Positive and negative intergroup contact: interaction not asymmetry

Katrín Árnadóttir[1], Simon Lolliot[2], Rupert Brown[1] and Miles Hewstone[3]

[1]University of Sussex, UK

[2]University of British Columbia, Canada

[3]University of Oxford, UK

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Author note: Correspondence concerning this article should be addressed to Rupert Brown, School of Psychology, University of Sussex, Brighton BN1 9QH, UK; r.brown@sussex.ac.uk.

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Abstract

This research reports a novel investigation into the comparative effects of positive and negative direct and extended intergroup contact on intergroup orientations. It tested the generality of the positive-negative asymmetry effect among majority (N = 357) and minority (N = 101) group members in Iceland. Little evidence of asymmetry was observed: the beneficial effects of positive contact were mostly as strong as the detrimental effects of negative contact, for both direct and extended contact. However, evidence was found for alternative interaction models in which positive contact buffers the negative effects of negative contact, and negative contact enhances the benefits of positive contact. These interaction effects were found only for direct contact and principally in the majority group, but were also found for the minority group, though more weakly. No interaction was observed for extended contact. It appeared that differential group salience elicited by positive and negative contact could partly contribute to the explanation of the observed effects, at least in the majority sample.

In the field of intergroup relations, one of the most reliable – if not always the strongest – effects is that contact between members of different groups leads to lessened prejudice and more favourable intergroup attitudes (Brown & Hewstone, 2005; Lemmer & Wagner, 2015; Pettigrew & Tropp, 2006). As is well known, this *Contact Hypothesis* was first properly formulated by Allport (1954) who specified four optimal conditions for such contact to have the strongest effects. These conditions have also received empirical support (Pettigrew & Tropp, 2006). Yet, with his usual prescience, Allport (1954, p. 261) warned that contact was not a universal panacea for prejudice; in some conditions, he suggested that it might actually lead to a worsening of intergroup relations. One of the more obvious of these conditions is where the contact is negative – that is, where encounters between members of different groups are marked by perceived threat or outright hostility. After many years of neglect, research attention has recently returned to such negative contact contexts, with some commentators claiming that negative contact may have stronger deleterious effects on intergroup relations than positive contact has beneficial effects – the so-called positive-negative contact asymmetry hypothesis (Barlow, Paolini, Pederson, Hornsey, Radke, Harwood & Sibley, 2012). In this paper, we re-examine this hypothesis in a novel intergroup setting and also provide evidence for an alternative model in which the focus is on understanding how positive and negative contact *interact* with each other.

The positive-negative contact asymmetry hypothesis

More than six decades of research have established beyond doubt that when members of different groups meet each other under the appropriate positive conditions – sustained, equal status, cooperative contact with the support of relevant institutional authorities – then intergroup attitudes become more positive (Pettigrew & Tropp, 2006). The benefits of positive contact are not limited to direct contact however. The last two decades have witnessed the emergence of evidence attesting the prejudice-reducing effects of various forms

of positive *indirect* contact also, principally extended contact (Wright, Aron, Mclaughlin-Volpe, & Ropp, 1997), vicarious contact (Cameron, Rutland, Brown, & Douch, 2006), and imagined contact (Crisp & Turner, 2009). Although such indirect contact may not always be as powerful or as durable in its effects as direct contact (though cf. Zhou, Page-Gould, Aron, Moyer & Hewstone, 2016), there is no question as to its efficacy in a wide variety of intergroup contexts (Brown & Paterson, 2016; Turner, Hewstone, Voci, Paolini, & Christ, 2007; Turner & Cameron, 2016; Vezzali, Hewstone, Capozza, Giovannini, & Wölfer, 2014). Furthermore, a growing body of research demonstrates that the beneficial effects of intergroup contact are not limited to prejudice-reduction. Positive intergroup contact, both direct and indirect, is associated with a host of beneficial outcomes, from more favourable implicit attitudes (e.g., Tam et al., 2006) to increased trust and forgiveness after bouts of intergroup conflict (e.g., Hewstone et al., 2006).

Notwithstanding this accumulation of evidence in support of positive contact, commentators from Allport (1954) onwards have warned that intergroup encounters sometimes occur under sub-optimal – even explicitly negative – conditions and that these can result in worsened intergroup relationships. Such caution was given added piquancy by Barlow and her colleagues (2012) who, in research conducted in a diverse range of contexts, argued that not only did negative contact yield adverse outcomes (as expected), but those deleterious effects were consistently stronger than the beneficial effects of positive contact. To explain this valence asymmetry effect (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001), Barlow and colleagues (2012) drew on some earlier findings of Paolini and colleagues (2010) which had found that negative contact experiences tended to heighten category salience more than did positive contact. Such a differential effect might have the consequence of enhancing the generalisation of any effects of contact which, in the case of negative encounters, are likely to be inimical to favourable intergroup attitudes or behaviour (Brown &

Hewstone, 2005). Thus, Barlow and her colleagues concluded that the greater apparent potency of negative contact should act as a counterweight to overoptimistic claims about the social benefits of positive contact.

However, the evidence for positive-negative asymmetry in intergroup contact is far from being consistent. Consider, first, direct contact: some studies have, indeed, found asymmetry (in favour of negative contact) on various outcome measures (Barlow et al., 2012; Dhont & Van Hiel, 2009; Dhont, Cornelis, & Van Hiel, 2010; Graf, Paolini, & Rubin, 2014; Labianca, Brass, & Gray, 1998; Paolini, Harwood, & Rubin, 2010; Paolini et al., 2014). Others, however, have failed to observe it, with some finding stronger effects for positive contact (Fell et al., 2016; Pettigrew, Tropp, Wagner, & Christ, 2011), and others finding little difference between positive and negative contact (Aberson & Gaffney, 2009; Bekhuis, Ruiter, & Coenders, 2013; Mazziotta, Rohmann, Wright, De Tezanos Pinto, & Lutterbach, 2015).

Much less research has investigated asymmetry effects of *indirect* contact. Wright and colleagues (1997, Study 4) experimentally compared negative, neutral and positive extended contact, and found that, while outgroup attitudes were less favourable in the negative than in the positive condition, these were not noticeably lower than in the neutral condition, whereas attitudes in the positive condition *were* more favourable than in the neutral condition (i.e., asymmetry in favour of *positive* extended contact). In two studies, Maziotta and colleagues (2015) observed scant differences in the absolute magnitude of associations between positive and negative extended contact and intergroup attitudes, although negative extended contact was correlated with negative direct contact more strongly than positive extended contact was correlated with positive direct contact. On the other hand, Labianca and colleagues (1998), using network analysis of relationships among work groups, found that negative indirect relationships were a stronger predictor of perceived intergroup conflict than were positive indirect relationships. This is more consistent with the asymmetry hypothesis.

In short, then, with positive and negative direct contact, (negative) asymmetry is far from being the general rule. The evidence base for positive-negative asymmetry in indirect contact effects is much smaller and, again, leads to an equivocal conclusion. It is also noteworthy that none of the above research has investigated asymmetry effects among minority groups, a significant lacuna in view of the fact that such groups tend to report having more intergroup contact experiences while also showing rather weaker contact effects overall (Tropp & Pettigrew, 2005).

Understanding the joint effects of positive and negative intergroup contact

Initial discussions of asymmetry effects from Barlow et al. (2012) onwards were predicated on an additive model. That is, it was assumed that the advantages of positive contact were outweighed by the larger disadvantages of negative contact because of the greater impact of negative contact on group salience (Paolini et al., 2010). However, that same salience argument was employed by Paolini and colleagues (2014) to predict that past experiences of positive contact might also moderate any contemporary negative contact effects by reducing the tendency for negative encounters to increase category salience. Across four studies set in different intergroup contexts and employing different implementations of positive and negative contact (both direct and indirect), they did indeed find that prior positive contact experiences weakened the relationship between negative contact and enhanced group salience. However, that initial investigation of positive-negative interaction effects focussed only on group salience as an outcome variable. Recently, Fell and his colleagues (2016) have tested *interaction* effects on intergroup attitudes. In their studies, the effects of negative contact on attitudes were hypothesised to be conditional upon the presence (or absence) of positive contact. Fell et al. (2016) proposed that such interaction effects could take four possible forms: (i) '*buffering*', in which positive contact mitigates the detrimental effects of negative contact by reducing the perceived 'fit' between negative contact and pre-existing

negative outgroup stereotypes; (ii) '*facilitation*', where positive contact yields enhanced benefits in the presence of negative contact by creating a more extreme contrast from the presumed neutral point (reported for imagined contact by Birtel & Crisp, 2012); (iii) '*poisoning*', in which negative contact reduces the benefits of positive contact because of its greater potential to increase the salience of group boundaries; and (iv) '*exacerbation*', when positive contact exacerbates the harmful effects of negative contact, the mirror image of facilitation, when the contrast from the neutral point shifts towards the negative pole (Fell et al., 2016). In three field studies, including two longitudinal designs, Fell and colleagues (2016) provided consistent evidence for two of these interaction effects: in all three studies, the effects of positive contact were larger in the presence of above average levels of negative contact ('facilitation'); and in only one study was the effect of negative contact weaker in the presence of above average levels of positive contact ('buffering').

In the research reported below, we build on this work by Paolini, Fell and colleagues in four ways: (i) we employ multi-item measures of both positive and negative contact and examine their simultaneous associations with several indicators of intergroup relations most of which were also multi-item (several previous studies used single item measures and just one dependent measure at a time); (ii) in addition to direct contact, we explore asymmetry in measures of positive and negative *extended* contact and also test their possible interaction effects (previous research on valence asymmetry has not examined extended contact); (iii) we also examine both of the above phenomena with a minority group (little prior research on contact valence has studied groups with an explicit minority status); (iv) furthermore, we build on previous work into asymmetry effects (e.g., Paolini et al., 2010, 2014) by exploring the simultaneous roles of group salience during positive *and* negative interactions, and we extend work by Paolini and colleagues by using outgroup attitudes, rather than category salience, as the crucial dependent variable. A buffering effect would be present if positive

contact reduces group salience during negative interactions, thereby diminishing the generalization of negative intergroup attitudes. Similarly, a facilitation effect would be explained by negative contact not only increasing category salience during negative interactions, but during *all* interactions, even positive intergroup experiences, thus encouraging positive attitude generalization.

The research was conducted in Iceland with a sample of indigenous (majority) Icelanders and a (minority) sample of Polish immigrants to Iceland. Iceland has a small population (338,349 inhabitants in January 2017). Of these, 30,275 were immigrants living in Iceland (8.9% of the population), the majority of whom (87%) come from European countries. We selected Polish immigrants as our outgroup sample as they form the largest immigrant group (13,795, or just over 4% of the entire population, and 45.6% of the immigrant population; Statistics Iceland, 2017).

In-depth research on discrimination and status of minorities in Iceland is rather scarce (European Commission Against Racism and Intolerance, 2003, 2007). However, some evidence exists that attitudes towards Polish immigrants are somewhat negative. In a nationally representative survey, Icelandic people were asked how they felt about people from different regions settling in Iceland, and only 52% said they approved of Eastern Europeans doing so (Maskína, 2015). Icelandic research has also shown that Eastern European men are often portrayed in the media as threatening and connected to crimes and fighting (Ólafsson, 2008).

After first establishing whether or not there is any asymmetry in the effects of positive and negative contact, we test the following three hypotheses:

H1: positive contact moderates the effects of negative contact such that the effect of negative contact is diminished under higher than average levels of positive contact ('buffering' hypothesis).

H2: negative contact moderates the effects of positive contact such that the effect of positive contact is enhanced under higher than average levels of negative contact ('facilitation' hypothesis).

H3: Given the pattern of relationships reported by Paolini et al. (2014) and Fell et al. (2016), we expect (1) positive contact will reduce category salience during negative interactions leading to a buffering effect on intergroup attitudes, and (2) negative contact will increase category salience during positive interactions resulting in a facilitation effect ('mediation' hypothesis).

Method

Participants

Participants were Icelandic and Polish individuals living in Iceland. The Icelandic sample originally had 367 participants. However, 10 participants were excluded from the analysis for not meeting the selection criteria (six for not identifying as either Icelandic or Polish, three for not meeting the minimum age criteria of 18 years and one for having given the same answer on 59 out of 60 items). This left a final sample size of N = 357 (263 females, 94 males: M_{age} = 38.88, SD_{age} = 11.61, range from 18 to 75). One participant did not correctly indicate their age; 69.5%, were full time workers; 12.6% were students, 12.6% were both studying and working and 5.3% were unemployed.

The Polish sample consisted of 101 participants. Five identified as either Icelandic or Polish-Icelandic, but since all participants were born in Poland this was not considered a criterion for exclusion (69 females, 32 males: M_{age} = 33.10, SD_{age} = 8.57, range from 20 to 62; 81.2% worked full time, 6.9% were students, 5.9% were working and studying and 5.9% were unemployed.

Procedure

Participants completed an online questionnaire in their native language (Icelandic or Polish). The Icelandic questionnaire was back-translated from English by two native Icelandic speakers. The Polish questionnaire was translated from English by a translation company. Recruitment took place through social networking sites and with the help of associations for Polish immigrants in Iceland.

Measures

The measures for both groups were identical, except that Icelandic participants answered questions about Polish people living in Iceland (labelled 'Polish immigrants'), and vice versa. All items were answered on five-point scales. To control for possible order effects, half the participants answered items regarding positive contact before negative contact, and the remainder vice versa.

Positive and negative direct contact. Four items each were used to measure positive and negative intergroup contact. Participants read the stem statement "When meeting [outgroup] people, how often do you…" and then read "…perceive the experience as [positive / negative]?", "…feel you are perceived as an [equal / unequal]?", "…feel [you are working together in some way / the interaction is in some way conflictual]?", "…feel they are [friendly / unfriendly]?" (anchors were: 1 = *Never* to 5 = *Very often*). These items formed reliable indices for both positive (α = .81 for Icelandic and α = .88 for Polish), and negative (α = .74 for Icelandic and α = .78 for Polish) direct contact.[1]

Positive and negative extended contact. Two items each were used to measure positive and negative extended intergroup contact. These were: "How many [ingroup] people

[1] Furthermore, because of the semantic overlap between the positive contact item "friendly" and the attitude item "Do you feel friendly towards them", we re-ran the analysis presented below excluding the positive contact item from the analysis for both samples. The results remained consistent between analyses.

do you know that are friends with [outgroup] people/that have had negative interactions with [outgroup]?" and "How often do you see or hear about [ingroup] people and [outgroup] people interacting in a friendly and pleasant manner/unfriendly and unpleasant manner?" (1 = *Never* to 5 = *Very often*). The two items measuring positive extended contact were aggregated into a single scale (r = .52, p < .001, for Icelandic and r = .67, p < .001, for Polish). The two items measuring negative extended contact were likewise aggregated into a single scale (r = .72, p < .001, for Icelandic and r = .68, p < .001, for Polish).

Outgroup trust. Four items were used to measure trust in the outgroup (Brehm & Rahn, 1997). Participants were asked to indicate their agreement with the statements: "I feel they can be trusted", "I think they are only looking out for themselves" (*R*), "I feel if given a chance they will take advantage of you" (*R*), and "I feel suspicious towards them" (*R*), (1 = *Strongly disagree* to 5 = *Strongly Agree*). Items marked with *R* were reversed. These formed reliable scales (α = .83 for Icelandic and α = .75 for Polish).

Outgroup orientation. Six items were used to measure a positive orientation towards the outgroup. Participants were asked: "Do you admire them?", "Do you feel friendly towards them?", "Do you feel annoyed by them?" (*R*), "Do you like them?", "Do you feel angry towards them?" (*R*) and "Are you afraid of them?" (*R*) (1 = *Not at all* to 5 = *Very much;* again, items marked with *R* were reversed). The last two items were dropped to increase the internal reliability of the scale. The remaining four items formed reliable scales (α = .81 for Icelandic and α = .72 for Polish).

Crime estimate. For this indirect measure of prejudice, participants answered the question: "Considering all crimes committed in Iceland, what do you think is the percentage

of crimes committed by Polish immigrants?“ (adapted from Pagotto et al., 2010). A larger percentage implicitly indicates more prejudice, since it is indicative that the respondent holds a stereotype about immigrants being more criminal. Given that, for the Polish immigrant sample, this item referred to crimes committed by the ingroup, we excluded it from the analysis for this sample.

Perceived cultural differences. Five items, adapted from Pettigrew and Meerten's (1995) scale, were used to measure subtle prejudice towards the outgroup. For three of these, which measured perceived cultural differences, participants read the stem statement: "How different do you think Icelandic people and Polish immigrants/people are in terms of..." and then read " ...the importance attributed to traditions?", "…the goals they try to achieve?" and "…the values they teach to children?" (1 = *Not at all* to 5 = *Very much*). The last two items were "Polish and Icelandic people can never really be comfortable with each other, even if they are close friends" and "I would not mind if an Icelandic person joined my close family by marriage" (1 = *Strongly disagree* to 5 = *Strongly agree*). The last two items, measuring threat and rejection and social distance, respectively, did not correlate well with the other three items or each other. They were removed from the analyses, increasing the internal reliability of the scale. The remaining three items formed a reliable scale of perceived cultural differences in the Icelandic sample ($\alpha = .81$). The scale was less reliable in the Polish sample ($\alpha = .66$) but, given the small number of items, it was considered acceptable.

Category salience during positive and negative contact. Two items each, adapted from Voci and Hewstone (2003), were used to measure category salience during positive and negative contact. Participants read the stem statement "On those occasions that you have met with [outgroup] and felt the interaction was positive/negative…" and then read "…how aware

were you that you belonged to different nationalities?" and "…did you perceive the other person as a typical [outgroup]?" (1 = *Never* to 5 = *Very much*). Whereas the two category salience items during negative contact correlated well with each other in both samples (Icelandic sample, $r = .52$, $p < .001$; Polish sample, $r = .52$, $p < .001$), the correlations between their two positive counterparts, albeit still significant, were substantially weaker (Icelandic sample, $r = .30$, $p < .001$; Polish sample, $r = .21$, $p < .05$). Given that the correlations between positive category salience items were low, we analysed them separately. From here on they will be referred to as 'salience' (former item) and 'typicality' (latter item). We analysed the data running the full model twice: once including valenced typicality in the model, and the second time including valenced salience. In the analyses to follow, we report effects for positive and negative group typicality and salience in the main analysis, but we ran them in separate models. The contact (direct and extended) regression coefficients reported below are those for the model including valenced *typicality*, unless salience is specifically referred to. If not mentioned specifically, it can be assumed that there were no significant effects for salience.

To ensure that our measures tapped their hypothesized constructs, we entered all items into an exploratory factor analysis using Mplus (Version 6.1, Muthen & Muthen, 2011; maximum likelihood estimator with robust standard errors, geomin rotation, set to extract between one and nine factors).[2] The analysis failed to extract eight or nine factors, and so we inspected the 7-factor solution. The 7-factor solution showed good model fit, $x^2(113) = 165.702$, $p < .001$, $x^2/df = 1.47$, CFI = .99, RMSEA = .03 [.02, .04], SRMR = .02. The factor loadings indicated that each item loaded distinctly onto its hypothesized construct. Fit statistics for the other models and the factor loadings for the 7-factor model are available

[2] MPlus only allows a maximum of nine factors to be extracted in an exploratory factor analysis. Given the potential overlap between our constructs, we asked for between one and nine factors to be extracted as a conservative appraisal of the underlying factor structure of the variables.

from the authors on request. Because of the high correlations between the composite measures of positive (and negative) contact and outgroup orientation and trust (*rs* > |.48|, see Table 2), we inspected the factor structure for cross-loadings between the contact items and outcome items. While there was some evidence of cross-loading, they were too weak to warrant any concern (smaller than |.27|).[3] While our measures do not satisfy Nunnally's (1967) criterion that the correlation between two variables should be at least .20 lower than the reliabilities, the clean factor structure and the fact that that these measures were designed to tap theoretically distinct constructs boosts our confidence in treating them as separate measures.

Results

Preliminary Analyses

We first ran four separate 2 (nationality of respondents: Icelanders vs Poles) x 2 (valence of contact: negative vs positive) mixed-model analyses of variance (ANOVAs), with repeated measures on the last factor, for (a) direct contact valence (positive vs. negative), (b) extended contact valence (positive vs. negative), and (c) valenced typicality (positive vs. negative), and valenced salience (positive vs. negative) (see Table 1 for variable means and standard deviations). We also ran a multivariate analysis of variance to test for group differences across the dependent variables

For direct contact, there was a main effect of contact valence, $F(1, 429) = 490.19$, $p < .001$, $\eta_p^2 = .53$, which was qualified by a significant interaction with nationality, $F(1, 429) = 5.80$, $p < .02$, $\eta_p^2 = .01$. In both national samples, respondents reported having more positive

[3] The positive contact item "…feel you are perceived as an equal" loaded on the positive orientation factor (.21). Second, the outgroup orientation item "…do you feel angry towards them" cross-loaded onto the negative contact factor (-.27).

direct contact (Icelandic sample $M = 3.77$, $SD = 0.89$; Polish sample, $M = 3.72$, $SD = 0.89$) than negative direct contact (Icelandic sample $M = 1.73$, $SD = 0.76$, $p < .001$, Cohen's $d = 2.47$; Polish sample, $M = 2.08$, $SD = 0.87$, $p < .001$, Cohen's $d = 1.86$). Icelandic and Polish participants reported similar levels of positive contact with outgroupers ($p = .58$. Cohen's $d = .01$), but Icelandic respondents reported having fewer negative contact experiences with Polish immigrants than Polish participants had with Icelanders ($p < .001$, Cohen's $d = .43$). For extended valenced contact, a significant main effect for extended contact valence emerged, $F(1, 429) = 40.26$, $p < .001$. Participants reported having more positive extended contact experiences ($M = 3.26$, $SD = 0.99$) than negative extended contact experiences ($M = 2.63$, $SD = 1.12$, $p < .001$, Cohen's $d = .60$). Extended contact valence did not interact with nationality.

For valenced typicality, there was a main effect of valence, $F(1, 377) = 16.79$, $p < .001$, $\eta_p^2 = .04$, and a main effect of nationality, $F(1, 377) = 6.81$, $p = .009$, $\eta_p^2 = .02$. These two main effects, however, were qualified by a significant interaction, $F(1, 377) = 4.45$, $p = .036$, $\eta_p^2 = .01$. In the Icelandic sample, respondents reported higher levels of group typicality during positive interactions ($M = 2.69$, $SD = 1.20$) than negative interactions ($M = 2.10$, $SD = 1.25$, $p < .001$, Cohen's $d = .48$). There were no differences between positive and negative group typicality for the Polish sample (positive typicality $M = 2.79$, $SD = 1.40$ vs. negative typicality, $M = 2.60$, $SD = 1.34$, $p = .66$, Cohen's $d = .14$). Furthermore, Polish respondents reported higher levels of negative typicality than did Icelandic respondents ($p = .005$, Cohen's $d = .40$). Both samples reported statistically similar levels of positive group typicality ($p = .91$, Cohen's $d = .05$). Finally, for valenced salience, there were no main effects or interaction, $Fs \leq 3.659$, $ps \geq .057$.

There was an overall multivariate main effect, $F(4, 453) = 37.75$, $p < .001$, $\eta_p^2 = .25$. The univariate tests showed that Polish respondents reported a more favourable outgroup orientation ($M = 3.96$, $SD = 0.75$) than Icelandic respondents ($M = 3.77$, $SD = 0.81$, $F(1, 456) = 4.29$, $p < .04$, $\eta_p^2 = .009$). They also, however, reported more perceived cultural differences ($M = 3.47$, $SD = 0.98$), and less outgroup trust ($M = 3.48$, $SD = 0.97$) than Icelandic respondents (cultural differences = 2.32, $SD = 1.02$; outgroup trust $M = 3.9$, $SD = 0.95$, all Fs ≥ 16.35, all $ps < .001$, all $\eta_p^2 \geq .03$).

Icelandic Sample

Bivariate correlations among all variables are presented in Table 2. We set up the same structural path model for both samples except we excluded the crime statistic variable in the Polish sample. To test for contact effects (Allport, 1954; Pettigrew & Tropp, 2006) and their moderation by typicality (Brown & Hewstone, 2005), we first regressed outgroup orientation, outgroup trust, perceived cultural differences between the in- and outgroup, and crime estimates onto direct and indirect positive and negative contact as well as positive and negative group typicality. To test our hypothesis on the role of typicality/salience, we also regressed category typicality/salience during positive and negative contact onto both direct and extended positive and negative contact. All valenced independent variables were entered simultaneously into the model. The resulting model was fully saturated (i.e., $df = 0$).

The model explained 4% of the variance in group typicality during positive contact and 30% of the variance in typicality during negative contact. The model also explained 48% of variance in intergroup orientation; 51% of the variance in outgroup trust in Polish immigrants; 14% of the variance in crime estimates; and 12% of the variance in perceived cultural differences between Icelanders and Polish immigrants.

For the sake of brevity, we will only note significant results below unless the non-significant paths are germane to our central hypotheses. For all unstandardized regression weights and their associated standard errors, see Tables 3a and 3b. See Figures 1 and 2 for a model of the results discussed below.

Positive and negative contact, typicality and salience. Negative direct contact was positively associated with typicality and salience during negative contact experiences; extended negative contact was only associated (positively) with salience during negative contact experiences. Positive direct contact was negatively associated with typicality during negative contact. Only direct negative contact was associated with typicality and salience during positive contact experiences, and both correlations were positive.

Outgroup orientation. Positive direct contact was associated with outgroup orientation, while negative direct contact was negatively associated with it. Extended contact, positive and negative, were not correlated with outgroup orientation. Negative typicality was negatively associated with outgroup orientation.

Outgroup trust. Positive direct contact was positively, and negative direct and extended contact were negatively, associated with outgroup trust. Group typicality during positive and negative interactions were both negatively correlated with outgroup trust, as was positive salience.

Perceived cultural differences. Positive direct contact was associated with fewer perceived cultural differences between Icelanders and Poles.

Crime estimates. Positive direct contact was negatively associated with crime estimates. Negative extended contact, on the other hand, was related to higher crime estimates. Positive salience was positively associated with crime estimates.

Contact asymmetry effects. Next, to test if positive or negative contact had stronger effects on the outcome variables (positive-negative asymmetry hypothesis), we contrasted the absolute value of the regression weights for the relationships between our valenced contact indices and the outcome variables. Because we performed four tests (one for each outcome variable), we applied a Bonferroni correction setting the level of accepted significance for these comparisons to $p = \frac{.05}{4} = .01$. With regards to direct contact valence, as can be seen from Table 4, all comparisons indicated that the magnitude of the main effects of positive and negative contact with Polish immigrants were of equal size (all *ps* ≥ .09). With regards to extended contact with Polish immigrants, however, negative extended contact was significantly more negatively associated with outgroup trust in Polish immigrants than was positive extended contact positively associated – an effect that remained significant even at the stricter alpha level ($p = .007$). Thus, there was no evidence of positive-negative asymmetry for *direct* contact, and only limited evidence of it for *extended* contact.

Interactions between positive-negative contact. All variables were centered before their interaction terms were created. We then added these interaction variables to the model. There were significant interactions between positive and negative direct contact on outgroup orientation ($b = 0.10$, $SE = .04$, $p = .010$), outgroup trust ($b = 0.10$, $SE = .05$, $p = .034$) and crime estimates ($b = -3.08$, $SE = 1.25$, $p = .013$), but not perceived cultural differences ($b = -0.03$, $SE = .07$, $p = .669$).[4] Note, all significant interactions to follow were decomposed at 1 standard deviation above and below the moderator variable.

Decomposing the interactions yielded evidence for both the buffering and facilitation hypotheses (see Table 6): for respondents reporting relatively more positive contact experiences, negative direct contact was not associated with outgroup orientation or outgroup

[4] The pattern of interactions remained unchanged when group salience was included in the model.

trust. Regarding crime estimates, negative contact was associated with lower crime estimates at high positive contact. For respondents reporting relatively fewer positive contact experiences, however, negative direct contact was significantly associated with a less favourable outgroup orientation and lower outgroup trust. For these respondents, direct negative contact was not reliably associated with crime estimates. Overall, these findings clearly support the buffering hypothesis (H1)

When treating negative contact as the moderator, positive contact was associated with all dependent variables, but it was more strongly related to the outcomes for respondents who reported having relatively more negative contact experiences compared to those reporting relatively fewer negative contact experiences. This was clear evidence for facilitation (H2).

There was no evidence that positive and negative *extended* contact interacted for any of the outcomes variables (all $ps \geq .349$).

Interactions between valence-congruent typicality and contact. Next we entered the interaction terms between valenced contact and the valence-congruent group typicality. The only significant interaction was between negative direct contact and negative group typicality on outgroup orientation ($b = -0.07$, $SE = .03$, $p = .028$). Decomposing this interaction showed that negative contact had a stronger negative effect on outgroup orientation under high typicality ($b = -0.26$, $SE = .06$, $p < .001$) compared to low typicality ($b = -0.10$, $SE = .08$, $p = .203$).

Interactions between direct and extended contact. We also entered the interaction terms between valence-congruent direct and extended contact. The only interaction to emerge as significant was the one between negative direct and extended contact and its association with crime estimates ($b = 2.26$, $SE = 1.10$, $p = .040$). Decomposing the interaction effect revealed an additive effect such that negative extended contact was associated with greater

crime estimates for those reporting relatively more negative direct contact experiences (b = 4.00, SE = 1.21, p = .001). Negative extended contact was not associated with crime estimates for those reporting relatively fewer negative direct contact experiences (b = 0.60, SE = 1.14, p = .596).

Investigating interaction effects between valence-*incongruent* direct and extended contact resulted in one significant interaction, namely between positive direct and negative extended contact and their association with crime estimates (b = -2.54, SE = 0.96, p = .008). This revealed a pattern consistent with the buffering hypothesis. Negative extended contact was not associated with crime estimates for respondents reporting relatively more positive direct contact experiences (b = -0.02, SE = 0.82, p = .984), whereas it was positively associated for participants who reported relatively fewer positive direct contact experiences (b = 4.57, SE = 1.47, p = .002).

Mediation analyses. Next, to test H3 we ran a set of moderated mediation analyses to determine whether the interaction term between positive and negative (direct) contact was associated with typicality and salience during contact as predicted.

The interaction term was not significantly associated with perceived typicality during positive contact (b = 0.11, SE = 11) or typicality during negative (b = -0.07, SE = .07) contact (ps < .35). It was, however, significantly associated with *salience* during both positive (b = 0.22, SE = .11, p = .046) and negative (b = 0.17, SE = .08, p = .031) encounters. The pattern of these interactions was broadly similar in both cases.

Decomposing these interactions with **positive contact as the moderator** revealed that for those participants who reported *higher* levels of positive contact, negative contact was reliably associated with increased salience during positive and negative contact experiences (bs = 0.62, 0.96; respectively; ps < .001). For respondents who reported *less* positive contact,

negative contact was positively, but more weakly, associated with salience (b = 0.66, 0.22; p < .001 and .10 respectively).

As such, salience during positive contact mediated the relationship between negative contact and trust towards Poles (PE = -0.06, 95% CI [-0.126, -0.014]) and crime estimates regarding Poles (PE = 1.20, 99% CI [0.138, 3.130]). Salience during negative contact did not mediate any of the relationships between negative contact and the outcome variables at high or lower levels of positive contact.

Using **negative contact as the moderator** revealed that for those participants who reported *higher* levels of negative contact, positive contact was *not* associated with salience during positive (b = -0.01, SE = .13) or negative (b = -0.04, SE = .12) contact (ps < .91). However, for those respondents who reported *less* negative contact, positive contact was associated with *less* category salience during positive (b = -0.35, SE = .12) and negative (b = -0.29, SE = .12) contact (both ps < .02). Both moderated mediations, however, failed to return any significant results at any level of negative contact.

Polish Sample

Bivariate correlations among all variables are presented in Table 2. The model explained 1% of the variance in group typicality during positive interactions and 40% of the variance in typicality during negative contact. The model also explained 56% of variance in intergroup orientation; 56% of the variance in outgroup trust in Icelandic people; and 15% of the variance in perceived cultural differences.

For the sake of brevity, we again only report significant results here unless the non-significant paths are germane to our central hypotheses. For all unstandardized regression weights and their associated standard errors, see Table 3a and 3b and see Figures 3 and 4 for the path model.

Positive and negative typicality and salience. None of the variables assessing contact with Icelanders—direct or extended, negative or positive—were associated with positive typicality during contact (*ps* ≥ .482). Positive contact with Icelanders was negatively associated with typicality during negative interactions; negative contact with Icelanders was positively associated with typicality during negative interactions.

With regards to group salience during positive interactions, only negative direct contact was associated with it. Negative direct contact had a salience-increasing effect. Negative direct and extended contact had salience increasing effects for salience during negative contact interactions, though the association with negative direct contact fell short of statistical significance ($p = .062$). Positive direct contact, on the other hand, was associated with decreased salience during negative interactions. This pattern of relationships is consistent with the hypothesized buffering / facilitation effects.

Outgroup orientation. As predicted, positive and negative direct contact were both associated with outgroup orientation, the former positively so and the latter negatively. Typicality during negative interactions was negatively associated with outgroup orientation. Positive and negative group salience was not associated with outgroup orientation.

Outgroup trust. Positive direct and extended contact with Icelanders were associated with more outgroup trust in Icelanders. Only direct negative contact with Icelanders was associated with less outgroup trust in Icelanders. Group typicality and salience during positive and negative interactions were not associated with outgroup trust.

Perceived cultural differences. None of the variables in the model were significantly associated with perceived cultural differences (*ps* ≥ .055).

Contact asymmetry effects. Once again, we contrasted the regression coefficients for the relationships between the two different types of valenced contact and the outcome

variables. As before, we applied a Bonferroni correction for this set of comparisons establishing the new accepted level of significance at $p = \frac{.05}{4} = .01$. None of the contrasts was significant, even at the conventional $p = .05$ level (see Table 5). Thus, in this sample, positive and negative contact had similar main effects on the outcome variables with no evidence of asymmetry.

Interactions between positive-negative contact. Once again, all variables were centered before their interaction terms were created. We then added these interaction variables to the model. The interaction term between positive and negative contact was not significantly associated with any of the outcome variables. However, two interactions approached conventional levels of statistical significance in their relationship with perceived cultural differences (direct valenced contact, $b = 0.20$, $SE = .11$, $p = .07$; extended valenced contact, $b = 0.13$, $SE = .07$, $p = .06$). Respondents who reported higher levels of positive contact showed a stronger positive relationship between negative contact and perceived cultural differences (direct negative contact, $b = 0.52$, $SE = .17$, $p = .002$; extended negative contact, $b = 0.17$, $SE = .10$, $p = .09$) than those who reported lower levels of positive contact (direct negative contact, $b = 0.19$, $SE = .12$, $p = .13$; extended negative contact, $b = -0.10$, $SE = .13$, $p = .42$). This resembles an 'exacerbation' effect. Treating negative contact as the moderator, respondents showed a strong (and significant) negative relationship between positive contact and perceived cultural differences when negative contact was low (direct positive contact, $b = -0.37$, $SE = .16$, $p = .02$; extended positive contact, $b = -0.35$, $SE = .13$, $p = .006$), but when negative contact was high, the effect was weak and non-significant (direct positive contact, $b = -0.02$, $SE = .14$, $p = .88$; extended positive contact, $b = -0.05$, $SE = .11$, $p = .64$). This effect is in line with the 'poisoning' effect, whereby negative contact reduces the benefits of positive contact.

Valence-congruent interactions between typicality and contact. Next we entered the interaction terms between valenced contact and the valence-congruent group typicality. The interaction between positive contact and typicality was not associated with any of the outcome variables (*ps* ≥ .109). The interaction between negative contact and typicality was not associated with outgroup orientation or perceived cultural differences.

Interactions between direct and extended contact. We entered the interaction terms between valence-congruent direct and extended contact. The only significant interaction was between positive direct and extended contact and its association with perceived cultural differences (*b* = -0.18, *SE* = .09, *p* = .044). Decomposing this interaction revealed that positive extended contact had a stronger negative relationship with perceived cultural differences for participants who reported more positive direct contact (*b* = -0.35, *SE* = .13, *p* = .006) compared to those who reported less positive direct contact (*b* = -0.05, *SE* = .11, *p* = .609).

There were no valence-incongruent interactions between direct and extended contact on any of the outcome variables (*ps* ≥ .124).

Mediation analyses. As no significant interactions between positive and negative contact were found, we did not run a mediated moderation analyses in this sample. However, because negative typicality was only associated with outgroup orientation, we tested it as a mediator of the relationship between positive direct contact and outgroup orientation. The results from the bootstrap analysis revealed a significant mediation (PE = 0.04, 95% CI [0.001, 0.129]). We did not test for mediation with group salience given that it was not significantly associated with any of the outcome variables.

Discussion

In this research we found little evidence of the putative stronger effect of negative than positive contact, for either group. There was, however, consistent evidence that positive contact was associated with lower, and negative contact with higher, category salience. Finally, in this novel investigation of valenced contact effects for both direct and extended contact, we found evidence of interaction effects of positive and negative contact only for direct contact, though mainly in the majority group (the minority group results were less conclusive). We now discuss these findings in more detail, focusing on five main results, consider some broader implications of our findings, acknowledge some limitations of the research and point to where future research is needed.

First, we found very little evidence for positive-negative asymmetry in contact effects in either the majority or minority group, regardless of whether the contact was direct or extended. In fact, at the conventionally accepted level of significance, across sixteen different comparisons of positive and negative contact effects, we observed just one statistically reliable difference – in the majority group, the association of negative extended contact with intergroup trust was stronger than the (negligible) association of positive extended contact with the same variable. For the rest, simply by visual inspection, the number of differences in favour of negative contact were exactly matched by the number of differences favouring positive contact. On the face of it, this lack of asymmetry in positive and negative contact is not consistent with explanations of contact that assume that the two types of contact are additive in their effects.

Second, and in contrast to the above *lack* of evidence for an additive model of positive and negative contact, there was clear evidence for our alternative *interaction* conceptualisation. This evidence was stronger in the case of the majority group, but since this sample was approximately three times as large as the minority sample, we are unable to say whether this pattern of findings was due to differences in group status, or to our power to

detect effects in the two samples. For direct contact and the Icelandic sample, on three of our dependent variables (outgroup orientation, outgroup trust and crime estimates) there was a significant interaction term between positive and negative contact. The upshot of these interactions was to provide support for both the buffering (H1) and facilitation (H2) hypotheses: negative contact, normally associated with a less favourable intergroup orientation, was effectively neutralised for those participants who had above average levels of positive contact; on the other hand, for the participants who did not have the benefit of those 'protective' positive prior experiences with the outgroup, negative contact was significantly associated with less favourable outgroup orientation and lower levels of outgroup trust. On the other side of the coin, positive contact was *more* strongly positively associated with a favourable outgroup orientation and outgroup trust, and *more* strongly negatively associated with crime estimates for those participants who had relatively greater amounts of negative contact. This was evidence of facilitation, first reported, using an imagined contact paradigm, by Birtel and Crisp (2012) who found across three studies that participants who first imagined a negative interaction with an outgroup member and then imagined a positive interaction with a member of the same outgroup showed significantly more favorable attitudes and greater future contact intentions than participants who imagined two consecutive positive interactions. Because, in this case, prior negative contact increased, or facilitated, the effect of subsequent positive contact, we have termed it a facilitation effect.

There was some tentative evidence of a different conceptualisation of the positive-negative interaction for the Polish sample for both positive and negative direct contact and positive and negative extended contact on perceived cultural differences. For the Polish immigrant sample, those reporting more positive interactions with Icelanders tended to show a *stronger* positive relationship between negative contact and perceived cultural differences than those reporting fewer positive interactions. If we assume that perceived cultural

difference is an indicator of subtle prejudice (Pettigrew & Meertens, 1995), this measure showed an exacerbation effect, whereby positive contact augmented the prejudice-inducing effects of negative contact. However, those reporting more negative contact (both direct and extended) showed a weaker relationship between positive contact and fewer perceived cultural differences, whereas prejudice-reducing effects of positive contact were only shown in the (relative) absence of negative contact. This is in line with a poisoning effect since the effects of positive contact seemed to be 'cancelled out' by the presence of negative contact.

Third, regarding hypothesis 3, we proposed, firstly, that positive contact would reduce category salience during negative interactions and, secondly, that negative contact would increase category salience during positive interactions. While we did not find support for the former prediction (referring here to the majority sample, where support for hypothesis 1 and hypothesis 2 was found), our results were somewhat in line with the latter, albeit not precisely as expected. Contrary to our predictions, negative contact was robustly associated with increased category salience during negative contact, regardless of participants' level of positive contact, and the association that was in fact *stronger* for those respondents with more positive contact experiences. Thus, we did not find support for the first part of hypothesis 3. We did, however, find some tentative support for the second prediction. While we had predicted that negative contact would be associated with an *increase* in category salience during positive contact, we found that among those respondents with fewer negative experiences the association between positive contact and salience during positive interactions was actually *negative*, while for those with more negative experiences this association was absent. Thus, it seems that for those experiencing positive contact but few negative experiences, contact is associated with a *decreased* awareness of belonging to different nationalities, and therefore it might reduce its beneficial potential to generalize (Brown & Hewstone, 2005). Experiencing some negative contact experiences alongside positive ones,

however, appears to put a halt to this stifling effect (see, Reimer and colleagues (2017) for conceptually similar results in the context of valenced contact and propensity for collective action).

Fourth, the positive-negative interaction seems to be limited to direct contact; we found little evidence that positive and negative extended contact interacted with each other in either of the two samples (just one marginally significant interaction for the Polish group). Perhaps this is not too surprising. The associations of extended contact, whether positive or negative, with our four intergroup indicators were generally weaker than the same associations for direct contact (see Tables 2 and 3), consistent with results obtained elsewhere in contexts where there are many opportunities for direct contact (Christ et al., 2010). This general lack of potency of extended contact may have meant that any interaction was always less likely to occur.

Fifth, although not directly central to our research goals, we also investigated whether direct and extended contact interacted with each other, as has been found elsewhere (e.g., Christ et al., 2010). By and large, there was little evidence of the moderation of the effects of extended contact by direct contact (or vice versa). We observed just two interactions between direct and extended contact, out of the many possible: for the majority Icelandic sample, negative extended contact appeared to be more potent in the presence also of higher than average direct contact in predicting crime estimates; and for the Polish sample, positive extended contact had a larger (negative) association with perceived cultural differences when direct contact was high than when it was low. Neither effect is consistent with Christ et al.'s (2010) findings that extended contact is usually more powerful in contexts where there is little direct contact. Given the scarcity and relative weakness of the interaction effects we observed, and our relatively small samples compared to those of Christ et al., we are not

inclined to attribute too much weight to these findings, though it would seem prudent to follow up such moderation effects for both positive *and* negative contact in future research.

We turn now to the two broader implications of our findings. We believe they cast further doubt on the generality of the positive-negative contact asymmetry effect proposed by Paolini and colleagues (2010) for category salience and Barlow and colleagues (2012) for outgroup attitudes. As we noted above, there was little evidence that negative contact was linked more strongly to unfavourable intergroup outcomes than positive contact was associated with favourable outcomes. As we noted in the introduction, the results of prior research in this area have been mixed; several studies confirmed negative asymmetry (Barlow et al., 2012; Dhont & Van Hiel, 2009; Dhont et al., 2010;, Cornelis, & Van Hiel, 2010; Graf et al., 2014; Labianca et al., 1998; Paolini et al., 2010; Paolini et al., 2014); others did not, and some even found the reverse (Fell et al., 2016; Pettigrew, Tropp, Wagner, & Christ, 2011), and still others found little difference between positive and negative contact (Aberson & Gaffney, 2009; Bekhuis et al., 2013; Mazziotta et al. 2015). On this basis we conclude that there is no reason to be as pessimistic about the efficacy of intergroup contact as a panacea for prejudice as Barlow and her colleagues appear to be.

In addition, the study consolidates the evidence for positive-negative interaction effects already identified by Paolini and her colleagues (2014) for category salience and by Fell and colleagues (2016) for outgroup attitudes, especially in the form of buffering and facilitation effects. Here, in a new intergroup context and with a new array of prejudice indicators considered simultaneously, we observed that positive contact mitigated some of the adverse effects of negative contact, and also that negative contact, somewhat counterintuitively, can enhance the benefits of positive contact (just as Birtel & Crisp, 2012, had reported for imagined contact). So far, these interaction effects seem mainly to occur for direct and imagined contact, but not (yet) for extended contact, though we believe it would be

interesting to investigate them also with positive and negative extended contact in contexts where there are few opportunities for direct contact. Another fruitful extension of this line of work would be to explore whether such interaction effects would also be detected in considering the generalisation of effects of contact with one outgroup to other (related) outgroups, the so-called 'secondary transfer effect' (Pettigrew, 2009; Tausch et al., 2010; see Lolliot et al., 2004, for a review). To our knowledge, the secondary transfer effect has not been studied for negative contact. Would one observe the same generalisation of negative outcomes across outgroups? Would that generalisation show any signs of positive-negative asymmetry or would it, as here, be ameliorated by the secondary transfer effects of positive contact? These all seem to us to be interesting avenues for future research.

We acknowledge some limitations of the research reported here. Self-evidently, it had only a cross-sectional design, thus preventing any causal inferences. Although some longitudinal evidence exists for interaction effects (Fell et al., 2016), experimental investigations would also obviously be desirable. We have noted, too, the small size of the Polish (minority) sample, which reduced the power of statistical analysis of those data and meant that differences in group status were perfectly confounded with sample size. Whether that lack of statistical power to detect interactions was responsible for the general lack of statistical interactions in that group, or whether they are actually less in evidence in minority groups, only further research with larger samples can tell.

In conclusion, then, we believe that the results reported here give grounds for continued optimism about the contribution that positive intergroup contact can make to the reduction of prejudice. Prior contributions by Paolini et al. (2010, 2014) and Barlow et al. (2012) opened up new avenues for research on the simultaneous effects of positive and negative contact. Clearly, negative contact can sometimes have stronger effects, but the preponderance of evidence indicates that positive contact is likely to have beneficial effects

in its own right, as Allport (1954) wisely surmised, and it seems also to have the potential to counteract the detrimental effects of its oppositely valenced counterpart.

Footnotes

1. When excluding the item with semantic overlap (positive contact – friendly), this becomes significant (b = .20, SE = .09, p = .03). Decomposing this interaction confirms the poisoning and exacerbation hypotheses.

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Table 1. Mean comparisons for the variables included in the study across the two samples.

	Icelandic Sample		Polish Sample	
Variable	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**
Positive Direct Contact	3.77_a	0.89	3.72_a	0.89
Positive Extended Contact	3.21_a	0.97	3.40_a	1.04
Negative Direct Contact	1.74_a	0.78	2.08_b	0.87
Negative Extended Contact	2.53_a	1.11	2.98_a	1.09
Positive Group Typicality	2.82_a	1.03	2.88_a	1.06
Positive Group Salience	3.10_a	1.26	3.00_a	1.30
Negative Group Typicality	2.40_a	1.19	2.86_b	1.21
Negative Group Salience	3.12_a	1.41	2.70_a	1.46
Outgroup Orientation	3.77_a	0.81	3.96_b	0.75
Outgroup Trust	3.91_a	0.95	3.47_b	0.97
Crime Estimates	13.53_a	14.64	--	--
Perceived cultural differences	2.32_a	1.02	3.47_b	0.98

Note. Means in rows that have different subscripts are significantly different from each other at $p \leq .05$.

Table 2. Inter-item correlations, means, and standard deviations of the variables under investigation for both samples.

		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1.	Positive Direct Contact	--	.41***	-.50***	-.31***	.05	-.15**	-.47***	-.33***	.64***	.62***	-.30***	-.29***
2.	Positive Extended Contact	.41***	--	-.14*	.01	.02	-.09	-.25***	-.13*	.30***	.29***	-.06	-.09
3.	Negative Direct Contact	-.55***	-.26**	--	.33***	.15**	.20***	.45***	.45***	-.48***	-.50***	.20***	.25***
4.	Negative Extended Contact	-.43***	-.28**	.53***	--	-.06	.06	.27***	.31***	-.30***	-41***	.27***	.21***
5.	Positive Group Typicality	-.05	-.02	.09	.06	--	.30***	.25***	.08	-.08	-.14*	.09	.08
6.	Positive Group Salience	-.32***	-.17	.36***	.25*	.21*	--	.30***	.39***	-.22***	-.24***	.18***	.08
7.	Negative Group Typicality	-.51***	-.30**	.57***	.41***	.05	.19	--	.52***	-.47***	-.49***	.26***	.25***
8.	Negative Group Salience	-.43***	-.10	.46***	.51***	.14	.27**	.52***	--	-.39***	-.35***	.12*	.12*
9.	Outgroup Orientation	.69***	.31**	-.58***	-.44***	-.02	-.30**	-.58**	-.39***	--	.64***	-.31***	.29***
10.	Outgroup Trust	.63***	.39***	-.63***	-.42***	.00	-.27**	-.44***	-.31**	.62***	--	-.43***	-.38***
11.	Crime Estimates	--	--	--	--	--	--	--	--	--	--	--	.26***
12.	Perceived cultural differences	-.33***	-.21*	.33***	.25*	.08	.18	.31**	.08	-.27**	-.35***	--	--

Note. Correlations above the diagonal are for the Icelandic sample. Correlations below the diagonal are for the Polish sample. * $p \leq .05$,** $p \leq .01$, *** $p \leq .001$

Table 3a. The unstandardized regression weights, standard errors, and associated levels of significance for the hypothesised main effects.

	Independent Variable: Contact Valence							
	Icelandic Sample				**Polish Immigrant Sample**			
Dependent Variable	**Direct Pos.**	**Direct Neg.**	**Ext. Pos.**	**Ext. Neg.**	**Direct Pos.**	**Direct Neg.**	**Ext. Pos.**	**Ext. Neg.**
Outgroup Orientation	0.41***	-0.20***	0.03	-0.05	0.34***	-0.18*	0.05	-0.05
	(.05)	(.06)	(.03)	(.04)	(.08)	(.08)	(.05)	(.05)
Outgroup Trust	0.42***	-0.27***	0.02	-0.16***	0.39***	-0.49***	0.16*	-0.04
	(.06)	(.07)	(.04)	(.04)	(.09)	(.10)	(.06)	(.07)
Crime Estimates	-4.04**	0.36	1.36	2.20*	--	--	--	--
	(1.46)	(1.40)	(0.85)	(0.76)				
Perceived cultural differences	-0.17*	0.14	-0.04	0.10	-0.13	0.19	-0.08	0.06
	(.08)	(.09)	(.06)	(.06)	(.13)	(.13)	(.10)	(.09)
Positive Typicality	0.16	0.34**	0.04	-0.10	0.02	0.14	-0.05	0.05
	(.10)	(.12)	(.07)	(.07)	(.20)	(.19)	(.14)	(.16)
Negative Typicality	-0.40***	0.47***	-0.04	0.12	-0.34*	0.61***	-0.14	0.12
	(.11)	(.11)	(.07)	(.06)	(.15)	(.16)	(.10)	(.12)
Positive Salience	-0.18	0.27*	0.13	-0.04	-0.22	0.37*	-0.08	0.07
	(.10)	(.13)	(.07)	(.07)	(.18)	(.17)	(.13)	(.15)
Negative Salience	-0.16	0.69***	-0.03	0.22**	-0.43*	0.29†	0.11	0.47***
	(.11)	(.11)	.08)	(.08)	(.18)	(.16)	(.12)	(.12)

Table 3b. The unstandardized regression weights, standard errors, and associated levels of significance for the hypothesised relationships with typicality and salience.

	Independent Variable: Contact Valence							
	Icelandic Sample				**Polish Immigrant Sample**			
Dependent Variable	**Pos. Typ.**	**Neg. Typ.**	**Pos. Sal.**	**Neg. Sal.**	**Pos. Typ.**	**Neg. Typ.**	**Pos. Sal.**	**Neg. Sal.**
Outgroup Orientation	-0.03	-0.09*	-0.04	-0.05	0.03	-0.12*	-0.02	0.00
	(.03)	(.04)	(.03)	(.03)	(.04)	(.05)	(.05)	(.05)
Outgroup Trust	-0.08**	-0.09*	-0.08*	< 0.01	0.05	0.03	0.01	0.06
	(.03)	(.04)	(.03)	(.04)	(.05)	(.06)	(.05)	(.06)
Crime Estimates	1.15	0.45	1.69**	-0.88	--	--	--	--
	(.72)	(.95)	(.61)	(.63)				
Perceived cultural differences	0.05	0.06	0.02	-0.03	0.03	0.07	0.05	-0.16†
	(.05)	(.06)	(.05)	(.05)	(.07)	(.08)	(.08)	(.08)

Table 4. Comparison of main effects of positive and negative contact on all outcome variables for the Icelandic sample.

Outcome Variable	Direct Contact		Wald x^2	Extended Contact		Wald x^2
	Positive	Negative	*df* = 1	Positive	Negative	*df* = 1
Orientation	0.41 (.05)	-0.20 (.06)	5.52*	0.03 (.03)	-0.05 (.04)	0.06
Trust	0.42 (.06)	-0.27 (.07)	1.73	0.02 (.04)	-0.16 (.04)	6.77**
Crime Estimates	-4.05 (1.46)	0.38 (1.40)	2.25	1.36 (0.85)	2.19 (0.76)	0.47
Perceived Cultural Differences	-0.17 (.08)	0.14 (.09)	0.05	-0.04 (.06)	0.10 (.06)	0.93

Note. Unstandardized regression weights with standard errors in brackets. We used the absolute value of all regression weights in the comparison tests. *df* = degrees of freedom. * $p \leq .05$,** $p \leq .01$, *** $p \leq .001$. Given the Bonferroni correction, only differences that are $p < .01$ are considered significant.

Table 5. Comparison of main effects of positive and negative contact on all outcome variables for the Polish sample.

Outcome Variable	Direct Contact		Wald x^2	Extended Contact		Wald x^2
	Positive	Negative	*df* = 1	Positive	Negative	*df* = 1
Orientation	0.34 (.08)	-0.18 (.08)	1.40	0.05 (.05)	-0.05 (.05)	0.00
Trust	0.39 (.09)	-0.49 (.10)	0.47	0.16 (.06)	-0.04 (.07)	1.30
Perceived Cultural Differences	-0.13 (.13)	0.19 (.13)	0.07	-0.08 (.10)	0.06 (.09)	0.02

Note. Unstandardized regression weights with standard errors in brackets. We used the absolute value of all regression weights in the comparison tests. All *ps* $\geq .22$

Table 6. Moderation results for the interaction between positive direct and negative direct contact in the Icelandic sample.

		IV = Negative Contact		IV = Positive Contact	
Dependent Variable	**Positive X Negative Contact Interaction Term**	**High Pos**	**Low Pos**	**High Neg**	**Low Neg**
Outgroup Orientation	0.10**	-0.08	-0.25***	0.47***	0.33***
	(.04)	(.08)	(.06)	(.06)	(.05)
Outgroup Trust	0.10*	-0.10	-0.27***	0.50***	0.36***
	(.05)	(.12)	(.07)	(.08)	(.07)
Crime Estimates	-3.08*	-4.61*	0.94	-4.14***	0.47
	(1.25)	(1.98)	(1.68)	(1.86)	(1.59)
Perceived Cultural differences	-0.03 (.07)	--	--	--	--

Note. *$p < .05$, ** $p < .01$, *** $p < .001$. Interaction terms are unstandardized regression coefficients. Numbers in brackets are standard errors. IV = independent variable; high pos = 1 standard deviation (SD) above mean positive contact; low pos = 1 SD below mean positive contact; high neg = 1 SD above mean negative contact; low neg = 1 SD below mean negative contact.

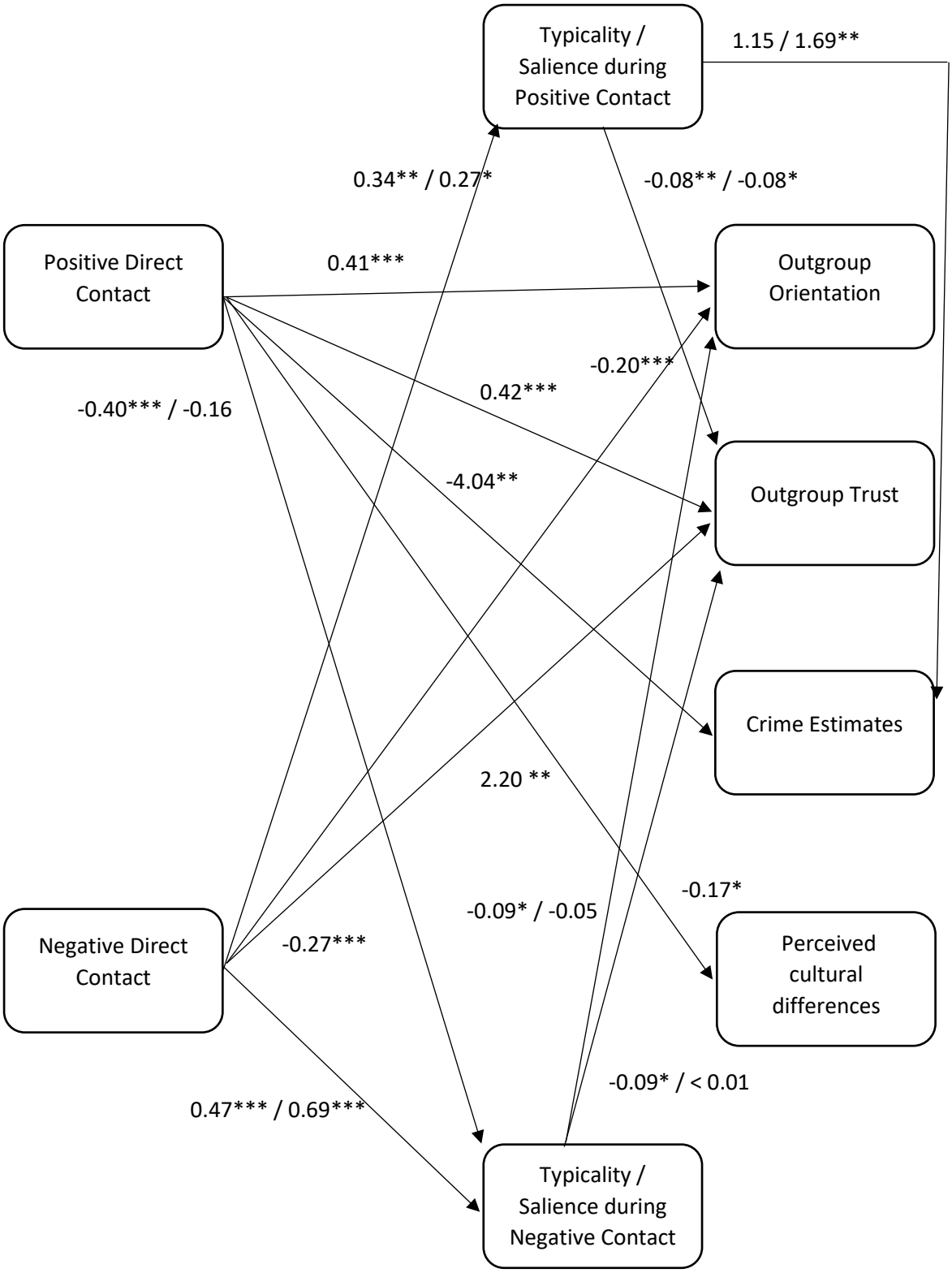


Figure 1. The results for the Icelandic sample (N = 355). Only results for direct valenced contact reported in this model. See Figure 2 for results pertaining to extended valenced contact. † ≤ .062, * $p < .05$, ** $p < .01$, *** $p < .001$. Unstandardized regression coefficients reported. Regression coefficients reported before the / are for typicality during valenced contact and those reported after the / are for group salience during valenced contact.

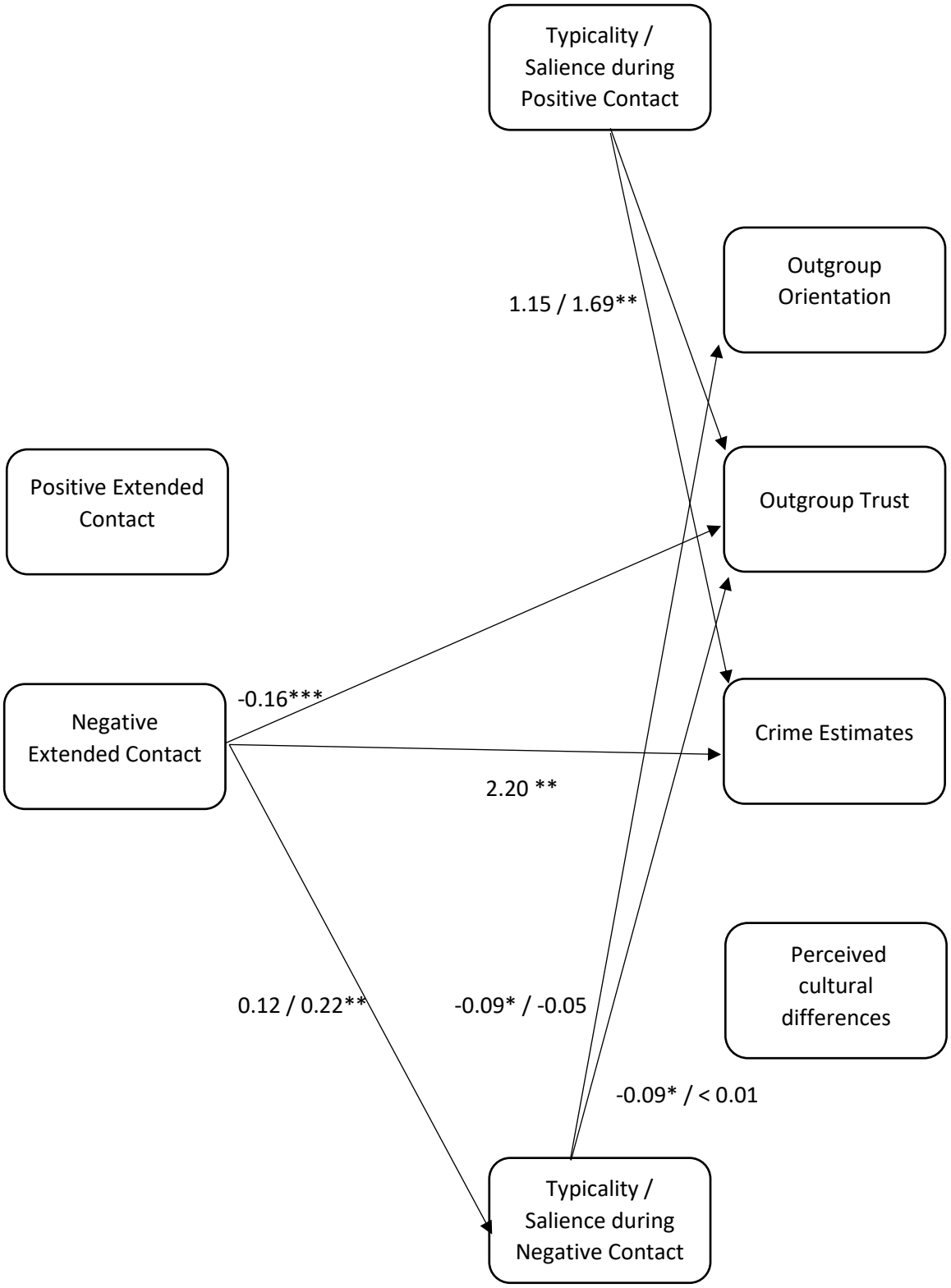


Figure 2. The results for the Icelandic sample (N = 355). Only results for extended valenced contact reported in this model. See Figure 1 for results pertaining to direct valenced contact. † ≤ .062, * $p < .05$, ** $p < .01$, *** $p < .001$. Unstandardized regression coefficients reported. Regression coefficients reported before the / are for typicality during valenced contact and those reported after the / are for group salience during valenced contact.

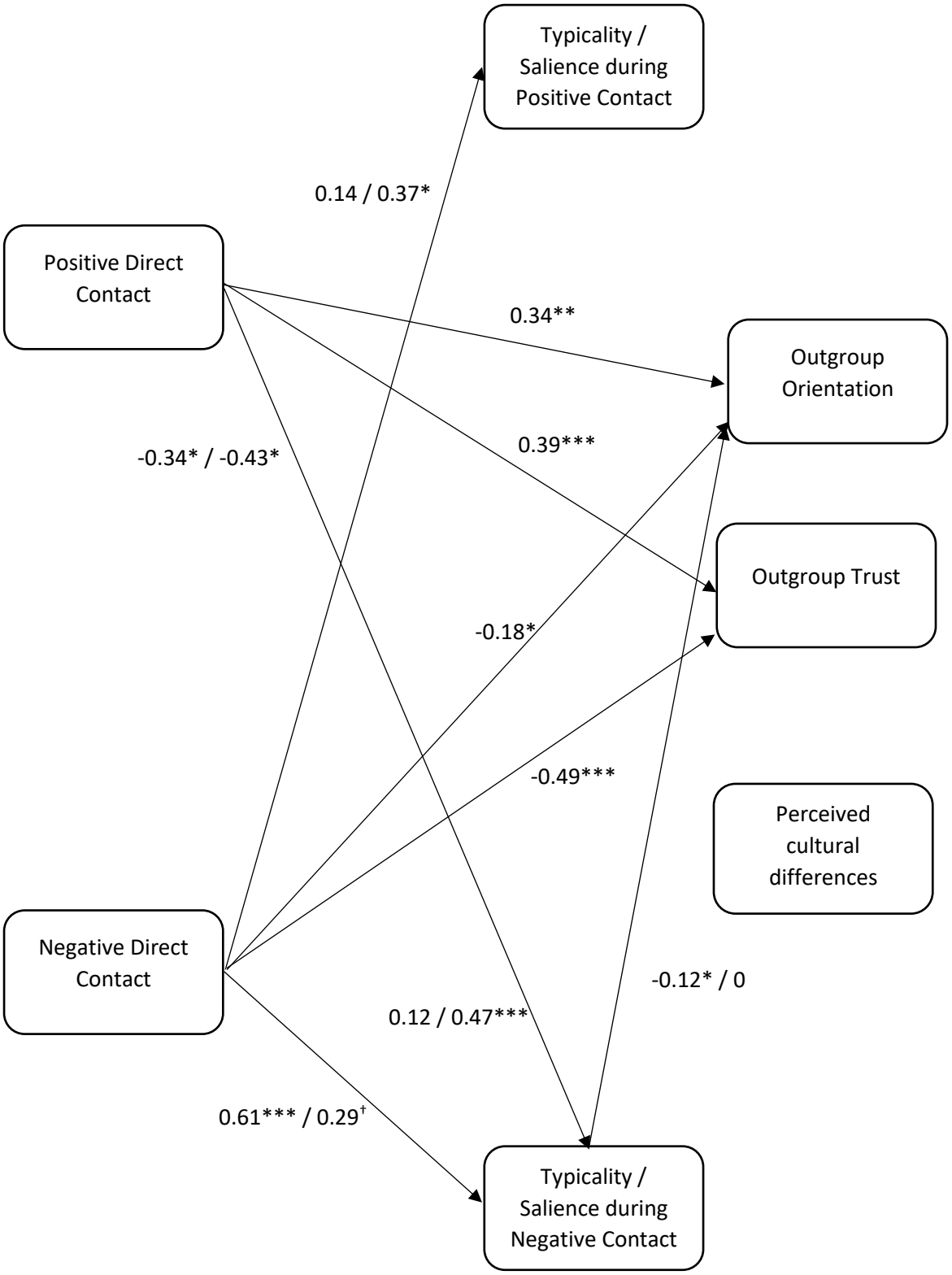


Figure 3. The results for the Polish sample (N = 101). Only results for direct valenced contact reported in this model. See Figure 4 for results pertaining to extended valenced contact. † ≤ .062, * $p < .05$, ** $p < .01$, *** $p < .001$. Unstandardized regression coefficients reported. Regression coefficients reported before the / are for typicality during valenced contact and those reported after the / are for group salience during valenced contact.

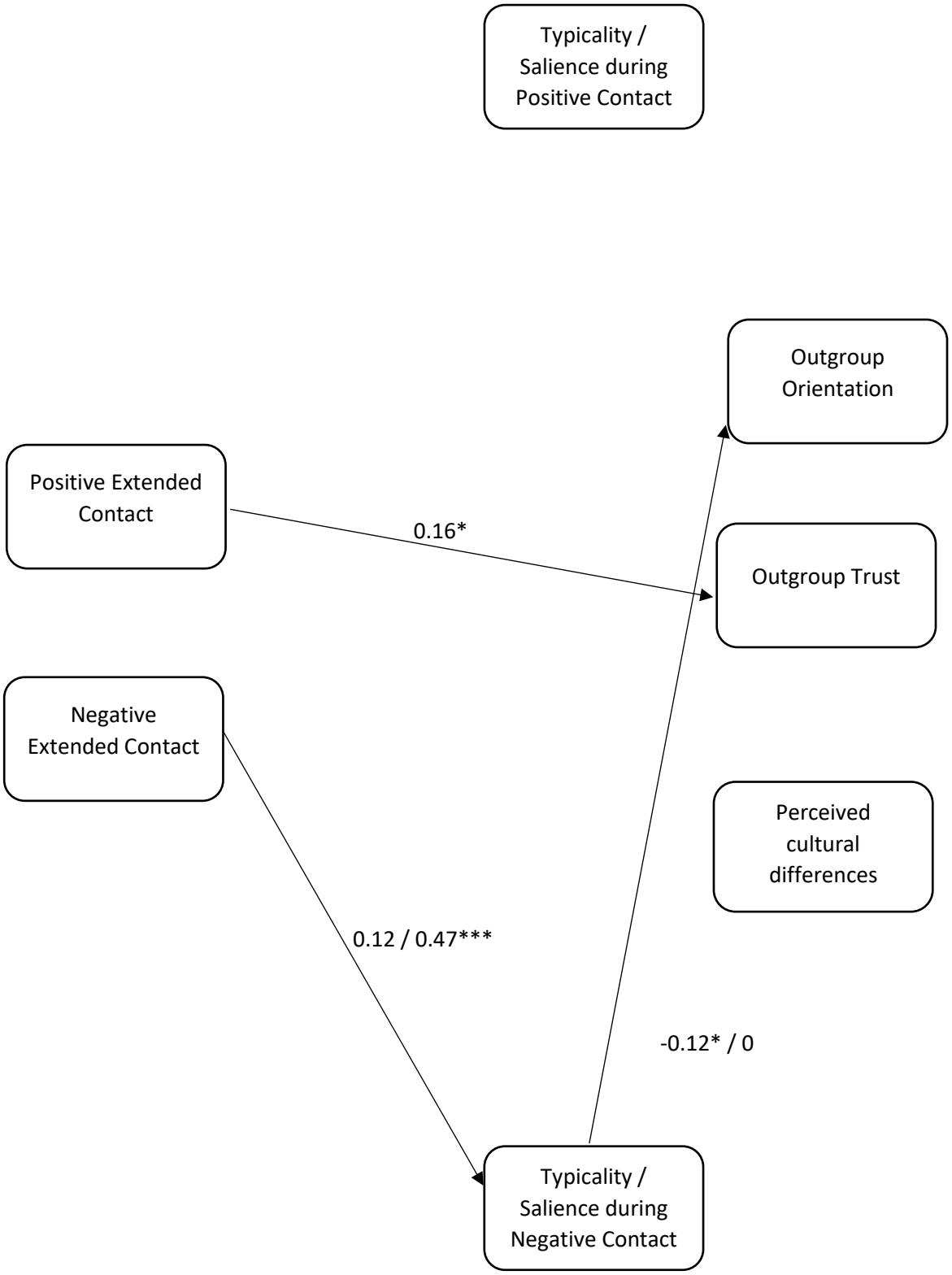


Figure 4. The results for the Polish sample (N = 101). Only results for extended valenced contact reported in this model. See Figure 3 for results pertaining to direct valenced contact. † ≤ .062, * $p < .05$, ** $p < .01$, *** $p < .001$. Unstandardized regression coefficients reported. Regression coefficients reported before the / are for typicality during valenced contact and those reported after the / are for group salience during valenced contact.