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**Comparing Direct and Imagined Intergroup Contact among Children:
Effects on Outgroup Stereotypes and Helping Intentions**

Abstract

We conducted an experimental intervention aimed at comparing the effectiveness of direct and imagined intergroup contact. Italian elementary school children took part in a three-week intervention with dependent variables assessed one week after the last intervention session. Results revealed that direct and imagined intergroup contact, compared to control conditions of direct and imagined intragroup contact, had an additive impact when it came to reducing negative stereotypes of immigrants and fostering future helping intentions toward this group. The theoretical and practical implications of the findings are discussed.

Keywords: direct intergroup contact, imagined contact, children, prejudice-reduction, intergroup relations, behavioral intentions.

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There is extensive evidence showing that direct, face-to-face contact between members of different groups can foster intergroup tolerance (Allport, 1954; Hodson & Hewstone, 2013; Pettigrew & Tropp, 2011). Recent research, however, has demonstrated that simply mentally simulating an interaction with an outgroup member can also improve outgroup attitudes (“imagined intergroup contact”; Crisp & Turner, 2009, 2012). Although imagined intergroup contact proved to be a successful strategy for improving intergroup relations (for a meta-analysis, see Miles & Crisp, 2014), a hitherto unanswered question remains: does imagined intergroup contact have a weaker, stronger or similar effect to direct intergroup contact? In this research we provide what is the first direct comparison of imagined and direct intergroup contact approaches with children. In so doing we provide for the first time further specification as to whether the two approaches have an additive or interactive impact on intergroup perceptions.

1. Imagined intergroup contact

Imagined intergroup contact is defined as “the mental simulation of a social interaction with a member or members of an outgroup category” (Crisp & Turner, 2009, p. 234). There is now a sizable literature demonstrating the effectiveness of this indirect contact strategy (for reviews, see Crisp, Husnu, Meleady, Stathi, & Turner, 2010; Crisp & Turner, 2009, 2012; Vezzali, Crisp, Stathi, & Giovannini, 2013). Recently, Miles and Crisp (2014) conducted a meta-analysis on imagined intergroup contact, including 71 independent tests and 5,770 participants. Results showed that this strategy had an average effect of $d_+ = .35$. Moreover, this positive effect extended to a wide range of outcome variables, including explicit outgroup attitudes (e.g., Turner, Crisp, & Lambert, 2007), implicit outgroup attitudes (Turner & Crisp, 2010), emotions (e.g., Birtel & Crisp, 2012), behavioral intentions (e.g., Husnu & Crisp, 2010), and behavior (e.g.,

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Turner & West, 2012). Findings also showed that effects were consistent across different target-groups, age-groups and situational contexts.

Relevant to the present study, results from the meta-analysis by Miles and Crisp (2014) demonstrated especially large effects for child samples, $d_+ = .81$. Indeed, although not numerous, there are now various studies demonstrating that imagined intergroup contact is an effective strategy for reducing prejudice among children (Cameron, Rutland, Turner, Holman-Nicolas, & Powell, 2011; Stathi, Cameron, Hartley, & Bradford, 2014; Vezzali, Capozza, Giovannini, & Stathi, 2012; Vezzali, Capozza, Stathi, & Giovannini, 2012; Vezzali et al., in press, Study 1). For example, Vezzali, Capozza, Giovannini, et al. (2012) conducted a 3-week experimental intervention asking Italian elementary school children to imagine a positive encounter with an unknown immigrant child in various social situations. Results revealed that, compared to a control condition where no intervention was applied, children in the imagined intergroup contact condition revealed stronger intentions to meet outgroup members and less implicit prejudice, as assessed one week after the last intervention session.

Vezzali et al. (in press, Study 1) sought to demonstrate that, in line with predictions derived from the common ingroup identity model (Gaertner & Dovidio, 2000, 2012), enhancing the salience of a superordinate identity that includes the ingroup and the outgroup during imagined contact would strengthen the efficacy of this strategy. Italian elementary school children were asked, over the course of four weeks, to imagine working as members of the same group with an outgroup member (i.e. an immigrant child) and take part successfully with him/her in various competitions (e.g., a cooking competition at school). Results indicated that this common ingroup imagined

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intergroup contact was more effective than standard imagined intergroup contact (i.e. imagined intergroup contact where a common identity was not made salient) in improving behavioral intentions toward the outgroup. Specifically, although the effects of common ingroup imagined intergroup contact did not significantly differ from those of a standard imagined intergroup contact condition, this was the only condition which had reliable effects compared to the control condition (where children imagined *intragroup* contact). Specifically, common ingroup imagined intergroup contact, relative to the control condition, increased helping intentions toward the outgroup, assessed one week after the last intervention session, and these effects persisted one week later, when helping intentions were again assessed.

Despite the rapidly growing research on imagined intergroup contact, studies conducted until now have tested separately the effects of direct and imagined intergroup contact, thus making difficult to know whether imagined intergroup contact is as effective as direct intergroup contact. One exception is the study by Giacobbe, Stukas, and Farhall (2013). The authors randomly assigned university students to imagine or have actual contact with a person with a diagnosis of schizophrenia (who was a confederate, in the actual intergroup contact condition). Compared to control conditions where imagined and direct contact were with age-matched control person, both imagined and direct intergroup contact improved (from pre-test to post-test) attitudes toward people with schizophrenia, without reliable differences between the two strategies.

We aimed to build upon the Giacobbe et al.'s (2013) study in some important ways. First, in the prior research actual intergroup contact was with a confederate and not with a real outgroup member, thus limiting the ecological validity of the results.

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Second, actual intergroup contact consisted of a single session lasting 15-20 minutes, so one could argue that its effects may not have had sufficient time to sink in, resulting in an underestimation of its effectiveness. Third, dependent variables were measured straight after the experimental session. To the extent that indirect experiences such as imagined intergroup contact may be less resistant to change and fade away more quickly than direct experiences (Fazio, Powell, & Herr, 1983), the results of this study did not account for the comparative strength of the contact strategies over time. Finally, the design employed by Giacobbe et al. did not allow to test whether direct and imagined intergroup contact have interactive or even additive effects, since the two contact strategies were not manipulated orthogonally. In our study we aimed to build upon the previous research by addressing the above questions.

2. The present research

We conducted an experimental intervention in a natural setting among elementary school children with the aim to compare the effectiveness of two especially strong forms of direct and imagined intergroup contact, and to test the effects of their combination on outgroup stereotypes and positive behavioral intentions.

Participants were Italian elementary school children; the outgroup was that of immigrants. To test our hypotheses, participants worked cooperatively in small groups of 3 to 6 children. We designed our intergroup contact interventions (both direct and indirect) based on principles recommended by the common ingroup identity model, in order to strengthen the efficacy of our manipulation (Gaertner & Dovidio, 2000, 2012). Specifically, we orthogonally manipulated direct and imagined contact in a 2×2 experimental design. Direct contact was manipulated by asking children to work on a task in ethnically heterogeneous *or* homogeneous groups (Guerra et al., 2010; see also

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Guerra, Rebelo, Monteiro, & Gaertner, 2013). This way, we had an experimental direct contact intergroup condition where participants experienced *intergroup* contact (i.e. they worked in heterogeneous groups), and a control direct contact condition, where participants experienced *intragroup* contact (i.e. they worked in homogeneous groups). Imagined contact was manipulated by asking children to imagine a story where they impersonated characters belonging to one group or to two groups cooperating together as a single group. In particular, children were assigned to an *intergroup* imagined contact condition (i.e. after categorizing them as distinct groups, they were asked to work together as a single group), or to an *intragroup* imagined contact condition (i.e. they worked as a single group with no mention to initial separate identities). The rationale for using these direct and imagined contact control conditions was that this way we had comparable control conditions for the two types of contact, i.e. both types of intergroup contact (direct and imagined) could be compared against a no-intergroup contact condition (i.e. direct and imagined intragroup contact). Intragroup imagined contact is a control condition typically used in imagined contact research (e.g., Stathi & Crisp, 2008, Study 2; Vezzali et al., in press, Study 1). Furthermore, the study by Giacobbe et al. (2013) also used direct and imagined intragroup contact control conditions, thus facilitating the comparison with our study.

As dependent variables, we focused on negative outgroup stereotypes and outgroup helping intentions. The choice to test the effects of intergroup contact on outgroup stereotypes is due to the fact that stereotypes represent knowledge structures more resistant to change than general attitudes (e.g., Dovidio et al., 2004). Finding an effect on this measure would provide especially strong support for our hypotheses. The rationale for including a measure of behavioral intentions lies on the fact that intentions

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represent a more reliable predictor of actual behavior than attitudes (Ajzen, 1991; Godin & Kok, 1996). Specifically, we focus on helping intentions, because they are a relatively under-investigated measure in imagined contact research (which generally focused on general contact behavioral intentions; e.g., Husnu & Crisp, 2010; Stathi et al., 2014), and because helping may be an especially relevant behavior in educational contexts, where it could signal social support for minority members.

In line with previous research, we predict independent additive effects of direct and imagined intergroup contact. However, based on studies showing that indirect intergroup contact has stronger effects among individuals with less direct intergroup contact experiences (see also Vezzali, Hewstone, Capozza, Giovannini, & Woelfer, 2014), we acknowledge the possibility of an interaction, such that imagined intergroup contact will work best among those who do not have direct intergroup contact. Furthermore, we do not exclude the possibility of an interaction showing that the two strategies are mutually reinforcing, such that outgroup attitudes will be more positive for participants who engage in *both* direct and imagined intergroup contact.

3. Method

3.1 Participants and experimental design

Participants were 149 Italian elementary school children (73 males, 76 females). Age ranged from 8 years 9 months to 10 years 11 months (Mean age = 9 years 11 months).¹ The participants were randomly allocated to one of the four cells of a 2 (Imagined contact: intergroup vs. intragroup) × 2 (Direct contact: intergroup vs. intragroup) between-subjects experimental design.

3.2 Procedure

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Children were randomly allocated to one of the four cell of our experimental design (given by the combination of the orthogonal manipulation Imagined contact × Direct contact), after having been randomly allocated to same-sex groups of 3 to 6 children each (ethnically homogeneous or heterogeneous; see below). The task was to create a story where children of each of the newly formed small, same-sex groups cooperated as a single group to survive in a hypothetical situation. In the *Imagined intergroup contact condition*, participants in each of the groups were asked to impersonate the characters of the story they were going to create together. Specifically, they were asked to imagine coming from two planets: some children from the planet Sun, the others from the planet Moon. To reinforce the distinction, participants were asked to imagine that children from the Sun had yellow skin and children from the Moon had blue skin.² In the instructions given to participants, both yellow and blue children were depicted as nice and generous, respectful of nature; they were athletic, fast and two meters tall. The background story said that yellow and blue children met on a third Planet, Astra. Astra is covered by wide forests with trees that can get to be 500 meters high; it has very high mountains and numerous rivers which cross the planet and end in a big lake. These instructions were meant to provide a detailed contact scene; imagining a detailed scene has been shown to strengthen the effects of imagined intergroup contact (Husnu & Crisp, 2010). Children were also told that yellow and blue children have always lived in peace with the nature, and the nature has always provided water and fruits necessary to survive. Unfortunately, one night they notice that something terrible was happening to the planet: the clear waters of the lake were now dirty, and trees and flowers around were dying. At this point, participants were asked to imagine being the group of children living on the planet; their aim was to discover

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who/what contaminated the lake (children were free to decide who or what was the source of the contamination), destroy it and come back to their peaceful life. It was explained that after having re-established peace (undermined by the “thing” that contaminated the lake), they could go around the planet to explore it and live new and exciting adventures. Importantly, participants were told that yellow and blue children did not differ only in terms of skin, but also for abilities and power: each group had magic powers, but different ones, and only by combining them could they have the strength to face the enemy of planet Astra. This instruction was intended to specifically reinforce the importance of working as a single common group.

In the *Imagined intragroup contact condition* the story and instructions provided were the same of those of the intergroup version. In this case, however, all children (who impersonated the story characters as in the Imagined intergroup contact condition) imagined to have a blue skin and to be natives of the planet Astra. This condition served as a control, since imagined contact is expected to work when participants mentally simulate an *intergroup*, rather than an *intragroup*, interaction (Crisp & Turner, 2012; for studies using intragroup imagined contact as a control condition, see also, e.g., Stathi & Crisp, 2008, Study 2).

The two imagined contact conditions described above (Imagined intergroup contact and Imagined intragroup contact conditions) were manipulated orthogonally to the two Direct contact conditions described below.

In the *Direct intergroup contact condition*, the small groups who completed the above imagery tasks, by working together as a single group, were composed by both Italian and immigrant children (i.e. small same-sex children groups were ethnically heterogeneous). This condition replicates previous studies conducted with children

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aimed at testing the effectiveness of the common ingroup identity model (Gaertner & Dovidio, 2000), where children belonging to distinct groups worked cooperatively on a task (e.g., Guerra et al., 2010).

In the *Direct intragroup contact condition* the small groups who completed the imagery above tasks (and who thus worked together as a single group) were only composed by Italian children (small same-sex children groups were ethnically homogeneous).

The orthogonal combinations of the four conditions described above created the factorial design to test the additive and interactive effects of direct and imagined intergroup contact. Each group created the story in three meetings (each lasting one hour and followed by a group discussion on the stories produced), once a week for three consecutive weeks.

One week after the last meeting, participants were administered a questionnaire with the dependent measures.

3.3 Measures

Negative outgroup stereotypes. Negative outgroup stereotypes were assessed with four items, asking participants how many outgroup members (immigrant children) are nice (reverse-scored), good (reverse-scored), bad and dirty (see Vezzali, Stathi, & Giovannini, 2012). The 5-step scale ranged from 1 (*none*) to 5 (*all*). The four items were combined in a composite measure of negative outgroup stereotypes ($\alpha = .78$).

Outgroup helping intentions. To measure the intentions to help an unspecified outgroup member in a hypothetical situation, three items were used, adapted from Vezzali et al. (in press, Study 1), e.g. “Think about an immigrant child who may have problems with writing an essay. Would you help him/her?”. A 5-point scale was used,

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ranging from 1 (*definitely not*) to 5 (*definitely yes*). Ratings were aggregated in a reliable index ($\alpha = .84$): the higher the score, the stronger the intention to help outgroup children.

4. Results

Since participants performed the task in small groups, the group was used as the unit of analysis in all analyses we conducted.

To test hypotheses, for each outcome variable we conducted a 2 (Imagined contact: intergroup vs. intragroup) \times 2 (Direct contact: intergroup vs. intragroup) between-subjects ANOVA. Means and standard deviations of variables in the four cells of the experimental design are presented in Table 1.

Table 1

Negative outgroup stereotypes. A main effect of direct contact emerged, $F(1, 50) = 4.29, p < .05, \eta^2_p = .08$, indicating that those working in heterogeneous groups (Direct intergroup contact) had less negative outgroup stereotypes ($M = 2.25; SD = 0.47$) than those included in homogeneous (Direct intragroup contact) groups ($M = 2.55; SD = 0.49$). In other words, we observed an effect of Direct intergroup (vs. intragroup) contact regardless the fact that participants imagined intergroup or intragroup contact. Moreover, we found a main effect of imagined contact, $F(1, 50) = 6.67, p < .05, \eta^2_p = .12$, showing that participants in the intragroup condition had more negative outgroup stereotypes ($M = 2.54; SD = 0.47$) than those who imagined an intergroup situation ($M = 2.21; SD = 0.47$). Therefore, imagined intergroup (vs. intragroup) contact reduced negative stereotypes independently by the fact that participants experienced direct

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intergroup or intragroup contact. The interaction between direct and imagined contact was nonsignificant, $F(1, 50) = 0.81, p = .374, \eta^2_p = .02$.

Outgroup helping intentions. We found a main effect of direct contact, $F(1, 50) = 7.67, p < .01, \eta^2_p = .13$, showing that participants working with outgroup members (Direct intergroup contact) had more positive helping intentions toward the outgroup ($M = 4.49; SD = 0.50$) than those working with ingroup members (Direct intragroup contact) ($M = 4.10; SD = 0.45$). Thus, as for negative outgroup stereotypes, an effect of Direct intergroup (vs. intragroup) contact emerged regardless of the fact that participants engaged in imagined intergroup or intragroup contact. In addition, a main effect of imagined contact emerged, $F(1, 50) = 4.06, p < .05, \eta^2_p = .08$, revealing more positive helping intentions among participants imagining intergroup ($M = 4.46; SD = 0.42$) rather than intragroup contact ($M = 4.20; SD = 0.56$). Therefore, the effect of imagined intergroup (vs. intragroup) contact was present independently by the Direct orthogonal contact condition (intergroup vs. intragroup) participants were included into. The interaction between direct and imagined contact was nonsignificant, $F(1, 50) = 1.66, p = .204, \eta^2_p = .03$.³

These results are in line with our hypotheses, predicting similar positive effects for both direct and imagined intergroup contact. In fact, results from ANOVA analyses presented above descriptively support the hypothesis that the effectiveness of direct and imagined intergroup contact is not different. Indeed, based on partial eta squared, direct intergroup contact was slightly more effective than imagined intergroup contact for outgroup helping intentions, whereas imagined intergroup contact was slightly more effective than direct intergroup contact for negative outgroup stereotypes.⁴ In addition, the absence of an interaction effect does not support the idea of multiplicative effects of

the two contact forms, instead showing that they have additive effects on outcome variables.⁵

5. General Discussion

The aim of this experimental intervention was to compare, for the first time, the effectiveness of direct and imagined intergroup contact in a natural setting among elementary school children. Our hypotheses were tested by considering, in addition to a measure of outgroup stereotypes, a measure of outgroup helping intentions, which is rarely used in the literature on imagined contact (for an exception, see Vezzali et al., in press, Study 1).

On a theoretical level, our results demonstrated that both direct and imagined intergroup contact reduced negative outgroup stereotypes and improved outgroup helping intentions. Specifically, we showed that a multi-session intervention conducted among young children and based on direct and imagined intergroup contact had positive effects on outgroup stereotypes and behavioral intentions that lasted – at least – one week. Notably, direct and imagined intergroup contact effects were not different, at least on the dependent variables we tested in this research. These results are in line with previous evidence demonstrating the effectiveness of imagined intergroup contact in school settings (Stathi et al., 2014; Vezzali, Capozza, Stathi, et al., 2012).

These results considerably extend those by Giacobbe et al. (2013), by providing ecological validity to the finding that both direct and imagined intergroup contact have similar effects. In particular, this finding was obtained by conducting a structured intervention in a naturalistic setting with a sample of children and by assessing dependent variables one week after the experimental manipulation. Moreover, our findings showed that imagined and direct intergroup contact can not only challenge

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stereotypic representations of the outgroup, but also act on intentions to help outgroup members. To the extent that behavioral intentions are the most proximal predictor of actual behavior (Ajzen, 1991; Godin & Kok, 1996), these findings are extremely encouraging. Nonetheless, we highlight that future research should examine whether the effects of these prejudice-reduction strategies actually extend to real behavior.

Our manipulation implied that participants in the experimental cell combining direct and imagined intergroup contact (i.e. the cell where both direct and imagined contact were at the intergroup level) were exposed to a double common ingroup, resulting from the common ingroup of (Italian and immigrant) children working on the same task (direct contact manipulation) and the group of (yellow and blue) characters living on Astra (imagined contact manipulation). However, despite this double common ingroup, we did not find evidence for an interaction between the two strategies (note that in all experimental cells children worked together as a single group – direct contact manipulation – and as characters living on Astra – imagined contact manipulation). In particular, their effects were not mutually reinforcing, such that outgroup attitudes were more positive when participants had both direct and imagined intergroup contact. Possibly, mutual reinforcing effects can emerge when considering longer time spans or in contexts of more severe conflict and/or segregation. Moreover, we did not find evidence for the alternative hypothesis of stronger effects for those engaging in imagined intergroup contact but not in direct intergroup contact. This may be because of how direct intergroup contact was operationalized in the present study. Previous studies of indirect intergroup contact have demonstrated stronger effects of indirect (i.e. extended) intergroup contact among those with low levels of *prior* direct intergroup contact (see Vezzali et al., 2014). In this study we did not assess prior direct intergroup

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contact, but manipulated it orthogonally to imagined intergroup contact. Thus, it is still possible that effects of imagined intergroup contact are stronger for individuals who did not engage in direct intergroup contact experiences *before* the experimental manipulation. However, the fact that, unlike most of imagined contact intergroup research (where direct intergroup contact is not assessed), we manipulated direct intergroup contact, increases the confidence in our results.

It is worth noting that, by manipulating direct and imagined intergroup contact orthogonally, we were able to provide the first experimental test of the combination of the two intergroup contact strategies. This test allowed us to address an important theoretical question, with clear practical implications: are the effects of direct and imagined intergroup contact additive or interactive? The fact that we obtained two main effects (for direct and for imagined intergroup contact, respectively) and not an interaction effect indicates that the effect of the two contact types is additive rather than multiplicative. In other words, both forms of contact represent valuable strategies that may be used in isolation or in combination to improve intergroup relations.

In this study control conditions for direct and imagined intergroup contact were operationalized as direct and imagined intragroup contact, respectively. This allowed us to have both classic direct and imagined intergroup contact conditions, and typical control conditions used in previous research (e.g., Stathi & Crisp, 2008, Study 2), also directly linked to hypotheses tested here (Giacobbe et al., 2013). This operationalization also facilitated the comparison between conditions, as control conditions for direct and imagined intergroup contact were equivalent. A limitation is that these control conditions were not “pure,” in the sense that they included direct and imagined contact (albeit with ingroup members). On one side, however, this may be considered as a

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strength of our research. In fact, participants in the two control conditions were in some way exposed to the intervention: despite the fact that they did not engage in (direct and/or imagined) intergroup contact, they worked cooperatively with peers (face-to-face and by imagining it) as members of the same group. Thus, it is likely that the intervention has primed cooperation among participants. Having found an effect of direct and imagined intergroup contact against these two control conditions provides particularly strong support for our hypotheses. However, it should be noted that effect sizes were not large and need to be interpreted with caution as well as replicated in future studies.

Although the present results show that the effects of direct and imagined intergroup contact did not differ, it is still possible that direct intergroup contact has more enduring effects or that it is more beneficial than imagined intergroup contact in other dimensions of intergroup relations. Indeed, since direct experiences should produce stronger effects than indirect experiences (Fazio et al., 1983), it is possible that attitudes formed following direct rather than imagined intergroup contact are more resistant to change, and that the differential effects of the two strategies can be found in the long term. In the present study we used a particularly strong form of imagined (as well as of direct) intergroup contact, based on common ingroup identity principles; moreover, effects were tested only one week after the last intervention session. This may also help explain why the combination of direct and imagined intergroup contact did not produce additional benefits: in the short time, their single effects were already sufficiently strong to improve outgroup attitudes. Possibly, testing the effects after several months may reveal stronger effects of direct compared with imagined intergroup contact (although the effects of imagined intergroup contact, at least among adults, have

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been shown to be considerably enduring: Vezzali, Crisp, Stathi, & Giovannini, 2015, demonstrated that a single session of imagined intergroup contact influenced self-reported behavior after a period of almost seven months). In addition, the combined effect of direct and imagined intergroup contact may be best seen in a longer time span, allowing participants time for cognitive and affective reflection.

This study was different from previous studies (e.g., Stathi et al., 2014; Vezzali, Capozza, Stathi, et al., 2012), because participants imagined impersonating and interacting with fantasy characters (yellow and blue children). In other words, they did not directly imagine contact with the target outgroup (i.e. immigrants). We argue that this removes a significant barrier to attitude change. Indeed, most interventions aiming at diminishing prejudice make direct reference to target groups, so potentially raising the salience of conflicting identities and defensive barriers against attitude change among participants. By asking participants to impersonate fantasy characters we were able to orthogonally manipulate direct and imagined intergroup contact. This way, in the condition combining direct and imagined intergroup contact, children could engage in imagined intergroup contact without creating a distinction between Italians and immigrants representing two separate groups in the story (which could also have activated resistance to attitude change); in contrast, attention was placed on creating cross-cutting categories, with both Italian and immigrant children impersonating both yellow and blue characters (see Footnote 2). However, we note that imagining contact of yellow vs. blue children may also represent a limitation, since imagining fictional categories does not allow to (directly) act on psychological processes driving imagined contact effects, such as anxiety reduction (Turner et al., 2007) or perspective-taking (Husnu & Crisp, 2015) (although it may do so indirectly, if participants generalize the

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fictional experience to experiences with real groups, as results seem to suggest; for an evidence of this process with extended contact, see Vezzali, Stathi, Giovannini, Capozza, & Trifiletti, 2015).

The manipulation we used is similar to that used by Hodson, Choma, and Costello (2009; see also Hillman & Martin, 2002), who conducted an experimental intervention aimed at improving attitudes toward homosexual people. In the experimental condition, undergraduate heterosexual participants formed small groups of 4-5 individuals who imagined crash-landing on an alien planet. Aliens had characteristics which brought to mind those of homosexual people, such as living in same-sex houses and using artificial procreation methods. Instructions noted that political opposition met hostile resistance, thus placing participants in a situation often faced by homosexual people (i.e. that of meeting a society hostile to their way of living). Participants had 20 minutes to discuss this situation in their small group by following scripted questions and then sharing their reactions. Finally, they were invited to consider how the simulation could apply to real groups. Compared to a control condition, participants in the experimental condition revealed stronger perspective-taking toward homosexuals, which was in turn predictive of more positive attitudes toward homosexuals.

Although similar, our manipulation differs from the manipulation used by Hodson et al. in at least five important ways. First, our participants actually impersonated fantastic characters. Second, fantastic characters in our study did not have stereotyping traits which linked them to specific real groups (thus, the effects of our manipulation possibly extend to various outgroups). Third, our participants did not respond to scripted questions; rather, they invented a story based on the given plot.

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Fourth, our study consisted of a multi-session intervention, where the simulation task was combined with a direct intergroup contact task. Finally, our participants were young children.

A potential limitation is that we do not have pre-test data on children's attitudes. However, this may be a more serious issue in nonexperimental research, because as noted by Paluck and Green (2009) "in nonexperimental research the outcomes can be explained by a combination of the intervention, random chance, and unmeasured pre-existing differences between comparison groups" (p. 343). The fact that we have manipulated our independent variables ensures more confidence in the results, although including a pre-test would have been optimal.

Our study has various novelties that we believe are noteworthy. First, it was the first study to orthogonally manipulate direct and imagined intergroup contact, thus allowing us to test whether the two strategies have additive or interactive effects. Second, it examined and compared for the first time two powerful forms of direct and imagined intergroup contact in a naturalistic setting using a sample of children. Third, it tested a new type of imagined intergroup contact. Specifically, Vezzali et al. (in press, Study 1) demonstrated that imagining contact with an outgroup child as members of the same group is an especially effective prejudice-reduction strategy. However, the authors asked children to imagine intergroup contact as members of a superordinate group *individually*. In this study, imagined intergroup contact is at a *group level*, since children were asked to imagine a story cooperatively in small groups. This is the first study where the imagined intergroup contact task is performed cooperatively with other participants.

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The present results have important practical implications. Interventions designed to reduce prejudice within schools may capitalize on both direct and indirect intergroup contact strategies in order to improve intergroup relations. Indeed, if direct intergroup contact is for some reasons difficult to implement, imagined intergroup contact can be used and yield similar effects on (at least some dimensions of) outgroup attitudes. To further strengthen the effects of imagined intergroup contact, children may work on school materials designed to facilitate mental imagery (Stathi et al., 2014). These interventions are likely to not only facilitate the reduction of negative outgroup stereotypes, but also foster cross-group helping behavior, which is often difficult to achieve (Nier et al., 2001). It is worth noting that these interventions have a multi-disciplinary nature, they imply learning to cooperate efficiently in small groups on a specific task. However, we caution on the generalizability of our effects to other age groups or cultures. Although, in principle, the proposed strategies should work regardless of individuals' age or cultural group, experimental interventions based on imagined intergroup contact outside the laboratory have been mainly conducted among elementary school children (e.g., Vezzali, Stathi, Capozza, et al., 2012), also the sample of this study, and in Western cultures.

In sum, this study shows that intergroup contact, either direct or imagined, fosters greater intergroup positivity. These findings may be of capital importance for designing future prejudice-reduction interventions that could be effectively implemented in educational contexts.

Footnotes

1. There also were 51 immigrants; however, analyses for them are not presented because, due to their small number, it was not possible to have an acceptable sample size in the various cells of the experimental design.
2. To avoid the possibility that children would directly associate the fantastic characters they were impersonating with existing racial groups, the experimenters carefully created (in groups composed by both Italian and immigrant children) cross-cutting categories, where not all Italian or all immigrant children in the same group came from Sun or Moon respectively (e.g., if a group was composed by two Italian and two immigrant children, one Italian and one immigrant children impersonated characters from the Sun and the other Italian and immigrant children impersonated characters from the Moon).
3. Results for both outgroup helping intentions and stereotypes did not change when adding age, gender and number of children composing the small groups as covariates.
4. In order to provide a direct test for our hypothesis, we compared the intergroup versions of the Direct and Imagined contact conditions for each of the dependent variables (i.e. we compared the cell of Direct intergroup contact with the cell of Imagined intergroup contact). None of the comparisons reached statistical significance, $ps > .26$, thus showing that the effects of the two strategies did not differ.

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5. We also included a measure of creativity. However, results for this measure are not relevant to the hypotheses tested in the current article so we do not discuss them further. Full details of this measure are available from the authors.

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