



Brief report

Secondary transfer effects from imagined contact: Group similarity affects the generalization gradient

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An experiment examined the effects of imagining contact with an illegal immigrant on attitudes towards illegal immigrants and subsequent effects of that attitude change on feelings about other groups (*secondary transfer*). Compared to a condition in which participants imagined negative contact with an illegal immigrant, participants who imagined positive contact reported more positive attitudes concerning illegal immigrants. Using bootstrapped mediation models, effects of positive imagined contact on attitudes towards illegal immigrants were shown to generalize to other groups that were independently ranked as similar to illegal immigrants, but not to dissimilar groups. This generalization gradient effect was relatively large. Implications for theory and practical applications to prejudice reduction are discussed.

Work on imagined contact has demonstrated positive effects on intergroup attitudes relative to control conditions (Crisp & Turner, 2009). The current paper examines whether such effects can result in *secondary transfer* to other groups (Pettigrew, 2009; Tausch *et al.*, 2010). Does imagining intergroup contact change attitudes about groups other than the group that is the focus of the contact? By measuring attitudes about a variety of secondary groups, we are also able to investigate the nature and size of a *generalization gradient*: to what extent and for what reasons does the degree of secondary transfer vary according to the specific secondary group under consideration?

While traditional face-to-face contact can clearly be effective in improving intergroup attitudes (Allport, 1954; Pettigrew & Tropp, 2006), concerns have been raised about its practical potential in achieving improved intergroup relations in society (Dixon, Durrheim, & Tredoux, 2005). Such concerns revolve around issues such as the

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pragmatics of achieving contact in segregated settings (Hewstone *et al.*, 2008), the prevalence of negative contact in hostile intergroup settings (Paolini, Harwood, & Rubin, *in press*), the influence of anxiety in direct contact (Greenland & Brown, 1999), and the difficulties in achieving generalization effects (Brown & Hewstone, 2005).

Partly as a result of such concerns, a number of forms of contact beyond face-to-face have recently received increasing attention. These include parasocial contact between TV viewers and TV characters (Schiappa, Gregg, & Hewes, 2005), viewers' observation of intergroup contact between TV characters (Ortiz & Harwood, 2007), knowledge, or observation of *other* in-group members having intergroup contact (Wright, Aron, McLaughlin-Volpe, & Ropp, 1997), contact over mediated interpersonal channels (Amichai-Hamburger & McKenna, 2006; Walther, 2009) and imagining contact with out-groups (Crisp & Turner, 2009). Each of these forms of contact can have positive effects on intergroup attitudes (see Harwood, 2010, for an integrative review). Each technique adds to the arsenal of contact methods because, compared to face-to-face contact, it is less likely to involve extensive intergroup anxiety, it operates well in situations that are segregated or involve threats of violence, or it is easier to implement on a large scale. As such, these techniques have the potential to influence attitudes with less risk and effort than traditional contact.

The current study extends research on imagined contact. The imagined contact paradigm asks individuals to imagine interacting with an out-group member. Subsequent assessments of attitudes about the out-group as a whole are typically more positive than in control conditions; these effects have accrued both on explicit and implicit attitudes measures (Crisp & Turner, 2009). The positive effects of imagined contact have been explained in a number of ways. Turner, Crisp, and Lambert (2007) suggest that a priming effect makes positive aspects of intergroup cognition more accessible (see also Husnu & Crisp, 2010). Imagined intergroup contact also forces *personalization* of the out-group in a situation in which group memberships are nonetheless salient (Miller, 2002). Participants in these studies must generate cognitive images that are both individualized and 'representative' of the group. Current theory indicates that the combination of positive and prototypical contact has unique potential for positive attitude change (Brown & Hewstone, 2005). Positive effects of imagined contact may also be explained via social learning processes (Bandura, 2009); a positive imagined encounter models positive intergroup relations and should result in more positive symbolic representations of out-groups. In addition, Stathi and Crisp (2008) present an account of imagined contact effects based on the idea of projection – that contact has effects via inferences that the out-group member shares positive traits with the self. In a series of experiments, Stathi and Crisp demonstrate that imagined contact increases the degree of overlap between positive self-traits and perceived positive traits of out-group members. This corresponds to other accounts of contact effects based on perceived similarity or inclusion of other in the self (Wright *et al.*, 1997).

Our study extends the imagined contact literature by examining generalization from the target out-group (illegal immigrants) to other out-groups. Pettigrew (2009), among others, has shown that contact with a single group member can enhance attitudes about not only their group, but also other groups (*secondary transfer effects*). Such effects are important on a number of levels. They offer a route through which contact's effects might extend beyond isolated attitude change to broader intergroup tolerance and harmony. These effects also suggest possibilities for *indirectly* changing attitudes about one group by implementing contact with a different group. Such strategies might be useful when implementing contact with a stigmatized target group is logistically challenging or laden

with excess emotional or sociohistorical baggage. In such circumstances, contact with a 'proxy' group might serve similar prejudice reduction goals with fewer attendant risks.

In addition to Pettigrew's (2009) data, evidence for secondary transfer effects is provided by Tausch *et al.* (2010). In an impressive series of cross-sectional and longitudinal survey studies, these authors presented strong evidence for secondary transfer effects and ruled out a number of alternative explanations for such effects. Pettigrew and Tausch *et al.* hypothesized that *similarity between groups* is a key moderator of attitude generalization from one group to another and suggested increased attention to this hypothesis. The current study answers their call by examining secondary transfer to a number of groups that vary in similarity to the target group, and by explicitly examining whether the size of secondary transfer effects is explained by similarity between the focal group and secondary groups (the *stimulus generalization gradient*). Such an effect assumes that attitudes are organized in some sort of semantic network, and that changes to one attitude will generalize to others that are proximal in the network but will not affect ones that are more distant.

Most work in this area has used correlational data, albeit often with careful use of control variables (Pettigrew, 2009; Tausch *et al.*, 2010). One study demonstrated secondary transfer effects of contact in a longitudinal design (Eller & Abrams, 2004), showing partial mediation of the effect through increased affective ties to the out-group. Van Laar, Levin, Sinclair, and Sidanius (2005) provided field-experimental evidence for secondary transfer effects. They found that White students who were randomly assigned to a Latino college roommate showed prejudice reduction over time concerning Black people. While these data are quite convincing, the authors noted the possibility that friendship patterns between Latino and Black students might explain the effects (e.g., Latino roommates' Black friends might have directly influenced White students' attitudes about Black people, rather than secondary transfer effects). Thus, there is a need for fully controlled experimental investigations of this effect that can rule out alternative explanations and demonstrate a causal relationship between contact and attitudes concerning secondary out-groups. The current study features such an experimental design.

The data reported here were collected in the US Southwest close to the Mexican border. Illegal crossing of the border is a significant local issue. People traversing the border are associated with drug smuggling (and its attendant cartel-related violence), people trafficking, and property crime. Some local citizens have established armed militia groups to patrol the region and respond to these perceived threats. Illegal immigrants are held responsible for the inconvenience of highway checkpoints and for taking jobs away from legal residents. The situation, however, is not one of unmoderated hostility. Most of those who successfully traverse the border gain employment in temporary low-income work, and many local residents willingly use the cheap labour. The challenges faced by border crossers in a desolate desert area are also covered sympathetically in local media. Hence, we anticipated substantial variation in attitudes among our college student respondents, most of whom have minimal direct exposure to illegal immigrants. Students' attitudes are important to understand insofar as they affect support for services such as water stations essential in saving the lives of many border crossers.

We hypothesized that imagined positive contact with an illegal immigrant would cause more positive attitudes about illegal immigrants, and that those effects would transfer to other attitudinal target groups. We predicted that the degree of transfer

would correspond to the similarity of the secondary groups to illegal immigrants. We expected larger transfer effects to groups such as Mexican-Americans, because they are ethnically associated with illegal immigrants, and to political refugees, because they are associated in terms of features such as crossing international borders and trying to escape a negative situation in their country of origin. We did not expect secondary transfer to groups such as graduate students or gender groups, because these groups share few identifying features with illegal immigrants and hence are not likely to be closely connected in a semantic network of attitudes.

Method

A total of 158 undergraduate communication majors at a large Southwestern USA university participated in this study. In all conditions, respondents first completed demographic measures. Given local associations between illegal immigration and Latino ethnicity, data from 26 respondents reporting Latino or Mexican-American ethnicity were not analysed. Two non-US-citizens were also excluded from the final analysis, as were two respondents who demonstrated zero variation in their feeling thermometer evaluations of all target groups (see below; final $N = 128$).

Respondents were randomly assigned to one of three 'imagination' tasks in a between subjects design. They were asked to imagine a positive interaction with an unfamiliar illegal immigrant ($N = 42$), a negative interaction with an unfamiliar illegal immigrant ($N = 38$), or they imagined being in an outdoor scene (control group: $N = 48$). A series of prompts encouraged elaboration on the imagined experience - in the imagined contact conditions we solicited open-ended responses to prompts such as 'what did the person look like' and 'what happened to make the experience positive/negative'. Such elaboration has been shown to be beneficial in reinforcing imagined contact effects in other research (Husnu & Crisp, 2010). Similar prompts occurred in the outdoor scene condition (e.g., 'what did the outdoor scene look like'). As a manipulation check, respondents rated their imagined interaction (or outdoor experience) in terms of how enjoyable and pleasant it was (1 = *not at all*, 7 = *very much*). These terms appeared to capture the essence of positive versus negative interactions without simply repeating the language used in the manipulation itself.

Respondents then rated their feelings about 21 groups (including illegal immigrants) on 'feeling thermometers' ranging from 1 (very cold/favourable) to 9 (very warm/unfavourable). The order in which specific groups were rated was randomized for each participant; a list of the groups is provided in Table 1.

Finally, participants in the negative condition engaged in a positive imagined contact task (again with an unfamiliar illegal immigrant) in order to counteract potential negative effects of the negative scenario, and they were debriefed.

As an aid to interpreting the results, we obtained independent rankings of the similarity between illegal immigrants and the 20 other groups using three independent undergraduate research assistants. These research assistants were blind to the goals of our research and our hypotheses. They were asked to rank all 20 groups in terms of how similar to illegal immigrants they were, with no specific definition of similarity provided (1 = *most similar*, 20 = *least similar*). We aimed to generate similarity measures that were as 'global' as possible. Reliability across the three raters was good (Cronbach's $\alpha = .81$). The mean rank scores are in the first column of Table 1, and the groups are ordered in terms of those scores.

Table 1. Secondary transfer effects of positive imagined contact with illegal immigrants to other groups

	Coder ratings of similarity to illegal immigrants ^a	Bootstrapped mediation coefficients		SD
		Positive–negative contrast	Positive–control contrast	
Mexican-Americans	2.33	–.463*	–.134*	1.88
Legal immigrants	2.67	–.234*	–.134*	1.79
Asian-Americans	4.67	–.238*	–.057	1.94
Homeless people	4.67	–.564*	–.190*	1.76
Terrorists	4.67	–.037	–.034	1.03
Political refugees	6.67	–.327*	–.122*	1.81
Black people	7.33	–.254*	–.024	1.67
Men	8.67	.036	–.060*	1.45
Women	11.00	–.030	–.058	1.58
Humanities majors	12.00	–.130	–.107*	1.61
White people	12.00	.084	.006	1.60
Engineering majors	12.33	–.008	–.038	1.63
Democrats	12.67	–.195*	–.099	1.72
Americans	13.00	.047	.001	1.47
People who text and drive	13.67	–.044	–.080	1.81
University of ____ students	13.67	–.025	–.029	1.65
Social science majors	14.33	–.169	–.103*	1.56
Republicans	16.33	–.076	–.089*	2.01
Professors	18.33	–.183*	–.059	1.68
Graduate students	19.00	–.128	–.046	1.60

Note. The negative-control contrast yielded no significant mediation effects and is not reported; * $p < .05$.

^a Mean of three independent coders' rankings of similarity between illegal immigrants and each of the other groups (low rank indicates high similarity).

Results

The manipulation check indicated that the conditions were significantly different in terms of their perceived enjoyability, $F(2, 121) = 117.42$, $p < .001$, $\eta^2 = .66$. *Post hoc* tests indicated that the positive contact scenario was rated as significantly more enjoyable ($M = 4.74$, $SD = 1.27$) than the negative scenario ($M = 2.21$, $SD = 1.34$). The control scenario ($M = 6.33$, $SD = 2.08$) was significantly more enjoyable than either imagined contact scenario, both $ps < .001$. All three conditions differed significantly from the mid-point of the scale (value of 4), all $ps < .01$.

A global test of the effects of condition on attitudes concerning illegal immigrants (assessed using the thermometer) indicated marginally significant effects, $F(2, 120) = 2.70$, $p = .07$, $\eta^2 = .04$. *Post hoc* tests indicated a significant difference ($p < .05$) between the positive ($M = 4.54$, $SD = 1.95$) and negative ($M = 3.53$, $SD = 2.06$) imagined contact conditions. Neither the positive nor negative differed significantly from the control condition ($M = 3.73$, $SD = 2.07$), however the difference between the positive condition and the control approached significance in an independent t test, $t(85) = 1.86$, $p = .07$, and yielded a non-trivial effect size ($d = .40$). The negative-control comparison was clearly non-significant, $t(82) = 0.44$, $p = .66$, $d = .10$. Finally, contrast analysis indicated a fully significant linear trend in the means from negative to control to positive ($p = .03$).

Secondary transfer effects were investigated by examining the indirect path from our contact valence manipulation, *through* attitudes about illegal immigrants, to attitudes about the other target groups. Examination of this path constitutes the most direct test of secondary transfer effects because it specifically tests for the transfer of *only* the experimentally induced portion of attitudes towards illegal immigrants to the secondary attitude measures. Within each mediated model, contact condition was the independent variable, attitude towards illegal immigrants was the mediator, and attitude towards one of the other groups was the dependent variable. Separate analyses were performed for each of the secondary groups, and this set of analyses was performed three times, contrasting, respectively, the positive-negative, positive-control, and negative-control imagined contact conditions.

The analysis was done using bootstrapped mediation tests of the indirect path, with effects calculated using the SPSS INDIRECT macro (Preacher & Hayes, 2008). MacKinnon, Lockwood, Hoffman, West, and Sheets (2002), among others, have demonstrated that bootstrapping techniques are preferable to other methods for examining indirect paths (e.g., Baron & Kenny, 1986) because they (a) increase power while not increasing Type 1 error and (b) do not rely on tests of unnecessary effects (e.g., the significance of the overall IV-DV effect). It is appropriate to note in this context that there were no significant *direct* effects of our manipulation on attitudes towards groups other than illegal immigrants in our data ($ps \geq .10$).

Results of the mediation analyses are presented in columns 2 and 3 of Table 1. Coefficients are not listed for the negative-control contrast because it yielded no significant effects. The second column of the table lists coefficients from the analysis comparing positive and negative conditions, indicating significant secondary transfer effects of our manipulation for the asterisked groups. Negative mediation coefficients indicate the predicted pattern of secondary transfer, because of how the conditions were coded (positive = 1, negative = 2). It is clear that secondary transfer effects exist and that they are not homogeneous. As shown by the asterisks, the effects of positive (vs. negative) imagined contact with illegal immigrants on attitudes about illegal immigrants subsequently generalize to attitudes about Mexican-Americans, legal immigrants, Asian-Americans, homeless people, political refugees, Black people, Democrats, and professors. Supporting our prediction that similarity between the target and the secondary group accounts for variation in the strength of secondary transfer effects, we found a significant correlation between the indirect path coefficients (column 2) and the similarity rankings from our independent coders (column 1), $r(18) = .51, p < .05$.

The third column lists the mediation coefficients emerging when the positive-control condition contrast is the predictor variable (positive = 1, control = 2). In this instance, significant secondary transfer was apparent for attitudes about Mexican Americans, legal immigrants, homeless people, political refugees, men, humanities majors, social science majors, and Republicans. Again, the effects are not homogeneous; the correlation between the size of the mediation coefficients and the group similarity rankings was marginally significant in this case, $r(18) = .39, p = .09$.

One alternative explanation of our findings might be that the groups demonstrating non-significant effects were those for which there was little variation in attitudes which would reduce the possibility of observing mediation. However, when controlling for variation in attitudes (the standard deviation scores in the final column of Table 1), the correlations remain at a similar magnitude and significance level: positive-negative partial $r(17) = .57, p < .05$, positive-control partial $r(17) = .43, p = .07$.

Discussion

These data are the first to show secondary transfer effects of intergroup contact in the imagined contact paradigm, and to show secondary transfer in a true experimental design. The effects suggest that imagined contact may be a useful technique for improving attitudes about groups beyond the specific target group. This might be helpful in attempting attitude change for groups where people are resistant to imagining positive intergroup contact (e.g., for sociohistorical reasons). In such contexts, research might uncover proxy groups to use in interventions, based on specific similarities between those groups and the true target group. These data represent a relatively strong test of secondary transfer effects because the primary effects demonstrated are from an experimental design, and hence a number of alternate interpretations (e.g., levels of contact with secondary groups, preexisting individual differences in prejudice) can be ruled out. Our findings are promising in expanding the potential for imagined contact to be a practical tool in battling prejudice.

As is demonstrated by the variation in the mediation coefficients in Table 1, secondary transfer effects do not increase tolerance across the board: they are stronger for more similar groups and weaker for less similar groups. Our data are the first to empirically estimate the *size* of the stimulus generalization gradient (Pettigrew, 2009), and the effect appears to be relatively large (explaining 16–25% of variance in level of secondary transfer, based on analysis). Pettigrew suggested that secondary transfer may stem from in-group reappraisal or deprovincialization, wherein contact leads to general tolerance and acceptance of diversity – a process that should yield similar secondary transfer effects across groups. The variation in transfer effects shown by our data suggests that deprovincialization and in-group reappraisal explanations are *not* central to secondary transfer effects, at least in imagined contact scenarios (see also Tausch *et al.*, 2010).

The specific groups to which effects generalize are revealing about perceptions of illegal immigrants in the local context. The fact that stronger transfer effects emerged for homeless people than Mexican-Americans, for instance, suggests that perceptions of illegal immigrants are more closely tied to socio-economic issues and/or transience than ethnicity. This contrasts with much of the explicit discourse concerning this group which is tied very much to ethnicity, language use, and national origin. If our interpretation is correct, then secondary transfer effects might help us to understand implicit associations between groups and the psychological origins of those associations, revealing somewhat unexpected connections between groups. Indeed, secondary transfer effects to groups such as professors and humanities majors in our data are surprising and worthy of further investigation (albeit such effects are smaller than effects for intuitively similar groups). These comments, of course, suggest that there are more subtle dimensions on which we could have assessed similarity between groups, and we suspect that such ratings might have yielded more power in predicting secondary transfer from similarity. In particular, dimensions underlying stereotyping (warmth, competence: Cuddy, Fiske, & Glick, 2008), or group level variables like status or permeability might offer interesting routes for future investigations of group similarity and secondary transfer. We anticipate that research examining a broader array of dimensions simultaneously will explain secondary transfer more fully. However, the very global similarity measure that we adopted demonstrated substantial utility in the current study.

The relative failure of the negative imagined contact condition warrants discussion. There was no suggestion of differences in attitudes about illegal immigrants between the negative imagined contact condition and the control condition nor was there evidence of

secondary transfer effects involving the negative-control comparison. We had expected that imagining negative contact might yield more negative attitudes about the out-group, given contact's theoretical potential to work in positive or negative directions (Paolini *et al.*, in press). To further investigate this finding, we would recommend that future designs include a neutral imagined contact condition to provide a more precise comparison for the negative condition. The current study adopted the 'imagine an outdoor scene' control that has been commonly used in imagined contact research (e.g., Turner *et al.*, 2007), but a neutral contact control might have been more appropriate in specifically comparing magnitude of positive vs. negative contact conditions. It is worth noting that attitudes about illegal immigrants were fairly negative in our data (3.93 on a 1–9 scale; more positive than only 'terrorists' and 'people who text and drive' among the groups we examined). Hence, effects in a negative direction might be hard to achieve with this target group. Finally, it is possible that the negative contact instructions yielded imagined interactions based on pity, for instance, rather than hostility. If so, effects on attitudes would be muted compared to a more hostile form of negativity. We are currently analysing open-ended data gleaned from positive and negative imagined contact tasks in order to provide more nuanced descriptions of exactly what respondents imagine in the various conditions.

Coda

'... transfer of changes from one prejudice to another – either positively from intergroup contact and negatively from collective threat – reflects the close links found between prejudices of varying types' (Pettigrew, 2009, p. 63). In this work, we found evidence for such links in an experimental design, and we managed to account for variation in those links with a measure of group similarity. We found no evidence of *negative* secondary transfer effects. Hence, our data adds to work showing that secondary transfer effects and imagined contact may offer promising means for reducing prejudice, including when used together.

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