

Changing stereotype content through mental imagery: Imagining intergroup contact promotes stereotype change

Group Processes & Intergroup Relations

15(3) 305–315

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DOI: 10.1177/1368430211427574

gpir.sagepub.com



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Abstract

Research has recently shown that imagining intergroup contact can reduce hostility toward outgroups. The present experiment explored whether imagining intergroup contact leads to more positive perceptions of outgroups differentially stereotyped on the two fundamental dimensions of social perception, namely warmth and competence. Depending on the experimental condition, participants ($N = 123$) imagined either an intergroup encounter with an outgroup member rated as high (vs. low) on warmth and competence or an outdoor scene. Results showed that imagining an intergroup encounter enhances warmth and competence perception of dehumanized groups, and promotes the perception of warmth and competence of envied and paternalized groups, respectively. These findings suggest that imagined contact could promote positive intergroup relationships toward a wide range of social groups, even dehumanized groups.

Keywords

intergroup contact, imagined contact, stereotype content model, warmth, competence

Paper received 05 July 2011; revised version accepted 29 September 2011.

Conflictual intergroup relations provide an enduring challenge for social psychologists. This is why, for almost a century, theorists have been trying to develop ways to reduce conflict between different groups. Intergroup contact theory (Allport, 1954; Pettigrew, 2008; Pettigrew & Tropp, 2006) is one of the most powerful theoretical approaches for improving outgroup attitudes. According to the contact hypothesis (Allport, 1954) prejudice between opposing groups can be reduced by bringing them together. The contact hypothesis has stimulated a large body of research and has received support across a

variety of settings and social groups (Hewstone & Swart, 2011; Pettigrew, 2008). Indeed, Pettigrew and Tropp (2006) recently conducted a meta-analysis of over 500 studies on intergroup

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contact, observing a robust, highly significant effect of contact in reducing prejudice. Moreover, their findings showed that contact reduces prejudice regardless of target group, age group, and geographical area.

Despite the clear benefits of intergroup contact, concerns have been raised about its practical potential in achieving improved intergroup relations (Crisp, Stathi, Turner, & Husnu, 2009). These concerns include issues such as the difficulty of engaging in direct contact in segregated settings (Husnu & Crisp, 2010a), the prevalence of negative contact in hostile intergroup settings (Paolini, Harwood, & Rubin, 2010), and the influence of anxiety on direct contact (Greenland & Brown, 1999). Recent research has, thus, identified potential solutions to overcome such concerns, promoting a number of indirect forms of contact beyond face-to-face encounters. Thus, according to the extended contact hypothesis, learning that an ingroup member has a close relationship with an outgroup member could improve one's own attitude toward the outgroup (Wright, Aron, McLaughlin-Volpe, & Ropp, 1997; see also Turner, Hewstone, Voci, & Vonofakou, 2008) even without direct experience of contact. A further extension of the contact hypothesis poses that simply imagining contact with outgroup members (i.e., imagined contact) could improve intergroup attitudes (Turner, Crisp, & Lambert, 2007; see also Crisp, Birtel, & Meleady, 2011; Crisp, Husnu, Meleady, Stathi, & Turner, 2010; Crisp & Turner, 2009). Specifically, imagined contact combines the assumptions posed by direct and extended contact hypotheses with more general findings about the impact of mental simulation on social behaviour.

Research on mental imagery has shown that imagining a particular context can evoke cognitive and behavioural effects similar to those experienced in the context itself (Dadds, Bovbjerg, Redd, & Cutmore, 1997; Garcia, Weaver, Moskowitz, & Darley, 2002). In addition, research on social cognition has found that after imagining a (counterstereotypic) strong woman, individuals showed reduced implicit stereotyping compared with participants who engaged in

neutral or stereotypic mental imagery (imagining a weak woman or a strong man), or participants who had not engaged in any imagery (Blair, Ma, & Lenton, 2001).

Building on these findings and extending them to the domain of intergroup relations, Turner et al. (2007) argued that imagining intergroup contact could have positive effects on intergroup attitudes. In a first set of experiments, Turner et al. (2007) found that imagined contact with an outgroup member (in this case an older person or gay man) led to more positive evaluative impressions, as well as greater perceived outgroup variability. In a second set of studies, Turner and Crisp (2010) found similar effects on a measure of implicit attitudes of young people toward the elderly, and of non-Muslims toward Muslims. Moreover, Stathi and Crisp (2008) showed that imagined contact encourages the projection of positive traits to ethnic and national outgroups. Similarly, Husnu and Crisp (2010a) showed that imagining contact led to more positive behavioural intentions toward outgroup members (see also Crisp & Husnu, 2011; Husnu & Crisp, 2010b; Turner & West, *in press*). In parallel to the process underlying direct intergroup contact, the effects of imagined contact on outgroup evaluations are mediated by reduced intergroup anxiety (Turner et al., 2007; see also Crisp et al., 2009). In sum, there is growing evidence that the mental simulation of positively toned intergroup contact can improve intergroup attitudes (Husnu & Crisp, 2010b; see also Crisp et al., 2010).

The current experiment aimed at extending previous studies on imagined contact by investigating whether imagined contact reduces hostility toward differentially stereotyped groups. Prior work on direct contact showed that the relationship between face-to-face contact and prejudice reduction remains significant across samples involving different stereotyped groups (Pettigrew & Tropp, 2006). In contrast, no prior study on imagined contact has systematically investigated whether imagined contact promotes more positive attitudes toward outgroups that are ascribed different stereotype contents. However, such an issue seems particularly relevant in order to

determine the extent to which imagined contact will be more or less effective across outgroups stereotyped in different ways.

Accordingly, it has been shown that there are two fundamental dimensions underlying group perception: warmth and competence (Cuddy, Fiske, & Glick, 2008; Fiske, Cuddy, Glick, & Xu, 2002). Whereas warmth basically refers to the aptitude to carry out harmonious social relations involving cooperation, forming connections with others as well as moral behaviour (e.g., being caring and friendly), competence is predominantly associated with achievement orientation (e.g., being intelligent, efficient). According to the stereotype content model (SCM; Fiske et al., 2002) warmth and competence dimensions yield four clusters of groups. Thus, derogated and dehumanized groups (e.g., welfare recipients and homeless) are low on both dimensions (see also Harris & Fiske, 2006), while the ingroup or allies of the ingroup (e.g., Americans, Whites, students) are rated as high on both dimensions. Moreover, other groups are ascribed mixed stereotypes comprising a positive evaluation on one dimension and a negative evaluation on the other. Thus, for example, Asians and Jews are viewed as competent but not warm (see Cuddy et al., 2009), while disabled and elderly are perceived as warm but not competent (Cuddy, Norton, & Fiske, 2005; Fiske et al., 2002). While the highly competent and warm groups elicit admiration stereotypes, the low-competent and high-warm groups or high-competent and low-warm groups elicit, respectively, paternalistic and envious stereotypes. Groups that are perceived as low in warmth and competence elicit the worst kind of image: dehumanizing stereotypes (Harris & Fiske, 2006, 2009). They are seen as not human, and elicit negative emotions (e.g., disgust and contempt) and behaviours (i.e., attack and violence) (see Cuddy, Fiske, & Glick, 2007).

Previous studies have demonstrated the effectiveness of imagined contact for groups against whom there is pervasive discrimination and societal tension, and that are differentially stereotyped in terms of warmth and competence (see Crisp et al., 2010, for a review). However, prior research

has thus far failed to provide compelling evidence that imagined contact could promote more positive attitudes toward dehumanized groups, perceived as low in both competence and warmth. As a case in point, the only study that explicitly investigated the role of imagined contact in promoting positive intergroup attitudes toward a dehumanized group (i.e., illegal immigrants; see Lee & Fiske, 2006) showed that imagining positive contact with illegal immigrants led to more favourable attitudes compared to imagining negative intergroup contact, but did not find that those who engaged in imagined positive contact showed more positive attitudes toward the group than those who had engaged in a neutral imagery task (Harwood, Paolini, Joyce, Rubin, & Arroyo, 2011). Such a study also did not conceive of investigating imagined contact, as we do, using the framework of the SCM (Fiske et al., 2002).

Given this state of affairs, more research is still needed on the possible effects of imagined contact on views of dehumanized groups. Such an issue seems particularly relevant considering that imagined contact was proposed as a strategy to promote positive intergroup relations especially in hostile intergroup settings involving high levels of segregation and intergroup anxiety (Crisp et al., 2009). Accordingly, it has been shown that dehumanized groups (i.e., groups perceived as low in both warmth and competence) are likely to elicit the highest levels of anxiety, hostility, and segregation (Fiske et al., 2002; see also Cuddy et al., 2008; Harris & Fiske, 2006).

Thus, linking work on imagined contact to research on stereotype content, the present experiment aimed at investigating whether imagined contact reduces intergroup hostility toward social groups which are differentially stereotyped on warmth and competence dimensions. Further, most of the studies on imagined contact have mainly focused on either affective (i.e., global evaluations) or behavioural (i.e., behavioural intentions) consequences of the intergroup imagination task (see Crisp et al., 2010, for a review). By contrast, few studies have explored the cognitive effects of imagined contact, considering either the perception of outgroup variability

(Turner et al., 2007) or the tendency to project positive self-traits to the outgroup (Stathi & Crisp, 2008). The present experiment aimed at extending prior work on the effects of imagined contact, and on its cognitive consequences in particular, exploring whether the mental simulation of a social interaction with an outgroup member leads to more positive stereotyping. More specifically, we aimed to show whether imagined contact enhances the perception of warmth and competence of outgroups, thus promoting the possibility that traditionally discriminated groups could move from the negative quadrants of the SCM (low warmth/low competence; high warmth/low competence; low warmth/high competence) to a more positive perception.

Considering that groups who engender admiration stereotypes are viewed as high on both warm and competence, we reasonably expected that for those groups imagined contact should not change the stereotype content (Hypothesis 1). Accordingly, groups high on both warmth and competence are perceived as allies of the ingroup (Cuddy et al., 2008; Fiske et al., 2002) and are viewed in a positive fashion even without the experience of contact. Thus, the mental simulation of a positive intergroup encounter with those groups would confirm the admiration stereotypes.

By contrast, considering that dehumanized groups are perceived as lacking in both warmth and competence (Harris & Fiske, 2006), the mental simulation of a positive intergroup encounter with such groups should enhance the perception of both warmth and competence (Hypothesis 2). As a matter of fact, previous studies have shown that positive imagined contact reduces both intergroup anxiety and the perceived distance between the self and the outgroup members (Stathi & Crisp, 2008; Turner et al., 2007; see also Crisp et al., 2010). Thus, outgroup members would be perceived as less threatening (Turner et al., 2007), more socially close to the ingroup (Stathi & Crisp, 2008), and therefore more sociable and cooperative (i.e., higher warmth perception). Similarly, prior work has shown that imagined contact promotes the projection of positive traits largely

related to ability and intelligence (i.e., intelligent, logical, studious) from the self to the outgroup members (Stathi & Crisp, 2008). Based on these findings, we also expected that imagined contact would enhance the perception of competence.

In line with this reasoning, given that groups who are ascribed mixed stereotypes (i.e., either paternalistic or envious) are perceived as being as high as ingroup members along one of the two fundamental dimensions (Fiske et al., 2002), we predicted that for those groups, imagined contact would promote a more positive perception along the dimension on which they are perceived negatively (Hypothesis 3). In other words, imagined contact should enhance the perception of warmth and competence for envied and paternalized groups, respectively (see also Cameron, Rutland, Turner, Holman-Nicolas, & Powell, 2011).

The present experiment

We conducted an experiment to investigate the effects of imagined contact on warmth and competence perceptions according to the SCM. Specifically, we tested our hypotheses by considering various immigrant groups. Although immigration is as old as the history of human beings, prejudice and hostility toward immigrants are widespread both in the United States and Europe (Pereira, Vala, & Costa-Lopes, 2010; Zagefka, Brown, Broquard, & Martin, 2007; Zárate, Garcia, Garza, & Hitlan, 2004). Against this background, immigration seems an appropriate context for the study of the role of imagined contact in changing stereotype content.

The present research was conducted in Italy. Thus, we selected four immigrant groups which were representative of the largest national groups living in Italy and which were perceived differently in terms of warmth and competence, as suggested by previous studies: Albanians (low warmth/low competence); Canadians (high warmth/high competence); Chinese (low warmth/high competence); and Peruvians (high warmth/low competence). There are 441,396 Albanian immigrants in Italy, making them one

of the largest minority groups in the country (Italian National Institute of Statistics [Istat], 2010). Since Albanian immigrants attracted the attention of Italian media in the early 1990s due to some criminal episodes, they are commonly perceived as criminals and deviants as well as uncivilized, and therefore as neither warm nor competent (Volpato & Durante, 2010). On the other hand, Chinese represent the fourth largest immigrant group in Italy with more than 170,000 residents (Istat, 2010). Due to their business success in the Italian job market, Chinese immigrants are viewed as competent but also highly competitive, cold, and untrustworthy (i.e., high competence/low warmth) (for Italian data, see LaBarbera & Ferrara, 2010; but see also Lin, Kwan, Cheung, & Fiske, 2005; Maddux, Galinsky, Cuddy, & Polifroni, 2008). Whereas Chinese are mostly seen in an envious fashion, prior work has suggested that immigrants coming from South America are mainly ascribed paternalistic stereotypes (see Volpato & Durante, 2010). Peruvians in particular represent the largest South American immigrant group living in Italy with more than 77,000 residents (Istat, 2010). Peruvian men and women are mainly employed as nannies and auxiliaries (Voci & Hewstone, 2003) thus evoking high warmth (e.g., nice, friendly, empathic) and low competence (i.e., not found in business and technical professions) stereotypes among Italian lay people (see Volpato & Durante, 2010). Although previous studies suggested that no immigrant group living in Italy is perceived as an ally of the ingroup and therefore both competent and warm (Volpato & Durante, 2010), recent research has shown that native Italians perceive Canadian immigrants as friendly, not threatening and highly educated, that is, highly warm and competent (Mancini & Panari, 2010). Italy, which has sent migrants to Canada in the past, is now starting to see a growing body of Canadians coming to its main cities. Supporting this view the Italian National Institute of Statistics (Istat, 2001) reports stable migration from Canada to Italy with more than 4,500 residents: they are well educated and enter high-status professions (i.e., high competence), and are well integrated and

perceived as cooperative (i.e., high warmth). Even if we acknowledge that Italy has much lower annual flows from Canada than from other countries, prior work (see Glick et al., 2006) seems to suggest that other high-status immigrants groups with more residents in Italy (e.g., U.S. immigrants) are not perceived as both warm and competent like Canadian immigrants.

Method

Participants and design A total of 123 students at a large university in Italy, 24 male and 99 female, aged between 19 and 55 ($M = 21.66$; $SD = 4.86$) participated in this study. All participants were Italian citizens.

The study employed a 2 (task: contact vs. control) \times 4 (target group: Albanians vs. Canadians vs. Chinese vs. Peruvians) \times 2 (traits: warmth vs. competence) mixed-model design, with repeated measures on the last factor.

Procedure At the beginning of the experiment the researcher told participants that they were participating in a study based on their attitudes towards various social issues. Participants were then randomly allocated to either contact or control conditions. Previous studies on imagined contact have employed several control conditions, including nonrelevant positive interaction (Stathi & Crisp, 2008), outgroup priming (Turner et al., 2007, Experiment 2), and no-contact control scenes (Husnu & Crisp, 2010b; Turner & Crisp, 2010; Turner et al., 2007, Experiment 1). The benefits of imagined positive contact have been demonstrated against all of these conditions. Thus, in the current experiment we employed the standard no-contact control scene used in previous research (Husnu & Crisp, 2010b; Turner et al., 2007; see Crisp et al., 2010, for a review).

Specifically, participants were asked: "I would like you to take a minute to imagine you are walking in the outdoors. Try to imagine aspects of the scene about you (e.g., is it a beach, a forest, are there trees, hills, what's on the horizon?)." By contrast, in the contact condition participants

imagined a positive encounter with one group representing one of the SCM quadrants: Canadians, Chinese, Peruvians, or Albanians. Specifically, participants were asked: "I would like you to take a minute to imagine yourself meeting a (Canadian vs. Chinese vs. Peruvian vs. Albanian) immigrant for the first time. During the conversation imagine you find out some interesting, positive, and unexpected things about the immigrant." In all conditions, participants were given 1 min to imagine the scene. In order to further reinforce the effects of the imagery task, participants were then instructed to "Describe as many aspects of the scenario you just imagined as possible" for 1 min on a response sheet (for a similar procedure see Husnu & Crisp, 2010b). Next, ostensibly as part of an unrelated research project, participants were asked to complete a questionnaire concerning the relations between Italians and immigrants living in Italy. Specifically, participants were asked to rate a given group on warmth (friendly, likeable, helpful; $\alpha = .92$) and competence (intelligent, competent, capable; $\alpha = .94$) (see Fiske et al., 2002) using 7-point scales (1 = *not at all*, 7 = *very much*). In the contact condition participants rated the group that was involved in the imagination task. In the control condition, participants rated one of the four selected groups, selected at random. The warmth and competence scores in this latter condition served as a manipulation check that the selected groups fell in the hypothesized SCM quadrant. To check that the imagination task was perceived positively, respondents rated their imagined interaction (or outdoor experience) in terms of how pleasant it was (1 = *not at all*, 7 = *very much*).

Results

To ascertain that both imagination tasks were perceived positively, we submitted the pleasantness scores to a 2 (task: contact vs. control) \times 4 (target group: Albanians vs. Canadians vs. Chinese vs. Peruvians) factorial analysis of variance (ANOVA). The analysis yielded a main effect of task, $F(1, 103) = 11.91$, $p = .001$, $\eta_p^2 = .10$, indicating that the outdoor scenario was perceived as more enjoyable

($M = 5.96$, $SD = 1.13$) than the contact scenario ($M = 5.21$, $SD = 1.15$). Although this difference was significant, it is important to note that scores for both the outdoor scenario ($t(52) = 12.48$, $p = .001$) and the contact scenario ($t(57) = 7.64$, $p = .001$) were significantly above the midpoint of the scale (i.e., 4), attesting to the high levels of pleasantness. No other significant effects were found, $p > .14$.

We then conducted a 2 (task: contact vs. control) \times 4 (target group: Albanians vs. Canadians vs. Chinese vs. Peruvians) \times 2 (traits: warmth vs. competence) mixed-model ANOVA, with repeated measures on the last factor. As expected the analysis yielded a significant three-way interaction between task, target, and traits, $F(3, 115) = 11.73$, $p = .001$, $\eta_p^2 = .23$. Follow-up analyses decomposed the interaction (see Table 1). We first consider the control and imagined contact conditions separately, then compare them.

Control condition In the control condition, Albanians were perceived as low on warmth as the Chinese, $p = .08$, but less warm than both Canadians, and Peruvians, $p = .001$. Further, Canadians were rated as warm as Peruvians, $p = .69$, but warmer than Chinese, $p = .001$. Finally, Chinese were perceived as less warm than Peruvians, $p = .03$.

Considering the competence scores, Albanians were rated as competent as Peruvians, $p = .68$, but less competent than both Canadians and Chinese, $p = .001$. Further, Canadians were viewed as competent as the Chinese, $p = .13$, but more competent than Peruvians, $p = .001$. Finally, Chinese were perceived as more competent than Peruvians, $p = .001$.

Further, in the control condition all warmth scores differed significantly from the midpoint of the scale (i.e., 4), $p < .03$, with the exception of the Chinese, $p = .11$. Whereas the competence scores of Canadians and Chinese differed from the midpoint, $p = .001$, the competence scores of Albanians and Peruvians did not differ from the midpoint of the scale, $p > .32$.

Taken together these findings showed that in the control condition the selected groups fell in

Table 1. Mean warmth and competence as a function of condition and target group

	Albanians		Canadians		Chinese		Peruvians	
	Warmth	Competence	Warmth	Competence	Warmth	Competence	Warmth	Competence
Control	2.72 (1.72) _a	3.68 (1.60) _a	4.71 (1.06) _a	5.37 (1.10) _a	3.50 (1.09) _a	6.02 (.88) _a	4.58 (.77) _a	3.86 (.45) _a
Contact	3.74 (1.16) _b	4.54 (1.26) _b	5.04 (1.04) _a	5.51 (1.13) _a	5.08 (1.18) _b	5.47 (1.02) _a	5.02 (1.25) _a	4.76 (.95) _b

Note: Means with different subscripts in a given column are significantly different at $p < .05$. Standard deviations are reported in parentheses.

their hypothesized SCM quadrants. Thus, whereas Albanians were perceived as low on both warmth and competence, Canadians were viewed as high on both dimensions. Chinese and Peruvians were perceived as low warmth/high competence and high warmth/low competence, respectively.

Imagined contact condition Considering the contact condition, Albanians were perceived as less warm than Canadians, Chinese, and Peruvians, $p = .001$. However, Canadians, Chinese, and Peruvians were viewed as equally warm, $p > .89$.

Looking at the competence scores, Albanians were rated as competent as Peruvians, $p = .58$, but less competent than Canadians and Chinese, $p = .015$. Canadians, Chinese, and Peruvians were judged as equally competent, $p > .08$.

Further, in the imagined contact condition all warmth scores fell above the midpoint of the scale, $p = .002$, with the exception of the warmth score ascribed to Albanians, $p = .34$. Similarly, in the imagined contact condition all the competence scores fell above the midpoint of the scale, $p < .06$.

These findings showed that in the imagined contact condition, all groups now fell in the high warmth/high competence quadrant, with the only exception being Albanians for whom the warm scores were at the midpoint.

Comparison between control and imagined contact conditions Further analyses showed that participants in the imagined contact condition rated Albanians as warmer than in the control condition, $F(1, 115) = 6.49$, $p = .012$, $\eta_p^2 = .05$. Similarly, Albanians were rated as

more competent in the imagined contact condition than in the control condition, $F(1, 115) = 5.21$, $p = .02$, $\eta_p^2 = .04$. In contrast, Canadians were perceived as equally warm, $p = .44$, and competent, $p = .75$, in the imagined contact and control conditions.

The Chinese were rated as warmer in the imagined contact condition than in the control condition, $F(1, 115) = 13.53$, $p = .001$, $\eta_p^2 = .11$. However, they were viewed as equally competent in the two conditions, $p = .18$.

Finally, participants in the imagined contact condition rated Peruvians as warm as in the control condition, $p = .29$. However, in the imagined contact condition they were viewed as more competent than in the control condition, $F(1, 115) = 4.14$, $p = .04$, $\eta_p^2 = .03$.

Discussion

The present experiment sought to investigate whether imagined contact reduces intergroup hostility toward social groups differentially stereotyped on warmth and competence dimensions. Specifically, we asked whether imagined contact could enhance the perceptions of warmth and competence of various outgroups. In line with Hypothesis 1, results showed that imagined contact did not change the stereotype content ascribed to Canadians, who were already perceived as high on both warmth and competence. Such findings could be reasonably explained considering that high warmth and competence groups are perceived as allies of the ingroup (Fiske et al., 2002; see also Cuddy et al., 2008) and therefore are evaluated positively even without

engaging in imagined contact. Thus, the mental simulation of an intergroup encounter with Canadians confirmed the positive image of such a group. These findings are in line with prior evidence showing that levels of prejudice moderate the effects of contact on intergroup attitudes. Indeed, it has been shown that contact is associated with less bias especially among individuals with high (vs. low) levels of prejudice toward a given group (Hodson, 2008; Hodson, Harry, & Mitchell, 2009). In line with this reasoning, we showed that imagined contact does not change the stereotype content of groups to which individuals show low levels of prejudice and hostility even in the absence of contact.

In line with Hypothesis 2, imagined contact enhanced both the perceived warmth and competence of a dehumanized group (i.e., Albanians), originally perceived as low on both dimensions. Similarly, in line with Hypothesis 3, groups located in the mixed quadrants (Chinese and Peruvians) shifted from the envious (vs. paternalistic) quadrant to the univalent positive quadrant (high warmth, high competence). Thus, imagined contact promoted a more positive perception of the competence of a group perceived in a paternalistic fashion (Peruvians—high warmth and low competence). In a similar vein, imagined contact enhanced the perceived warmth of a group seen in an envious fashion (Chinese—low warmth and high competence). Taken together these findings show that imagined contact is a valuable method for reducing hostility in general, and promoting stereotype change in particular. As a matter of fact, our findings show that the mental simulation of an intergroup encounter led to discriminated groups being perceived in a more positive fashion, shifting from the negative mixed quadrants of the SCM (high warmth/low competence; low warmth/high competence) to a more positive perception. Even if the mental simulation of an intergroup encounter with a dehumanized group did not promote a major shift from the univalent negative quadrant to the univalent positive quadrant, the noteworthy result is that the perceptions of both warmth and competence improved substantially, attesting to

the effectiveness of the imagined contact. One obvious way to improve further attitudes toward dehumanized outgroups would be to combine imagined contact interventions with more direct forms of contact (see also Crisp et al., 2009).

It is important to note that we found that imagined contact led to more positive perceptions, even if the contact scenario was perceived as less pleasant than the control condition. Thus, we can reasonably rule out that our findings are due to simply thinking about something positive, rather than imagining contact.

A second potential criticism is that participants may have responded more positively in the imagined contact condition because they guessed the rationale of the experiment and behaved in accordance with the perceived expectations of the experimenter. However, feedback following the experiment revealed that none of the participants was suspicious about its purpose, nor did any of them successfully guess the purpose of the experiment. We can therefore rule out an explanation for our findings in terms of demand characteristics (for a similar argument, see Crisp et al., 2009, 2010; Turner et al., 2007).

We consider these findings a novel contribution to the literature on imagined contact. First, although previous research has investigated the effectiveness of imagined contact in improving intergroup attitudes toward several social groups (Crisp et al., 2009), no prior study has provided compelling evidence that imagined contact could encourage more positive attitudes toward dehumanized outgroups. Our data thus complements previous research by showing that imagined contact can prove effective at improving stereotype content in a wider range of domains, even those that involve dehumanizing relationships.

Moreover, these findings advance our understanding of the cognitive effects of imagined contact. Most studies in this area have mainly shown that the mental simulation of an intergroup encounter improves evaluative impressions as well as intentions to engage in future contact toward groups (see Crisp et al., 2010). Studies exploring the cognitive effects of imagined contact have been relatively few in number, but

have shown that imagined contact can promote the projection of positive traits from the self to other groups (Stathi & Crisp, 2008) and increase the perception of outgroup variability (Turner et al., 2007). The present research, by showing that imagined contact promotes stereotype change in the form of enhanced perceptions of warmth and competence, has further extended the evidence for cognitive consequences of mental simulation of an intergroup contact.

The present results suggest several avenues for future research. First, it should be noted that the reported study considered only immigrant groups as targets of the mental imagery; subsequent research is still needed to replicate these effects across other nonimmigrant groups. Second, we should assess the specific emotional set of reactions that follows from imagining an intergroup encounter, since a unique emotional pattern of responses is predicted for each quadrant of the SCM (Fiske et al., 2002). Third, we should investigate the persistence of stereotype change brought about via imagined contact, as well as clarify whether such stereotype change could be due to factors such as an increase in perceived interdependence or the perceived status relations between ingroup and outgroup members, as acknowledged by the SCM (Fiske et al., 2002).

To conclude, our findings add to the burgeoning evidence that imagined contact may be a valuable addition to existing interventions aimed at improving intergroup relations. Specifically, we showed that imagined contact can even be effective in the case of negatively stigmatized, dehumanized groups, helping to change the content of their stereotypes from the vulnerable combination of low perceived competence and warmth.

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