitudes towards the Vietnamese at T2.

Note. Outgroup attitudes ranged from 0 to 100. The central thick box represents the effect estimated with 50% CI; lines on the side of the boxes represent the effect estimated with 90% CI. The central gray line represents the mean effect. In this plot, all independent variables were z -scored to make the effects comparable.

attitudes at T2 was significant, $b = 0.57$, $SE = 0.03$, 95% CI [0.51, 0.63], as well as the path from change in positive contact, $b = 1.51$, $SE = 0.63$, 95% CI [0.27, 2.76]; change in negative contact, $b = -3.15$, $SE = 0.69$, 95% CI [-4.51, -1.79]; and perceived warmth, $b = 1.86$, $SE = 0.64$, 95% CI [0.62, 3.12]. Perceived competence was not a significant predictor of outgroup attitudes at T2, either on its own, $b = -0.31$, $SE = 0.65$, 95% CI [-1.58, 0.99], in interaction with contact (see Figure 5 for an interaction with change in positive contact, negative contact, and warmth), or in interaction with warmth, $b = 0.73$, $SE = 0.69$, 95% CI [-0.63, 2.09].

We found a significant two-way interaction between change in negative contact and warmth, $b = -2.50$, $SE = 0.88$, 95% CI [-4.20, -0.79]. The decomposition of the interaction effect

showed that only participants who perceived positive stereotypes were affected by change in negative (i.e., stereotype-inconsistent) contact (see Table 4). Figure 4 illustrates the conditional effects of change in negative contact on outgroup attitudes towards the Vietnamese at T2, showing that the effect of change in negative contact increased with perceived warmth of Vietnamese people, supporting stereotype-refutation Hypothesis H1a (not H1b; stereotype-confirmation H2 was not supported). The comparison of effects of stereotype-consistent and stereotype-inconsistent contact on change in outgroup attitudes is graphically presented in Figure 5. We plotted predicted values of attitudes at T2 based on change in positive (stereotype-consistent) and negative (stereotype-inconsistent) contact. Increase or decrease in negative contact

Table 4. Simple effects of the two-way interaction between change in positive contact and warmth of the Vietnamese.

	<i>n</i>	Change in negative contact		Change in positive contact	
		B	95% CI	b	95% CI
Low warmth	168	1.48	[−1.64, 5.05]	1.05	[−2.06, 4.21]
High warmth	484	−6.01	[−4.65, −7.26]	1.79	[−0.43, 4.09]

Note. Perceived competence and warmth ranged from 1 to 5; effects were predicted for low competence and warmth that included values 1 and 2; high competence and warmth included values 4 and 5; *n* represents all participants who indicated low (below midpoint of the scale) or high (above midpoint of the scale) values of warmth. Each effect was estimated at two values of perceived warmth and then averaged, that is, low warmth equals 1 and 2, high warmth equals 4 and 5. Neutral values (3) were not included in the decomposition. Significant effect is boldfaced.

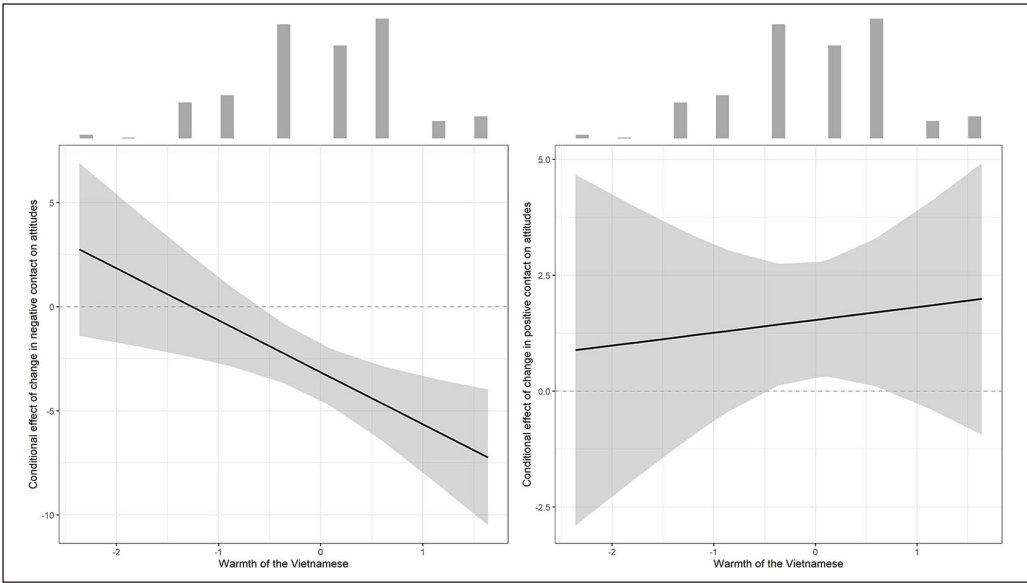


Figure 4. Conditional effect of change in positive contact (left) and change in negative contact (right) on outgroup attitudes towards the Vietnamese at different values of perceived warmth, showing the significant effect of change in negative but not positive contact.

Note. The X-axis represents the values of warmth after it was scaled; columns on the top of the plots represent the distribution in perceived warmth of the Vietnamese. The Y-axis represents the conditional effect sizes. If the highlighted region does not contain zero, the conditional effect was significant for a given value of warmth depicted on the X-axis.

had a more significant impact on attitudes than change in positive contact.

To sum up, participants who perceived positive stereotypes (warmth) of Vietnamese people were affected only by change in negative, stereotype-inconsistent contact. Competence did not play a role in the link between intergroup contact and attitudes; this mixed finding is discussed in

detail in what follows.¹ Thus, stereotype-inconsistent contact was the only predictor of outgroup attitudes towards both outgroups.

Discussion

The present study tested how change in intergroup contact influenced outgroup attitudes, considering

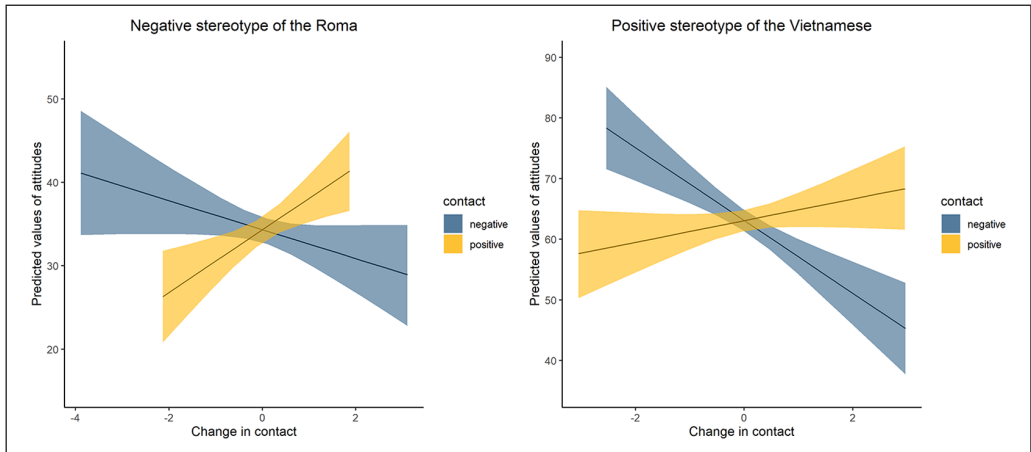


Figure 5. Predicted values of outgroup attitudes based on change in positive and negative contact—the cases of the Roma and the Vietnamese.

Note. In the case of negative stereotype of the Roma, change in negative contact represents stereotype-consistent contact, and change in positive contact represents stereotype-inconsistent contact. In the case of positive stereotype of the Vietnamese, change in positive contact represents stereotype-consistent contact, and change in negative contact represents stereotype-inconsistent contact.

the context in which intergroup contact takes place—specifically in the context of perceived group stereotypes. Results showed that stereotype-inconsistent contact played a greater role in shaping outgroup attitudes than stereotype-consistent contact. Our results suggest that this applies to decrease as well as increase in contact. In the case of the Roma, positive contact had a greater effect on outgroup attitudes when participants perceived that negative stereotypes about the Roma prevailed in society. In the case of the Vietnamese, negative contact influenced attitudes more than positive contact when stereotypes about Vietnamese people were perceived as positive. Thus, it was stereotype-inconsistent contact that had a greater influence on outgroup attitudes than stereotype-consistent contact. This was shown not only by the main analysis but was further confirmed by the robustness check contrasting the effects of stereotype-consistent contact with the effects of stereotype-inconsistent contact within the groups of participants who perceived the most prevalent stereotypes, showing that only stereotype-inconsistent contact predicted change in outgroup attitudes.

Perceived stereotypes determine whether intergroup contact changes outgroup attitudes. The role of group

stereotypes in the link between direct intergroup contact and attitudes has been neglected in intergroup contact research. Although two studies previously investigated the link between indirect contact and stereotypes (not attitudes) focusing on the moderating role of initial stereotypes, they yielded results that support the stronger influence of stereotype-inconsistent contact on outgroup outcomes in comparison to stereotype-consistent contact (Brambilla et al., 2012; Muniknsma et al., 2013). Positive indirect contact improved stereotypes especially among participants who perceived negative stereotypes and, in contrast, negative contact worsened stereotypes in participants who initially perceived positive stereotypes. Our study provides more nuanced evidence about the role of expectations in intergroup contact imposed by group characteristics by employing not only instances of positive but also negative intergroup experiences and two distinctly stereotyped minorities, which speaks to the generalizability of our findings. The results of our study support the literature that provides cues that stereotype-inconsistent contact has a larger impact on the formation of outgroup attitudes than stereotype-consistent contact. In fact, the results imply that stereotype-consistent

contact can have very limited consequences for changes in outgroup attitudes. There are several potential reasons why stereotype-inconsistent contact can shape outgroup attitudes more than stereotype-consistent contact, which were discussed in detail in the introduction of our hypotheses. For example, stereotype-inconsistent contact is more informative and thus attracts more attention or is processed more thoroughly (e.g., Clark & Kashima, 2007; Fiske, 1980; Sherman & Frost, 2000).

The meta-analysis of experimental studies conducted by Paolini and McIntyre (2019), which focused on individual-to-group generalization with both stigmatized and nonstigmatized outgroups, also emphasized the centrality of outgroup expectations. Its outcomes, however, found a generalization advantage of negative experiences for stigmatized outgroups and a generalization advantage of positive experiences for admired outgroups (i.e., expectation-consistent; Paolini & McIntyre, 2019). One factor that might explain the differences between that meta-analysis and studies finding a more important role of expectation-inconsistent contact (Brambilla et al., 2012; Munniksmä et al., 2013), including ours, is that we actually measured more nuanced group perceptions in the form of stereotypes while the meta-analysis dealt with predefined stigmatized and nonstigmatized groups. One reason why measurement of stereotypes might play a crucial role is that stereotypes can be defined by more than one dimension, which results in ambivalent stereotypes. Moreover, the meta-analysis employed evidence from a different field that did not primarily focus on the valence of generalization but rather the extent to which members' traits matched those of their group. More evidence is needed to disentangle the reasons for contradictory findings brought by the two lines of research.

In the case of the Vietnamese, only stereotypical warmth significantly interacted with change in contact in predicting outgroup attitudes. Asian minorities in general (Lin et al., 2005), and the Vietnamese in the Czech Republic in particular (Zingora, 2014), are perceived as competent. Thus, the perception of the Vietnamese as

competent might be so widespread that it can be redundant in explaining outgroup attitudes or the intergroup contact–outgroup attitudes link. An alternative explanation is that perceived competence can interact with warmth and change in contact only if warmth is low. If an outgroup is generally perceived as warm (i.e., having positive intentions), then whether this outgroup is competent to pursue these positive intentions is not much relevant since intergroup contact is not expected to be dangerous or harmful (Fiske et al., 2002). However, if an outgroup is perceived as cold (i.e., having negative intentions), then the difference that competence makes is of importance.

The stereotype-refutation hypotheses (H1) were not supported when participants perceived positive stereotypes of the Roma and negative stereotypes of the Vietnamese. In the case of the Roma, the number of participants who perceived stereotypes of them as positive was too low and can hardly be interpreted. In the case of the Vietnamese, the number of participants who perceived negative stereotypes was also much lower than the number of participants who perceived positive stereotypes. Our explanation of why change in contact did not affect participants with less frequently perceived stereotypes is that participants were aware of the most widespread stereotypes in society. Failing to report the most common stereotypes points to a motivation not to perceive the most common stereotypes as a kind of resistance, which may inhibit the effect of stereotypes perceived in society (Kunda & Sinclair, 1999).

The design of our study also provided a probe into the link between intergroup contact and attitudes in people holding ambivalent stereotypes (Cuddy et al., 2009). Our findings suggest that outgroup attitudes among people endorsing ambivalent stereotypes are not influenced by either change in positive or negative intergroup contact. Attitudes towards ambivalently stereotyped groups may be unaffected by change in intergroup contact because expectations about intergroup interaction are unclear, based on ambivalent emotions and beliefs connected with these groups (Fiske et al., 2002). It is possible that intergroup contact affects outgroup attitudes

only when positive and negative stereotypes create clear expectations about the valence of interactions with the given group. When expectations are mixed, the valence of intergroup contact has a less clear effect. We examined participants with ambivalent stereotypes only in the case of the Roma, where the three-way interaction between contact and both stereotypical dimensions was significant, but the number of participants with ambivalent stereotypes was too low to be reliably interpreted. Future research should focus on the effects of intergroup contact on outgroup attitudes toward groups associated with ambivalent stereotypes (e.g., disabled people, Jews), and identify the conditions that allow contact to be effective in challenging outgroup attitudes towards these groups.

An alternative explanation for our findings is a ceiling effect. For instance, participants who perceived positive outgroup stereotypes could have more positive attitudes than participants who perceived negative outgroup stereotypes. Consequently, stereotype-consistent positive contact would not have much room for improvement of the already positive attitudes. In contrast, stereotype-inconsistent negative contact could have more room for changing attitudes for the worse, thus resulting in a stronger effect of stereotype-inconsistent than stereotype-consistent contact. However, low correlations between stereotype dimensions and outgroup attitudes (see Tables 1 and 2) indicate that participants with positive (or negative) stereotypes are not necessarily those with negative (or positive) outgroup attitudes. A ceiling effect could also have manifested because attitudes towards the two contrasted outgroups—the Roma and the Vietnamese—differed. Positive contact had more room for improving attitudes towards the Roma, whereas negative contact had more room for worsening attitudes towards the Vietnamese. However, average attitudes towards both outgroups at both time points were not extreme, which indicates that both positive and negative contact could change outgroup attitudes to a similar extent. This implies that a ceiling effect is unlikely a significant factor influencing the results.

The investigation of our hypotheses by considering two differently stereotyped groups increases the likelihood of generalizability of our results to different social groups. The most robust finding is the effect of stereotype-inconsistent contact on outgroup attitudes. The slight differences between findings for the two groups (e.g., competence not playing a role in the case of the Vietnamese) may be due to the specificity of group perception in the Czech Republic. Thus, our conclusion should be tested in different intergroup contexts and social groups.

Implications. Intergroup contact has been promoted as an intervention for improving attitudes towards groups that need it most—those suffering from prejudice, discrimination, and negative stereotypes (Pettigrew & Tropp, 2013). Our study confirms that intergroup contact can indeed fulfil its purpose whereby positive intergroup contact can be an effective tool for improving attitudes towards negatively perceived groups, as is the case of the Roma in Central and Eastern Europe (Csepeli & Simon, 2004). At the same time, our results warn against applying intergroup contact as an attitude-improving intervention without considering perceived characteristics of the target outgroup. There is a danger that negative contact will deteriorate attitudes towards positively stereotyped groups more than positive contact will be able to improve them.

Our findings speak to the importance of knowing “what works” in planning intervention programs (Paluck, 2006). If we know which outgroup attitudes are more likely to be influenced by positive than by negative contact, this could help us identifying outgroups most suitable for contact interventions. Intergroup contact is not a panacea for improving outgroup attitudes and, as such, it should be applied with caution across distinct intergroup contexts where positive experiences may not work and negative experiences may change matters for the worse (Hewstone, 2003). Our study indicates that considering stereotypes attached to a group can be of crucial importance if we want to be able to maximize the effectiveness of contact as a prejudice-reduction strategy.

Limitations and future directions. The first limitation of our research relates to the fact that we employed a convenience sample that consisted mostly of university students. Another limitation is that we used just one item to measure competence and outgroup attitudes. Future studies should employ a more nuanced measurement of the constructs in order to further clarify how changes in positive and negative intergroup contact in the presence of various stereotypes shape outgroup attitudes towards groups associated with different stereotypes. Third, although our sample was relatively large, some combinations of competence and warmth were underrepresented. This is not necessarily due to the homogeneity of our sample; rather, it mirrors the fact that certain stereotypes prevail in society over others (e.g., negative stereotypes of the Roma). The small power associated with insufficient observations is a probable reason why we did not find significant estimates. Future research should examine intergroup contact with groups perceived in a less convergent way to test our hypotheses on a more variable scale of stereotypes.

Although we included respondents endorsing ambivalent stereotypes, we did not consider ambivalent contact. Ambivalent contact describes a situation in which participants have experienced distinct positive and negative intergroup exchanges in the past, or their particular experience with an outgroup member was positive and negative at the same time (Graf & Paolini, 2017). In the context of our study, ambivalent contact may also be stereotype-consistent if it corresponds to a specific ambivalent group stereotype (e.g., contact with a member of a group stereotyped as competent and cold during which one receives competent advice in a cold, impersonal way), or stereotype-inconsistent if it diverges from expectations based on the given combination of stereotypical dimensions (e.g., a member of a group stereotyped as competent but cold behaving in an incompetent but warm, hearty way). We suppose that ambivalent contact would also follow our prediction about the greater effect of stereotype-inconsistent versus stereotype-consistent contact.

However, more evidence about change in outgroup attitudes after ambivalent contact in the case of ambivalently stereotyped outgroups is needed.

Our findings should be cautiously interpreted with respect to causality since our research design allows interpreting mainly directional and temporal links. Although we employed the change-score model, the causal interpretation of our results should be bolstered by experimental studies.

This study has important implications for future research. Whereas there is a growing literature on individual differences as moderators of contact (Hodson et al., 2017), contact research has in fact largely overlooked the role of expectations both as potential antecedents for contact and as factors that can guide the appraisal of contact as well as its consequences for outgroup attitudes (for exceptions, see e.g., Bikmen, 2011; Stathi et al., 2020). In fact, contact has always been implicitly considered as a “starting point” without acknowledging that it may be shaped by prior expectations. The search for antecedents and moderators may be even more important when examining minority samples. To the extent that minorities are generally less affected by contact (Tropp & Pettigrew, 2005), investigating their expectations and the factors that prevent or instead facilitate contact is essential. This study further suggests the importance of taking into account the specific context and outgroups, since expectations and their effects may differ.

An important avenue that this study leaves open relates to the investigation of ambivalent stereotypes/attitudes as moderators of contact effects. Harsh or explicit forms of prejudice declined over the last decades, being replaced by more socially acceptable forms of prejudice (Dovidio & Gaertner, 2004). Although it is important to understand how contact shapes modern forms of prejudice, we argue that it is of equal importance to test how approaching contact and its consequences can differ depending on one's perception of ambivalent stereotypes.

Finally, departing from most contact research (e.g., Swart et al., 2011), we employed the conditional change-score model (Berrington et al.,

2006; Finkel, 1995) to investigate longitudinal relations. This approach allows to capture the process of contact dynamically and to investigate changes within individuals, therefore, it can provide important insights into how intergroup relations develop over time. Future studies can adopt different approaches simultaneously, which could provide complementary insights into the study of prejudice reduction after contact.

Another goal of future research can be to disentangle the roles of stereotypes and typicality; the role of typicality was shown to facilitate contact effects on outgroup attitudes (Brown, Eller, Leeds, & Stace, 2007; Brown & Hewstone, 2005). In our research, typicality could have been operationalized in terms of match between the valence of group stereotypes and the valence of intergroup contact with members of the given group. For example, negative contact with a negatively stereotyped outgroup can be viewed as typical. Yet, typicality can be conceptualized in many ways, for example, based on appearance of outgroup members corresponding to a prototype of an outgroup and not based on stereotype valence (and this is how it is generally conceptualized in contact research; cf. Brown & Hewstone, 2005). Thus, stereotype-consistent contact in our research should not be viewed as contact with a necessarily typical outgroup member.

Conclusions


With our novel approach to studying the dynamic effects of intergroup contact on attitudes in the context of different stereotypes, we enrich intergroup contact literature in several ways. We reintroduced the topic of perceived group stereotypes into the field of intergroup contact research and examined the consequences of contact and stereotype valence (mis)match for change in outgroup attitudes. We used longitudinal data, which enabled us to capture how dynamic changes in intergroup contact influence outgroup attitudes over time. Our design included two different groups and thus offers more ecologically valid and generalizable conclusions. In contrast to most studies from psychology of intergroup relations, we


treated outgroups as being associated with a variety of distinct stereotypical perceptions. Consequently, we documented how the effects of positive and negative contact on outgroup attitudes can differ depending on the actually perceived group stereotypes. The outcomes of our research are in line with the usual finding that positive contact improves outgroup attitudes; however, this was the case only when participants perceived group stereotypes as negative. At the same time, negative contact played a more prominent role than positive contact in shaping outgroup attitudes of people who perceived positive group stereotypes. These findings indicate that outgroup attitudes are primarily shaped by stereotype-inconsistent contact (i.e., positive contact with a negatively stereotyped group or negative contact with a positively stereotyped group), rather than by stereotype-consistent contact (i.e., positive contact with a positively stereotyped group or negative contact with a negatively stereotyped group).


Funding

This research was supported by a grant 20-01214S “Mutual perception of acculturation preferences in majority and immigrants: An intergroup perspective” awarded by the Czech Science Foundation and by RVO: 68081740 from the Institute of Psychology, Czech Academy of Sciences. The funder did not play a role in the research.

ORCID iDs

Tibor Zingora  <https://orcid.org/0000-0003-4063-7922>

Loris Vezzali  <https://orcid.org/0000-0001-7536-9994>

Sylvie Graf  <https://orcid.org/0000-0002-7810-5457>

Supplemental material

Supplemental material for this article is available online.

Note

1. In order to make the results relating to both minorities comparable, we reran the analysis for the Roma without competence that did not predict

outgroup attitudes towards the Vietnamese. In the case of the Roma, the effect of change in positive contact was significant only if perceived warmth was low, $b = 4.15$, 95% CI [1.98, 6.26], not high, $b = -2.30$, 95% CI [-6.82, 1.76]; and the effect of change in negative contact was nonsignificant regardless of perceived warmth: low: $b = -1.60$, 95% CI [-3.16, 0.08], high: $b = -1.46$, 95% CI [-4.68, 1.82]. Omitting competence in this analysis did not alter the interpretation of results.

References

- Aberson, C. L. (2015). Positive intergroup contact, negative intergroup contact, and threat as predictors of cognitive and affective dimensions of prejudice. *Group Processes & Intergroup Relations*, 18, 743–760. <https://doi.org/10.1177/1368430214556699>
- Allport, G. W. (1954). *The nature of prejudice*. Addison-Wesley.
- Anderson, N. H. (1971). Integration theory and attitude change. *Psychological Review*, 78, 171–206. <https://doi.org/10.1037/h0030834>
- Anonymous. (2014). Details omitted for double-blind reviewing.
- Árnadóttir, K., Lolliot, S., Brown, R., & Hewstone, M. (2018). Positive and negative intergroup contact: Interaction not asymmetry. *European Journal of Social Psychology*, 48, 784–800. <https://doi.org/10.1002/ejsp.2365>
- Bargh, J. A., Chen, M., & Burrows, L. (1996). Automaticity of social behavior: Direct effects of trait construct and stereotype activation on action. *Journal of Personality and Social Psychology*, 71, 230–244. <https://doi.org/10.1037/0022-3514.71.2.230>
- Barlow, F. K., Paolini, S., Pedersen, A., Hornsey, M. J., Radke, H. R. M., Harwood, J., Rubin, M., & Sibley, C. G. (2012). The contact caveat: Negative contact predicts increased prejudice more than positive contact predicts reduced prejudice. *Personality and Social Psychology Bulletin*, 38, 1629–1643. <https://doi.org/10.1177/0146167212457953>
- Bekhuis, H., Ruiter, S., & Coenders, M. (2013). Xenophobia among youngsters: The effect of inter-ethnic contact. *European Sociological Review*, 29, 229–242. <https://doi.org/10.1093/esr/jcr057>
- Berrington, A., Smith, P. W. F., & Sturgis, P. (2006). *An overview of methods for the analysis of panel data*. ESRC National Centre for Research Methods. <http://eprints.ncrm.ac.uk/415/1/MethodsReviewPaperNCRM-007.pdf>
- Bikmen, N. (2011). Asymmetrical effects of contact between minority groups: Asian and Black students in a small college. *Cultural Diversity and Ethnic Minority Psychology*, 17, 186–194. <https://doi.org/10.1037/a0023230>
- Brambilla, M., Ravenna, M., & Hewstone, M. (2012). Changing stereotype content through mental imagery: Imagining intergroup contact promotes stereotype change. *Group Processes & Intergroup Relations*, 15, 305–315. <https://doi.org/10.1177/1368430211427574>
- Brown, R., Eller, A., Leeds, S., & Stace, K. (2007). Intergroup contact and intergroup attitudes: A longitudinal study. *European Journal of Social Psychology*, 37, 692–703. <https://doi.org/10.1002/ejsp.384>
- Brown, R., & Hewstone, M. (2005). An integrative theory of intergroup contact. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 37, pp. 255–343). Elsevier. [https://doi.org/10.1016/S0065-2601\(05\)37005-5](https://doi.org/10.1016/S0065-2601(05)37005-5)
- Brown, R., Vivian, J., & Hewstone, M. (1999). Changing attitudes through intergroup contact: The effects of group membership salience. *European Journal of Social Psychology*, 29, 741–764. [https://doi.org/10.1002/\(SICI\)1099-0992\(199908/09\)29:5/6<741::AID-EJSP972>3.0.CO;2-8](https://doi.org/10.1002/(SICI)1099-0992(199908/09)29:5/6<741::AID-EJSP972>3.0.CO;2-8)
- Clark, A. E., & Kashima, Y. (2007). Stereotypes help people connect with others in the community: A situated functional analysis of the stereotype consistency bias in communication. *Journal of Personality and Social Psychology*, 93, 1028–1039. <https://doi.org/10.1037/0022-3514.93.6.1028>
- Cottrell, C. A., & Neuberg, S. L. (2005). Different emotional reactions to different groups: A sociofunctional threat-based approach to “prejudice”. *Journal of Personality and Social Psychology*, 88, 770–789. <https://doi.org/10.1037/0022-3514.88.5.770>
- Crandall, C. S., Eshleman, A., & O'Brien, L. (2002). Social norms and the expression and suppression of prejudice: The struggle for internalization. *Journal of Personality and Social Psychology*, 82, 359–378. <https://doi.org/10.1037/0022-3514.82.3.359>
- Csepeli, G., & Simon, D. (2004). Construction of Roma identity in Eastern and Central Europe: Perception and self-identification. *Journal of Ethnic and Migration Studies*, 30, 129–150. <https://doi.org/10.1080/1369183032000170204>
- Cuddy, A. J. C., Fiske, S. T., & Glick, P. (2007). The BIAS map: Behaviors from intergroup affect and

- stereotypes. *Journal of Personality and Social Psychology*, 92, 631–648. <https://doi.org/10.1037/0022-3514.92.4.631>
- Cuddy, A. J. C., Fiske, S. T., & Glick, P. (2008). Warmth and competence as universal dimensions of social perception: The stereotype content model and the BIAS map. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 40, pp. 61–149). Elsevier.
- Cuddy, A. J. C., Fiske, S. T., Kwan, V. S. Y., Glick, P., Demoulin, S., Leyens, J.-P., Bond, M. H., Croizet, J.-C., Ellemers, N., Sleebos, E., Htun, T. T., Kim, H.-J., Maio, G., Perry, J., Petkova, K., Todorov, V., Rodríguez-Bailón, R., Morales, E., Moya, M., . . . Ziegler, R. (2009). Stereotype content model across cultures: Towards universal similarities and some differences. *British Journal of Social Psychology*, 48, 1–33. <https://doi.org/10.1348/014466608X314935>
- Dasgupta, N., & Greenwald, A. G. (2001). On the malleability of automatic attitudes: Combating automatic prejudice with images of admired and disliked individuals. *Journal of Personality and Social Psychology*, 81, 800–814. <https://doi.org/10.1037/0022-3514.81.5.800>
- Dijksterhuis, A., & van Knippenberg, A. (1995). Memory for stereotype-consistent and stereotype-inconsistent information as a function of processing pace. *European Journal of Social Psychology*, 25, 689–693. <https://doi.org/10.1002/ejsp.2420250607>
- Dovidio, J. F., & Gaertner, S. L. (2004). Aversive racism. *Advances in Experimental Social Psychology*, 36, 1–51. <https://doi.org/10.4135/9781412972017.n16>
- Erber, R., & Fiske, S. T. (1984). Outcome dependency and attention to inconsistent information. *Journal of Personality and Social Psychology*, 47, 709–726. <https://doi.org/10.1037/0022-3514.47.4.709>
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175–191. <https://doi.org/10.3758/BF03193146>
- Finkel, S. E. (1995). *Causal analysis with panel data*. SAGE.
- Fiske, S. T. (1980). Attention and weight in person perception: The impact of negative and extreme behavior. *Journal of Personality and Social Psychology*, 38, 889–906. <https://doi.org/10.1037/0022-3514.38.6.889>
- Fiske, S. T., Cuddy, A. J. C., Glick, P., & Xu, J. (2002). A model of (often mixed) stereotype content: Competence and warmth respectively follow from perceived status and competition. *Journal of Personality and Social Psychology*, 82, 878–902. <https://doi.org/10.1037/0022-3514.82.6.878>
- Fiske, S. T., Lin, M. H., & Neuberg, S. L. (1999). The continuum model: Ten years later. In S. Chaiken & Y. Trope (Eds.), *Dual process theories in social psychology* (pp. 231–254). Guilford Press.
- Fiske, S. T., & Neuberg, S. L. (1990). A continuum of impression formation, from category-based to individuating processes: Influences of information and motivation on attention and interpretation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 1–74). Elsevier. [https://doi.org/10.1016/S0065-2601\(08\)60317-2](https://doi.org/10.1016/S0065-2601(08)60317-2)
- Gocłowska, M. A., & Crisp, R. J. (2013). On counter-stereotypes and creative cognition: When interventions for reducing prejudice can boost divergent thinking. *Thinking Skills and Creativity*, 8, 72–79. <https://doi.org/10.1016/j.tsc.2012.07.001>
- Goodrich, B., Gabry, J., Ali, I., & Brilleman, S. (2018). rstanarm: Bayesian applied regression modeling via Stan (R package Version 2.17.4) [Computer software]. <http://mc-stan.org/>
- Graf, S., & Paolini, S. (2017). Investigating positive and negative intergroup contact. In L. Vezzali & S. Stathi (Eds.), *Intergroup contact theory: Recent developments and future directions* (pp. 92–113). Taylor & Francis.
- Graf, S., Paolini, S., & Rubin, M. (2014). Negative intergroup contact is more influential, but positive intergroup contact is more common: Assessing contact prominence and contact prevalence in five Central European countries. *European Journal of Social Psychology*, 44, 536–547. <https://doi.org/10.1002/ejsp.2052>
- Haddock, G., Zanna, M. P., & Esses, V. M. (1993). Assessing the structure of prejudicial attitudes: The case of attitudes toward homosexuals. *Journal of Personality and Social Psychology*, 65, 1105–1118. <https://doi.org/10.1037/0022-3514.65.6.1105>
- Hamilton, D. L., Sherman, S. J., & Ruvalo, C. M. (1990). Stereotype-based expectancies: Effects on information processing and social behavior. *Journal of Social Issues*, 46, 35–60. <https://doi.org/10.1111/j.1540-4560.1990.tb01922.x>
- Hardin, C. D., & Conley, T. D. (2001). A relational approach to cognition: Shared experience and

- relationship affirmation in social cognition. In G. B. Moskowitz (Ed.), *Cognitive social psychology: The Princeton Symposium on the Legacy and Future of Social Cognition* (pp. 3–17). Lawrence Erlbaum Associates.
- Hayward, L. E., Tropp, L. R., Hornsey, M. J., & Barlow, F. K. (2017). Toward a comprehensive understanding of intergroup contact: Descriptions and mediators of positive and negative contact among majority and minority groups. *Personality and Social Psychology Bulletin*, 43, 347–364. <https://doi.org/10.1177/0146167216685291>
- Hewstone, M. (2003). Intergroup contact: Panacea for prejudice? *The Psychologist*, 16, 352–355. <https://ora.ox.ac.uk/objects/uuid:fc21a9d6-950d-4937-8053-223ad6d4867c>
- Hodson, G., Turner, R. N., & Choma, B. L. (2017). Individual differences in intergroup contact propensity and prejudice reduction. In L. Vezali & S. Stathi (Eds.), *Intergroup contact theory: Recent developments and future directions* (pp. 8–30). Routledge.
- Kelman, H. C. (1958). Compliance, identification, and internalization: Three processes of attitude change. *Journal of Conflict Resolution*, 2, 51–60. <https://doi.org/10.1177/002200275800200106>
- Kunda, Z., & Sinclair, L. (1999). Motivated reasoning with stereotypes: Activation, application, and inhibition. *Psychological Inquiry*, 10, 12–22. https://doi.org/10.1207/s15327965pli1001_2
- Lin, M. H., Kwan, V. S. Y., Cheung, A., & Fiske, S. T. (2005). Stereotype content model explains prejudice for an envied outgroup: Scale of Anti-Asian American Stereotypes. *Personality and Social Psychology Bulletin*, 31, 34–47. <https://doi.org/10.1177/0146167204271320>
- Macrae, C. N., Hewstone, M., & Griffiths, R. J. (1993). Processing load and memory for stereotype-based information. *European Journal of Social Psychology*, 23, 77–87. <https://doi.org/10.1002/ejsp.2420230107>
- Munniksma, A., Stark, T. H., Verkuyten, M., Flache, A., & Veenstra, R. (2013). Extended intergroup friendships within social settings: The moderating role of initial outgroup attitudes. *Group Processes & Intergroup Relations*, 16, 752–770. <https://doi.org/10.1177/1368430213486207>
- Munro, G. D., & Ditto, P. H. (1997). Biased assimilation, attitude polarization, and affect in reactions to stereotype-relevant scientific information. *Personality and Social Psychology Bulletin*, 23, 636–653. <https://doi.org/10.1177/0146167297236007>
- Paluck, E. L. (2006). Diversity training and intergroup contact: A call to action research. *Journal of Social Issues*, 62, 577–595. <https://doi.org/10.1111/j.1540-4560.2006.00474.x>
- Paluck, E. L., Green, S. A., & Green, D. P. (2018). The contact hypothesis re-evaluated. *Behavioural Public Policy*, 3, 1–30. <https://doi.org/10.1017/bpp.2018.25>
- Paolini, S., & McIntyre, K. (2019). Bad is stronger than good for stigmatized, but not admired outgroups: Meta-analytical tests of intergroup valence asymmetry in individual-to-group generalization experiments. *Personality and Social Psychology Review*, 23, 3–47. <https://doi.org/10.1177/1088868317753504>
- Pettigrew, T. F. (1998). Intergroup contact theory. *Annual Review of Psychology*, 49, 65–85. <https://doi.org/10.1146/annurev.psych.49.1.65>
- Pettigrew, T. F., & Tropp, L. R. (2006). A meta-analytic test of intergroup contact theory. *Journal of Personality and Social Psychology*, 90, 751–783. <https://doi.org/10.1037/0022-3514.90.5.751>
- Pettigrew, T. F., & Tropp, L. R. (2013). *When groups meet: The dynamics of intergroup contact*. Psychology Press.
- Richards, Z., & Hewstone, M. (2001). Subtyping and subgrouping: Processes for the prevention and promotion of stereotype change. *Personality and Social Psychology Review*, 5, 52–73. https://doi.org/10.1207/S15327957PSPR0501_4
- Rowe, L., & Goodman, S. (2014). “A stinking filthy race of people inbred with criminality”: A discourse analysis of prejudicial talk about Gypsies in discussion forums. *Romani Studies*, 24, 25–42. <https://doi.org/10.3828/rs.2014.2>
- Seibt, B., & Förster, J. (2004). Stereotype threat and performance: How self-stereotypes influence processing by inducing regulatory foci. *Journal of Personality and Social Psychology*, 87, 38–56. <https://doi.org/10.1037/0022-3514.87.1.38>
- Sherman, J. W., & Frost, L. A. (2000). On the encoding of stereotype-relevant information under cognitive load. *Personality and Social Psychology Bulletin*, 26, 26–34. <https://doi.org/10.1177/0146167200261003>
- Stangor, C., & McMillan, D. (1992). Memory for expectancy-congruent and expectancy-incongruent information: A review of the social and

- social developmental literatures. *Psychological Bulletin*, 111, 42–61. <https://doi.org/10.1037/0033-2909.111.1.42>
- Stathi, S., Vezzali, L., Di Bernardo, G. A., & Tropp, L. (2020). Do they want contact with us? The role of intergroup contact metaperceptions on positive contact and attitudes. *Journal of Community and Applied Social Psychology*. <https://doi.org/10.1177/10.1002/casp.2452>
- STEM. (2016). *What attitudes do Czech citizens have towards various nationalities and ethnic groups?* <https://en.stem.cz/what-attitudes-do-czech-citizens-have-towards-various-nationalities-and-ethnic-groups-2/>
- Swart, H., Hewstone, M., Christ, O., & Voci, A. (2011). Affective mediators of intergroup contact: A three-wave longitudinal study in South Africa. *Journal of Personality and Social Psychology*, 101, 1221–1238. <https://doi.org/10.1037/a0024450>
- Tropp, L. R., & Pettigrew, T. F. (2005). Relationships between intergroup contact and prejudice among minority and majority status groups. *Psychological Science*, 16, 951–957. <https://doi.org/10.1111/j.1467-9280.2005.01643.x>
- Vehtari, A., Gabry, J., Yao, Y., & Gelman, A. (2019). loo: Efficient leave-one-out cross-validation and WAIC for Bayesian models (R package Version 2.1.0) [Computer software]. <https://CRAN.R-project.org/package=loo>
- Wigboldus, D. H. J., Dijksterhuis, A., & van Knippenberg, A. (2003). When stereotypes get in the way: Stereotypes obstruct stereotype-inconsistent trait inferences. *Journal of Personality and Social Psychology*, 84, 470–484. <https://doi.org/10.1037/0022-3514.84.3.470>
- Zingora, T. (2014). *Roma and Vietnamese through the eyes of majority group: The role of threat in the relationship between intergroup contact and attitudes* (Unpublished master's thesis). Masaryk University, Brno, Czech Republic.
- Zingora, T., & Graf, S. (2019). Marry who you love: Intergroup contact with gay people and another stigmatized minority is related to voting on the restriction of gay rights through threat. *Journal of Applied Social Psychology*, 49, 684–703. <https://doi.org/10.1111/jasp.12627>