

**Let's stay close: An Examination of the Effects of Imagined Contact on Behavior
toward Children with Disability**

Veronica Margherita Cocco¹, Elisa Bisagno², Gian Antonio Di Bernardo², Nicola Bicchieri², Simone Calderara², Andrea Palazzi², Rita Cucchiara², Franco Zambonelli², Alessia Cadamuro², Sofia Stathi³, Richard Crisp⁴, Loris Vezzali²

¹University of Parma, Italy

²University of Modena and Reggio Emilia, Italy

³University of Greenwich, UK

⁴Durham University, UK

Correspondence concerning this article should be addressed to Veronica Margherita Cocco, University of Parma, via Borgo Carissimi 10, Parma, Italy. E-mail: veronicamargherita.cocco@unipr.it

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Data can be freely shared upon request to the first author of this article .

Conflict of interest disclosure

The authors declare no conflict of interest.

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Abstract

In line with current developments in indirect intergroup contact literature, we conducted a field study using the imagined contact paradigm among high-status (Italian children) and low-status (children with foreign origins) group members ($N = 122$; 53 females, mean age = 7.52 years). The experiment aimed to improve attitudes and behavior toward a different low-status group, children with disabilities. To assess behavior, we focused on an objective measure that captures the physical distance between participants and a child with disability over the course of a five-minute interaction (i.e., while playing together). Results from a three-week intervention revealed that in the case of high-status children imagined contact, relative to a no-intervention control condition, improved outgroup attitudes and behavior, and strengthened helping and contact intentions. These effects however did not emerge among low-status children. The results are discussed in the context of intergroup contact literature, with emphasis on the implications of imagined contact for educational settings.

Keywords: imagined contact, indirect contact, intergroup contact, intergroup behavior, prejudice, children.

Introduction

Direct, face-to-face contact represents an effective tool for prejudice reduction among young people (Tropp et al., 2021; Turner & Cameron, 2016; Ülger et al., 2018; Vezzali & Stathi, 2021). However, direct contact strategies bringing ingroup and outgroup members together are often not feasible, mostly due to practical constraints (such as, difficulty of implementation, limited opportunities for contact). There is evidence, though, that *indirect* contact strategies, such as imagined intergroup contact, are effective in improving intergroup relations in educational contexts (Di Bernardo et al., 2017; Miles & Crisp, 2014). Imagined contact is the mental representation of contact experiences, whereby people are asked to imagine an intergroup interaction in their mind's eye (Crisp & Turner, 2012). However, an important limitation of research so far is that there is scarce evidence about whether the positive effects obtained with attitude and questionnaire measures translate into actual behavior. In addition, imagined contact studies often used non-objective behavioral measures, for instance assessing behavior indirectly, by asking participants to self-report their past behavior (e.g., Vezzali, Stathi, Crisp, Giovannini, et al., 2015, Study 1). Given that imagined contact can represent a useful and effective practical prejudice-reduction tool, understanding whether it produces *real* behavioral change is of paramount importance. In addition, since indirect contact strategies such as imagined contact are often intended as precursors of face-to-face contact (Vezzali & Stathi, 2017; White et al., 2021), we need evidence that imagined contact improves *contact* behavior, that is behavior displayed during contact with outgroup members. A further relevant limitation is that few imagined contact studies have considered the perspective of the low-status group (e.g., Bagci et al., 2019a; Stathi & Crisp, 2008), which could be more resistant to the effects

of intergroup contact (Tropp & Pettigrew, 2005). The large absence of considering the stance of low-status groups limits not only the conclusions about the usefulness of imagined contact, but also its realistic use in contexts where high- and low-status groups are both present.

To address these limitations, we conducted an experimental intervention with elementary schoolchildren, considering the perspectives of both high-status (Italians) and low-status (children with foreign origins) group members. To avoid a binary perspective of intergroup relations, rather than investigating reciprocal relationships between the two groups, we investigated the effects of imagined contact toward a different low-status group. Specifically, we investigated whether imagined contact would improve Italian children's and children with foreign origins' attitudes, behavioral intentions and actual behavior toward children with disabilities. Specifically, we also include an objective measure of behavior displayed during contact, capturing the average distance from the outgroup member over the course of an intergroup interaction. This test allows us to go beyond the binary logic generally used in contact studies, where relations between one high-status and one low-status group at a time are investigated (Dixon et al., 2020). Rather, we consider how groups at different levels of the social hierarchy respond to a low-status group as a function of a contact intervention.

Imagined Contact

Imagined contact has been shown to be an effective tool for prejudice reduction (Crisp & Turner, 2012; Miles & Crisp, 2014). Extensive research conducted with child samples has also shown positive effects of imagined contact on outgroup attitudes and stereotypes (Cameron, Rutland, Turner, et al., 2011; Constantin & Cuadrado, 2021),

different types of intentions (contact intentions: Vezzali, Stathi, Crisp, & Capozza, 2015; Stathi et al., 2014; helping intentions: Vezzali et al., 2020; Vezzali, Stathi, Crisp, & Capozza, 2015; action tendencies: Ioannou et al., 2017; Turner et al., 2013; anti-bullying intentions: Vezzali et al., 2020), and behavior (Birtel et al., 2019; Vezzali, Stathi, Crisp, Giovannini, et al., 2015, Study 1).

Contact interventions have been proven generally effective in reducing prejudice toward individuals with disabilities among adolescents and children (Armstrong et al., 2016; Ülger et al., 2018). Birtel et al. (2019, Study 1) extended these findings to preschoolers, showing that imagined contact improves preschool children's attitudes and behavioral intentions toward children with disabilities (for additional evidence with elementary schoolchildren, see Cameron, Rutland, & Turner, 2011; Ginevra et al., 2021).

Vezzali et al. (2020) investigated whether imagined contact would be effective in tackling bias-based bullying, an especially strong form of discrimination. The authors asked elementary schoolchildren aged 5-11 years in the experimental condition to engage in three imagined contact sessions over three weeks. In each session, children first imagined becoming friends with a child in a wheelchair, then imagined that this child was bullied and how they would react. Compared to a no-intervention control condition, participants in the experimental condition revealed greater intentions to meet and help children with disabilities (in wheelchairs) as well as stronger intentions to counteract bullying targeting them.

These studies support the effectiveness of imagined contact to improve children's attitudes and intentions toward children with disabilities. However, they do not provide indications as to whether these effects extend to real behavior.

Imagined Contact and Behavior

As with the broader contact research, studies on imagined contact have rarely used behavioral measures. There are few notable exceptions. For example, West et al. (2017) showed that, compared with a control condition where they imagined an outgroup scene, adult participants involved in an imagined contact task were more likely to sign an online petition supporting the outgroup. Other studies found effects of imagined contact on behavior by using resource allocation tasks (Birtel et al., 2019, using child samples; Meleady & Seger, 2014; Pagotto et al., 2013). In some studies, effects on self-reported behavior emerged (Vezzali, Crisp, et al., 2015). For instance, Vezzali, Stathi, Crisp, Giovannini, et al. (2015, Study 1) found that after an imagined contact intervention, relative to children who did not take part in any intervention, participants decided to devote a greater part of their free time tutoring an unknown outgroup member who was ostensibly joining their school.

Some studies using adult samples found indirect evidence for more positive intergroup behavior following imagined contact compared with control conditions, as assessed by observers (Birtel & Crisp, 2012, Study 1). For instance, West et al. (2015) found that, after imagining contact with a person with schizophrenia (relative to a control condition where contact was with a person without schizophrenia), participants displayed more positive behavior with a confederate ostensibly with schizophrenia, as reported by the confederate being involved in the interaction.

Other studies conducted with adults also used seating distance as the behavioral measure, that is measuring the distance between where participants decide to sit and where an outgroup member sits before interaction with this person (ostensibly) takes place (McWaters & Hawkins, 2019; Turner & West, 2012; Ma et al., 2019, Study 3,

conducted a study with a seating distance measure using a sample of adolescents). This measure has often been used as a reliable indicator of nonverbal behavior (Mehrabian, 1968; Todd et al., 2011). For instance, Turner and West (2012) in two experimental studies asked university (non-Muslim in Study 2) students to engage in imagined contact with an outgroup member (obese person or Muslim person in Studies 1 and 2, respectively) or to imagine meeting an unspecified stranger (control condition). Results revealed that, at the prospect of meeting an outgroup person, participants positioned their chair closer to that of the outgroup member they believed they were going to meet in the experimental rather than in the control condition. These results however were not replicated in a study with university students by McWaters and Hawkins (2019).

These studies show that imagined contact generally affects behavior. Behavior was however assessed with indirect measures (such as observers' reports or self-reports), casting doubts on the reliability of effects. Moreover, only a few of these studies assessed (indirectly) contact behavior (Vezzali, Crisp, et al., 2015; West et al., 2015). To the extent that imagined contact is expected to favor subsequent contact (Crisp & Turner, 2012), it is essential to conduct studies providing direct evidence of effects on contact behavior.

Imagined Contact among Members of High-Status and Low-Status Groups

Consistent with findings from the broader contact literature (Tropp & Pettigrew, 2005), the meta-analysis by Ülger et al. (2018) revealed that interventions in school contexts are generally effective among high-status groups, while the effect is smaller among low-status groups. Unfortunately, imagined contact research with samples of low-status group members is scarce, and typically conducted with adult samples.

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Stathi and Crisp (2008, Study 1) provided first evidence for the effects of imagined contact among both high-status and low-status group members, considering the relations between Mestizo (high-status) and Indigenous people (low-status) in Mexico. Results revealed that, compared with a condition of neutral imagined contact, imagining positive contact led participants to report greater projection of positive traits to the outgroup. Such effect however only occurred among high-status group members (for similar effects, see also Bagci et al., 2018).

Bagci et al. (2019b) conducted three studies with minorities from UK (Eastern Europeans: Study 1) and Turkey (Kurds: Studies 2 and 3). Results were mixed, with positive effects on greater social participation among Eastern Europeans, but opposite effects among Kurds (but only among highly identified group members; Study 3). Bagci et al. (2019a) extended results to collective action, showing that imagined contact mobilized both low-status (Kurds: Study 1) and high-status (Turks: Study 2) groups to engage in actions supporting their ingroup.

Findings of the studies presented above show that imagined contact effects among low-status groups are at best mixed, and that imagined contact is more effective among high-status than low-status groups. They, however, have important limitations, in addition to only involving adult samples. First, only one study (Stathi & Crisp, 2008, Study 1) simultaneously considered high-status and low-status groups within the same study. Second, these studies did not include behavioral measures and relied on predominantly self-reported attitudinal measures.

In addition, prior research with low-status samples investigated reciprocal relationships between high-status and low-status groups, using a classic dyadic perspective that divides hierarchies in one high-status and one low-status group at a

time. However, groups operate in wider hierarchies, which comprise high-status and low-status groups endorsing differential levels of status (Dixon et al., 2020). Failing to account for such complex relations may reduce our ability to understand why prejudice-reduction interventions sometimes fail among members of low-status groups. In this study, we aimed to go beyond the classic binary perspective, investigating how high-status (Italians) and low-status (with foreign origins) children react to an imagined contact intervention focusing on contact with a different low-status, disadvantaged group: individuals with disabilities.

Inter-minority Contact and Attitudes

Studies on inter-minority attitudes conducted with adult samples suggest that contact with other low-status groups can shape positive attitudes toward low-status group members. Visintin et al. (2017) tested whether contact between a low-status group and a lower-status group would reduce prejudice. Results revealed that Bulgarian Turks' (high-status minority) contact with Roma (low-status minority) in Bulgaria was associated with more positive outgroup attitudes and greater support for pro-Roma policies.

Brylka et al. (2016), examining the secondary transfer effect i.e., the generalization of contact effects from the outgroup one has contact with to an outgroup uninvolved in contact; Pettigrew, 2009; Vezzali et al., 2021), investigated the relations between two minorities at different levels of the status hierarchy in Finland: Estonians (high-status minority) and Russians (low-status minority). Results showed that minorities' (Russians and Estonians) contact with the high-status group (Finns) generalized to positive attitudes toward the other low-status group via more positive attitudes toward the high-status group among both minorities, and via greater public

collective self-esteem among the low-status minority (Russians). Possibly, positive relations with the high-status minority contributed to the low-status minority self-esteem, favoring prejudice reduction (see also Cernat, 2019; Hindriks et al., 2014; Visintin et al., 2016). It is worth noting that these studies considered relations between low-status groups defined on a single dimension, and specifically race/ethnicity. None of them has however considered relations between low-status groups across different dimensions (for example, immigration status and disability).

Although literature suggests that contact can enhance positive inter-minority attitudes, there is reason to believe that when the position of the low-status group is threatened by a third group, development of positive attitudes may be inhibited. According to the theory of triadic social stratification (Caricati, 2018), which applies social identity theory (Tajfel & Turner, 1979), intermediate-status groups provide their members with positive self-esteem when social comparisons with other low-status groups allow them to maintain their superior status. Therefore, downward social comparisons can be used by intermediate-status group members to maintain their social position. Threats to their position can motivate negative intergroup reactions, inhibiting the outcomes of contact interventions.

In the present study, we can anticipate that imagined contact will reduce prejudice in the case of a high-status group, that is Italian children. However, children with foreign origins, who represent a lower-status group, may be reluctant to improve attitudes and behavior toward another low-status group, such as children with disabilities. The two lower-status groups experience disadvantage due to different dimensions, and it is therefore difficult to place them along a precise status hierarchy. In fact, for instance, two low-status ethnic groups can be placed on a status hierarchy in

terms of relative higher or lower-status; in contrast, low-status groups defined on qualitatively different dimensions (such as, nationality and presence of disabilities) can hardly be defined as having lower or higher relative status in a society context. In our case, and in light of this uncertainty about which group can occupy a relatively higher or lower-status position, individuals with disabilities may be perceived as challenging the status position of children with foreign origins. Ambiguity about the relative status position may be especially challenging, as the target outgroup of the school intervention (children with disabilities) may implicitly suggest the value of children with disabilities at the expense of children with foreign origins (leading low-status children in this research to resist the intervention). Adding to this, low-status individuals may wish to maintain social distance from low-status groups perceived as dissimilar (as it is likely that children with disabilities are perceived by children with foreign origins; Hindriks et al., 2014). Based on these considerations, we expect that the intervention will have smaller effects among children with foreign origins compared with Italian children.

The present research

We conducted a field study using an imagined contact intervention among Italian children and children with foreign origins in Italy. The intervention aimed at improving attitudes, contact and helping intentions toward children with disabilities, as well as intergroup behavior.

We decided to focus on Italians and children with foreign origins as the social categories because of their relevance in the Italian public discourse and based on previous studies conducted in the same context with same-age children, showing the potential of contact to improve intergroup relations as well as the differential groups' response to contact (e.g., Vezzali et al., 2018). The categorization in Italian children and

children with foreign origins is also relevant in terms of numerical representation: in the region where the intervention was conducted (Emilia-Romagna), the percentage of primary schoolchildren with foreign origin (17.04%) is higher compared with the aggregated Italian data (8.5%).

The choice of children with disabilities as the target-group was based on two considerations. First, previous studies showed that imagined contact can be effective to improve attitudes toward this group, but behavioral measures, as well as responses from a low-status outgroup (such as children with foreign origins), were missing from the literature (e.g., Ginevra et al., 2021). Second, the school where the study was conducted expressed a strong motivation to educate schoolchildren in socially including children with disabilities (providing this way institutional support, a key ingredient to prejudice-reduction interventions, Pettigrew & Tropp, 2006). Based on early discussions with teachers, we decided to consider children with a physical disability as the target of the intervention, since it may be easier for young children to understand physical compared with intellectual disability.

The choice to focus the intervention on imagined rather than direct contact is based on practical reasons, that is the small number of children with disabilities in regular classes. Children with disabilities are indeed generally one or two per class, and often they do not attend all classes with their schoolmates. These conditions make an approach based on structuring intimate contact with the whole class unlikely. To the extent that imagined contact has been proved to be effective in this age group (Miles & Crisp, 2014), we opted for this strategy instead of other indirect contact strategies (White et al., 2021).

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A main aim of the present study was to investigate effects on contact behavior. As explained earlier, research on imagined contact suffers from some limitations: (a) it has used indirect assessment of behaviors, (b) it has been conducted mostly with adults, (c) it has only rarely focused on contact behavior. It is therefore important to provide direct assessments of behavior, particularly with child participants. Crucially, it is important to focus on *contact* behavior. Imagined contact has been theorized mostly as a strategy complementary to direct contact, that can help foster future positive intergroup behavior. We therefore include a direct and objective measure assessing contact behavior.

Previous research has used seating distance as a measure of behavior (Mehrabian, 1968; Todd et al., 2011). It is worth noting that, although often used as an “objective” measure, seating distance represents a static measure assessed *before* the interaction takes place. Therefore, it does not assess contact behavior. It would be instead important to measure nonverbal behavior objectively while the interaction takes place. The main aim of the present research was to assess the effects of imagined contact on intergroup behavior with a reliable and objective measure that could overcome the limits of previous research. In addition, we aimed to provide the first such test with a child sample, while considering both high-status and low-status group members. Specifically, we asked participants to interact with a child with disability, and we assessed the average distance from this child over the course of the interaction. It is worth noting that children with disabilities acting as confederates for the behavioral measures were children with an intellectual disability of similar gravity (see the section of Measures), a choice determined by school availability. Therefore, they constitute a partly different target compared to the main target of the intervention, that is children

with disabilities in general. Note that previous research conducted both with adults (Carvalho Freitas & Stathi, 2017) and children (Ginevra et al., 2021) showed that the effects of imagined contact generalize across types of disabilities. For instance, Ginevra et al. (2021) found similar effects of imagined contact on children with sensory disabilities, intellectual disabilities, or behavioral difficulties. Our behavioral measure, therefore, assesses generalization to a further type of disability, allowing a stringent test of our hypotheses: finding an effect would provide especially strong support for our predictions.

To the extent that intentions are a reliable predictor of behavior (Godin & Kok, 1996), and that imagined contact interventions often used intentions as a proxy for behavior (Vezzali, Stathi, Crisp, & Capozza, 2015), we included contact and helping intentions as two forms of behavioral intentions. Their inclusion allows us to understand whether effects on behavioral intentions and actual behavior differ, as well as provide comparability with previous research. To further do so, we also assessed outgroup attitudes. In particular, we chose to include a measure of social distance, which conceptually matches our behavioral measure, to also facilitate comparison between the two.

Paluck et al.'s (2019) meta-analysis identified only 27 studies assessing dependent variables at least one day after a contact intervention. To further strengthen the potential contribution of our research, we assessed the dependent variables approximately one week after the last intervention session.

In summary, we predict that the imagined contact intervention, compared with a no-intervention control condition, will strengthen contact and helping intentions, and improve outgroup attitudes and behavior toward children with disabilities. We further

hypothesize stronger effects among high-status (Italian) children compared with low-status children (children with foreign origins).

To determine the sample size, we relied on school availability, and specifically on the availability of the school that requested the intervention, which allowed access to all classes from grades 1 to 3. A post-hoc power (knowing the effect size, the error probability, design, and sample size) analysis showed that power achieved ($1-\beta$), considering only significant results ranged from .43 to .54 considering 84 participants; post-hoc power ranged from .52 to .74 when participants were 122. The meta-analysis by Miles and Crisp (2015) revealed large effect sizes with child samples, increasing our confidence to detect effects with the current sample.

Method

Participants and Experimental Design

Participants were 122 first-, second, and third-grade elementary school children without disabilities from a school located in Northern Italy (69 males, 53 females). Age of participants ranged from 6 years to 9.75 years (Mean age = 7.48 years). Eighty participants were Italians (46 males, 34 females), aged between 6 years and 8.92 years ($M = 7.52$ years); 42 participants had foreign origins (23 males, 19 females), age ranging from 6 years to 9.75 years ($M = 7.38$ years). The Italian or foreign origin was determined on the basis of teachers' indications, taking into account whether children had foreign background (that is, whether they had foreign parents). Participating classrooms were randomly allocated to one of two conditions (three classes in each of the two conditions): Imagined contact (62 participants, of which 44 Italian and 18 with foreign origins), Control, no intervention (60 participants, of which 36 Italians and 24 with foreign origins).

Procedure

The intervention was conducted by students enrolled in educational courses at a Northern Italian university; they were trained by the 8th and 10th authors of the present article. The procedure was partly similar to that used by Vezzali et al. (2020). Participants in the imagined contact condition took part in three intervention sessions, once a week for three consecutive weeks. For each child, sessions were conducted individually with a researcher. Each session, lasting approximately 30 minutes, followed a similar process. First, children were introduced by the researcher to the type of disability considered in the session, by describing a hypothetical child with that disability (child in a wheelchair in the first session, deaf child in the second session, blind child in the third session).

Second, participants were asked to spend two minutes imagining meeting an unknown child with the disability considered in that session, playing together and becoming friends. In order to increase the effectiveness of the imagined contact task, participants were asked to imagine the encounter in detail (Husnu & Crisp, 2010) and with their eyes closed (Husnu & Crisp, 2011). We varied the setting of the imagined encounter to avoid subtyping: school, neighborhood, park in the first, second, and third sessions, respectively (see also Stathi et al., 2014).

Third, we reinforced the imagined contact task. Generally, this is done by asking participants to write down what they have imagined. However, this may be difficult for first- to third-grade children, who may lack the sufficient academic skills. We therefore used more engaging reinforcing tasks, by also systematically varying them across sessions to increase children's motivation (see Vezzali et al., 2020). Specifically, in the first session children were asked to verbally describe their imagined interaction to their

best friends, while being recorded by the researcher. In the second session, participants were asked to draw what they had just imagined (see also Birtel et al., 2019), while also describing the interaction to the researcher. In the last session, children were asked to draw, cut, and paste on a poster depicting the school garden the imagined interaction, while describing it verbally to the researcher. Each week the reinforcement session was followed by prompt questions by the researchers (“Where are you?”; “What do you say when you meet?”; “What games do you play together?”; “What do you say to become friends?”). Finally, all sessions ended with a collective discussion on what children had just imagined.

Approximately one week after the last intervention session, children were individually administered a questionnaire by researchers. Researchers started administering the behavioral measure one week after the last intervention session; data were collected within approximately one week. To avoid concerns for demand characteristics, researchers who administered the questionnaire and the behavioral measures were different from those delivering the sessions to the children.

In the control condition, researchers described the types of disabilities to participating children as in the experimental groups and administered the questionnaire without engaging in any intervention. Children in the control condition participated in the intervention after filling out the questionnaire for parity.

In a final session, after dependent variables had been collected in all classes, children were thanked and debriefed.

Measures

Unless otherwise indicated, measures had a 5-step scale ranging from 1 (*absolutely not*) to 5 (*absolutely yes*).

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Distance (behavioral measure). Each participant met with a child with disability from another class, with whom they were not familiar. In total, there were four children, all of whom had an intellectual disability of similar gravity, took turns meeting participants. The participating children with disabilities were informed that children from their school would be playing with them in a classroom allocated for this purpose by the school. We set interactions so that children with disabilities engaged in play with children from other classes, with whom they had not had previous face-to-face interactions. They met in a separate room, equipped with toys, and were invited to play together for five minutes. The interaction, lasting five minutes, was recorded through the Microsoft Kinect device. The participants' interpersonal distance from the child with disability was computed as the average distance between the centroids of the two interacting children, defined as the center of the mass of the tracked spatial coordinates of the participant (25 body joints; see Palazzi et al., 2016). The final index expresses the average distance in cm between the two persons involved in the interaction.

Outgroup attitudes. To assess attitudes, we relied on a measure of social distance (Esses & Dovidio, 2002), consisting of three items (Cocco, Bisagno, Di Bernardo, et al., 2021; Vezzali et al., 2018). Participants were asked whether they would like to be neighbors, friends, or schoolmates with an unknown child with disability. Responses were combined in a single index, with higher values expressing more positive outgroup attitudes ($\alpha = .73$).

Contact intentions. We used three items (Cameron & Rutland, 2006; Cocco, Bisagno, Di Bernardo, et al., 2021; Vezzali et al., 2020), asking participants whether they would like to play, have an ice-cream together, get acquainted with an unknown

child with disability they met at the park. We merged responses in an index of willingness to have contact with outgroup members ($\alpha = .78$).

Helping intentions. Four items were used (Cocco, Bisagno, Di Bernardo, et al., 2021; Vezzali, Stathi, Crisp, & Capozza, 2015) asking participants whether they would help an unknown schoolmate with disability with mathematical exercises or with writing a text in case he or she has difficulties doing these tasks, whether they would help him/her find a lost book, and find his/her class in case he or she gets lost and asks for help. A single index of helping intentions was obtained by averaging responses ($\alpha = .84$).

Results

Neither age nor gender were associated with dependent variables (with one exception; see results for contact intentions), therefore they will not be discussed further.

Before running the main analysis, a confirmatory factor analysis (CFA) was conducted to test whether social distance, outgroup attitudes, and helping intentions represented distinct constructs. The model showed an excellent fit, $\chi^2(6) = 4.64, p < .05$, RMSEA $\approx .00$, CFI = 1.00, TLI = 1.00, SRMR = .02, with all factor loadings higher than .72 ($ps < .001$). In addition, all correlations were lower than .83 and, consequently, lower than $|1|$ (95% confidence interval) indicating that the three factors represented distinct constructs.

Means in the four experimental conditions are provided in Table 1; correlations among variables are in Table 2.

To test hypotheses, for each outcome variable we conducted a 2 (Condition: imagined contact vs. control) \times 2 (Group: Italian vs. foreign origin) between-subjects

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ANOVA. Means and standard deviations of variables in the four cells are presented in Table 1.

Distance. Four participants were eliminated because of an issue with the Kinect equipment that did not function properly; for practical reasons (e.g., malfunction of the instrument, temporary unavailability of children with disabilities), this measure could not be administered to 34 further participants. The final sample for this measure, therefore, consisted of 84 participants: 23 high-status and 12 low-status participants in the experimental condition; 29 high-status and 20 low-status participants in the control condition. Results revealed that neither the main effect of Condition, $F(1, 80) = .18, p = .677, \eta^2_p = .00$, nor the main effect of Group, $F(1, 80) = 1.91, p = .171, \eta^2_p = .02$, were significant. However, the predicted interaction Condition \times Group approached significance, $F(1, 80) = 3.20, p = .077, \eta^2_p = .04$. Decomposition of the interaction revealed that, as expected, high-status participants reported lower distance from the outgroup in the imagined contact than in the control condition; this effect however only approached significance, $F(1, 80) = 3.30, p = .073, \eta^2_p = .04$. In contrast, distance between imagined contact and control condition did not differ among low-status participants, $F(1, 80) = .74, p = .391, \eta^2_p = .01$. A closer inspection of the effect emerged revealed that the difference in distance between high-status and low-status participants emerged in the imagined contact condition, where high-status participants stayed closer to the outgroup, $F(1, 80) = 4.19, p = .044, \eta^2_p = .05$, but not in the control condition, $F(1, 80) = .10, p = .748, \eta^2_p = .00$.

Outgroup attitudes. The main effect of Condition was significant, $F(1, 118) = 4.08, p = .046, \eta^2_p = .03$, showing that outgroup attitudes were more positive in the imagined contact than in the control condition. The main effect of Group was instead

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nonsignificant, $F(1, 118) = .66, p = .420, \eta^2_p = .01$. In line with expectations, the interaction Condition \times Group was (marginally) significant, $F(1, 118) = 3.69, p = .057, \eta^2_p = .03$. Decomposition of the effect revealed that outgroup attitudes were more positive in the imagined contact than in the control condition among high-status participants, $F(1, 118) = 11.36, p = .001, \eta^2_p = .09$; outgroup attitudes however did not differ between the two conditions among low-status participants, $F(1, 118) = .00, p = .952, \eta^2_p = .00$.

Contact intentions. Neither the main effect of Condition, $F(1, 118) = .858, p = .356, \eta^2_p = .01$, nor the effect of Group, $F(1, 118) = .039, p = .844, \eta^2_p = .00$, were significant. In line with predictions, the interaction Condition \times Group was significant, $F(1, 118) = 4.42, p = .038, \eta^2_p = .04$. Results revealed that contact intentions were higher in the imagined contact than in the control condition for high-status participants, $F(1, 118) = .671, p = .011, \eta^2_p = .05$, but not for low-status participants, $F(1, 118) = .526, p = .470, \eta^2_p = .00$. Because contact intentions were correlated with gender, indicating higher contact intentions for females than for males ($r = .20, p < .05$), the analysis was repeated by including gender as a control variable. Although the Condition \times Group became marginally significant, $F(1, 117) = 3.63, p = .059, \eta^2_p = .03$, results mirrored those found without controlling for gender. Specifically, the difference in contact intentions between imagined contact and control condition was significant among high-status participants, $F(1, 117) = 5.88, p = .017, \eta^2_p = .05$, but not among low-status participants, $F(1, 117) = .37, p = .546, \eta^2_p = .00$.

Helping intentions. Neither the main effect of Condition, $F(1, 80) = .37, p = .547, \eta^2_p = .00$, nor the effect of Group, $F(1, 80) = 2.16, p = .144, \eta^2_p = .02$, were significant. Consistent with predictions, the interaction Condition \times Group was

significant, $F(1, 80) = 10.35, p = .002, \eta^2_p = .08$. Decomposition of the effect showed that helping intentions were higher in the imagined contact than in the control condition among high-status participants, $F(1, 188) = 4.99, p = .027, \eta^2_p = .04$. The difference between imagined contact and control conditions was also significant among low-status participants, although in the opposite direction, such that helping intentions were higher in the control than in the imagined contact condition, $F(1, 118) = 5.55, p = .020, \eta^2_p = .04$.

Discussion

Consistent with past research, imagined contact improved two relevant types of intentions used in the imagined contact literature, that is contact and helping intentions, as well as outgroup attitudes measured as social distance. But the main finding is that the effects of imagined contact translated into actual behavior among high-status group members. We believe that the result obtained is meaningful; Italian children remained on average 17 centimeters closer to the child with disability in the imagined contact compared to the control condition. Although the difference between imagined contact and control condition was not fully statistically significant, possibly due to the smaller sample when using this measure (see section of Results), results showed a significant difference between high- and low-status participants in the imagined contact condition. Specifically, distance was significantly lower among high- vs. low-status participants, suggesting that high-status participants may have been more receptive to the intervention. Findings need however to be replicated with larger samples.

Notably, we relied on an observable and objective measure of behavior. Such a measure refers to the whole course of the interaction, rather than to the anticipation of it (measured by classic seating distance measures). Adding confidence in our findings, the

measure was administered approximately one week after the last intervention session, supporting studies showing the durability of imagined contact effects (Ioannou, 2019; Vezzali, Crisp, et al., 2015) as well as its strength (Giacobbe et al., 2013; Vezzali, Stathi, Crisp, & Capozza, 2015).

Regarding our second hypothesis, relating to stronger effects of imagined contact among high-status group members, we found that the difference between imagined contact and control conditions for our measures was only significant among Italian children. Before discussing this result, we note that the sample size for the low-status group was rather low. It is therefore possible that effects that emerged among the high-status group, which had a low to moderate effect size, were unlikely to be detected among the low-status group, which had a lower sample size than the high-status group. Note however that, at a descriptive level, the means for the low-status group do not suggest that nonsignificant effects are due to the low sample size; if anything, the means suggest more positive inclinations in the control than in the experimental condition (an effect fully significant for the measure of helping intentions). In other words, an inspection of the means does not suggest that significant differences did not emerge because of the low sample size. Future studies using larger sample sizes may provide more reliable indications on the effects of imagined contact on attitudes and behavior, at least for the low-status group.

Considering the high means (Table 2) among low-status group members further points to the possibility of ceiling effects. Contact interventions are especially meaningful when targeting a population with relatively negative attitudes and behaviors, while room for improving is lower and prejudice reduction less relevant if participants are already favorably oriented toward the outgroup. Note however that attitudes and

intentions were generally more positive in the high-status group, making an explanation only based on ceiling effect less likely. Rather, our explanation refers specifically to the receptivity to the intervention, such that motivation to preserve own status position or to gain respect from the high-status group, made low-status group members less responsive to an intervention meant to improve their already positive attitudes even more.

Given the above limitations and interpretations, we argue that findings emerged for the low-status group may depend, at least in part, on the smaller contact effect often found among low-status group members (Bagci et al., 2018; Tropp & Pettigrew, 2005), and may be better understood by reflecting on intergroup relations beyond a binary perspective (Dixon et al., 2020). Children with foreign origins may feel disadvantaged compared to Italians; the attempt to improve relations with children with disabilities may threaten their relative position in the social hierarchy, as well as potentially hinder their relations with the high-status group who may become more interested in positive relations with children with disabilities. Alternatively, their relatively disadvantaged position may make them less sensitive to the disadvantage experienced by children with disabilities, resulting in lower receptivity to the imagined contact intervention. These considerations are consistent with social identity theory, according to which groups act to improve their social position (Tajfel & Turner, 1979). They are also consistent with the triadic social stratification theory (Caricati, 2018), specifying that low-status group members can react with increased prejudice when their position within the larger hierarchy is threatened by a further low-status group (for instance, as a consequence of an intervention). Indirectly supporting these arguments, imagined contact had a negative

effect on helping intentions among low-status participants, such that they displayed lower helping intentions in the imagined than in the control condition.

Note that we are not aware of any studies testing hypotheses on triadic stratification among children. While there is evidence that contact can be less effective among low-status than high-status groups, such as Italian children and children with foreign origins (e.g., Vezzali et al., 2018), there are no direct examinations of underlying motivations. Mirroring larger contact research conducted with adults, there is not a definite answer about whether contact generally has lower effects among low-status groups (Tropp & Pettigrew, 2005).

Differential category salience is an alternative or complementary explanation. Given that children with disabilities were Italian, a pattern of crossed categorization (Crisp & Hewstone, 2007) could have emerged, such that Italian children's attitudes improved, at least in part, because they shared a common identity with children with disabilities; such crossed categorization pattern was instead unavailable to children with foreign origins, who did not share the nationality category with children with disabilities.

Note that the above explanations based on the different perspectives of high- and low-status groups assume that social identities were salient to participants. That is we collected data from Italian children and children with foreign origins, assuming that they self-define in terms of high- and low-status groups (and without including a measure of status). Results from other studies conducted with children belonging to these groups in a similar context consistently suggest differential effects for Italian children and children with foreign origins. Specifically, Italian children and children with foreign origins generally express distinct concerns regarding intergroup contact

(Stathi et al., 2021) and respond differently to experiences that could potentially improve intergroup relations, such as contact (Vezzali et al., 2018) or an external threat (Vezzali, Cadamuro, et al., 2015). Additionally, these social categories, i.e., being Italian or having foreign origins, reflect numerical demographics trends and correspond to salient categories in the public discourse in Italy. Based on these considerations, we argue that children of Italian and foreign background self-define, at least partly, using these categories. Such differential definitions would allow to explain, at least in part, results that consistently show that in the Italian context children with foreign origins typically display lower receptivity to factors aimed at reducing prejudice. As we argued above, based on means (Table 2), explanations solely based on low statistical power or ceiling effects are unlikely to provide a solid interpretation of findings, and can be complemented by an explanation relying on the psychological meaning of the belonging to high- or low-status categories. However, such explanations may be specific to the Italian context and how categories are defined in it, therefore we suggest caution in generalizing the present findings beyond the social categories and context of this research.

Developmental research suggests that children from middle childhood start being sensitive to the social context (Raabe & Beelmann, 2011), corresponding with enhanced cognitive abilities (Aboud, 2008). Amongst these cognitive abilities is the development of multiple classification skills, allowing children to consider multiple groups simultaneously (Aboud, 2003). Such an ability is relevant to our study since children can consider the larger social context that may include more groups (in the case of our study, Italian children, children with foreign origins, and children with disabilities). These cognitive developments are necessary to develop social dominance

orientation tendencies, that is the orientation toward the desire of a hierarchical society, occurring in the latest years of primary school (Cadamuro et al., 2022). Social dominance orientation is a strong predictor of prejudice (Pratto et al., 2006), also among children (Vezzali et al., 2018). Consistent with past theorizations (Killen et al., 2012), we argue that it is important to implement prejudice-reduction interventions early in development, as we did in this study, while children are developing key cognitive abilities and orientations relevant to intergroup relations.

The present study supports and extends other studies conducted with same-age children in the same cultural context, showing that imagined contact reduces prejudice toward children with disabilities among high-status group members (Ginevra et al., 2021; Vezzali, Stathi, Crisp, Giovannini, et al., 2015). Similar findings have been obtained in other contexts (e.g., Stathi et al., 2014). Based on existing evidence, we believe that imagined contact can reduce prejudice toward children with disabilities also in other contexts. Potentially, we believe that it could also reduce prejudice, at least among the high-status group, toward other low-status categories, such as the Roma. However, we cannot speculate on the generalization of the effects found for the children with foreign origins group to other low-status categories. Based on our rationale, effects can depend on the relative position on the status hierarchy, and also on whether the two groups (the one receiving the intervention and the target-group) are on the same hierarchy (e.g., two ethnic groups are on the same hierarchical dimension). Future research should use other target-groups, to test the boundaries of generalizability.

It is worth noting that this research has been possible because of the availability provided by one school that was motivated to educate children on the social inclusion of children with disabilities. Such availability included not only class sessions, but also

pre- and post-meetings with parents and teachers, and with parents of the children with disabilities who acted as confederates for the behavioral measure. As such, it was difficult to find another school with a similar availability to increase the rather low sample size (especially for the behavioral measure). Nonetheless, similar multi-session interventions (e.g., Vezzali, Capozza, Stathi, et al., 2012) used similar sample sizes, and research on imagined contact with children often produces large effect sizes (Miles & Crisp, 2014). Future studies should nonetheless try to employ larger sample sizes to test effects on behavioral measures.

The present findings can inform social policy aimed at the societal inclusion of individuals with disability. Some scholars have questioned the societal relevance of imagined contact, relegating it to an individual task, operating at a micro-level (Lee & Jussim, 2010). The present findings contribute to a consistent line of research showing that imagined contact, and indirect contact more generally, can reduce prejudice in educational contexts and can therefore inform social policy on social inclusion (Di Bernardo et al., 2017; Turner & Cameron, 2016; White et al., 2021). This can be done in the form of indirect contact interventions that can be easily integrated into school curricula (Cameron, Rutland, Turner, et al., 2011; Tercan et al., 2021), allowing to tackle specific problematic phenomena such as group-based bullying (Cocco, Bisagno, Visintin, et al., 2021; Vezzali et al., 2020; Vezzali & Stathi, 2021).

As explained earlier, the choice to use imagined contact instead of direct contact was largely based on the low number of children with disabilities in classes. Based on previous research on imagined contact conducted with both adults and children, we can speculate that for the high-status group results would be similar (Giacobbe et al., 2013; Vezzali, Stathi, Crisp, & Capozza, 2015). For the low-status group, based on the finding

that contact is generally effective in improving attitudes toward disability in young children (Ülger et al., 2018), we may expect that (in contrast with the present intervention) direct contact fosters more positive intergroup relations. In the case of contact between children with foreign origins and with disability, the larger social hierarchy comprising the high-status group may be less salient and not inhibit contact effects; indeed, research showed that inter-minority contact generally improves intergroup relations (Visintin et al., 2017). Note however that direct contact can also have unintended consequences. For example, contact can lead to more positive explicit attitudes, but more negative implicit attitudes (Yu et al., 2022): given that implicit attitudes are a predictor of behavior (Kurdi et al., 2019), it can be inferred that contact may also in some cases worsen intergroup behavior. For instance, negative (e.g., threatening) conditions or expectations can translate into negative contact, which can have detrimental effects on intergroup relations (Schafer et al., 2021). Future studies can benefit from a direct comparison of direct and indirect contact strategies in naturalistic contexts (see Vezzali, Stathi, Crisp, & Capozza, 2015). This can allow to not only understand their relative effectiveness, but also in which conditions and on which specific variables they can be (more) effective.

Research has found support for different mechanisms underlying the effects of indirect contact, such as reduced anxiety or increased inclusion of the other in the self, often shared with direct contact (Stathi et al., 2014; Turner et al., 2008). Indirect contact, like direct contact, also greatly benefits from normative support (Pettigrew, 1998). However, unlike direct contact, it also exerts its effects via changes in perceived social norms, which are a main driver of its effects (White et al., 2021). Research conducted with young people has mostly investigated the interplay between extended or

vicarious contact – as indirect contact forms – and social norms, and has specifically focused on the mediating role of social norms (Cameron, Rutland, Hossain, et al., 2011; Cocco, Bisagno, Di Bernardo, et al., 2021; Vezzali, Stathi, Giovannini, et al., 2015, Study 1). There are however indications that imagined contact also benefits from stronger social norms toward intergroup acceptance and can shape perceived social norms (Fowler & Harwood, 2021). In the context of the present research, a whole school took part in activities aimed to improve attitudes toward children with disabilities (in fourth- and fifth-grade, we relied on a different prejudice-reduction strategy unrelated to imagined contact) therefore providing strong institutional support for the importance of socially including children with disabilities. In sum, indirect contact interventions are generally largely effective because of their effects on social norms; possibly, the present intervention also benefitted from a more positive normative climate. Future studies should investigate whether and how imagined contact and social norms interact in predicting improved intergroup attitudes and behavior among children and adolescents.

We acknowledge some limitations in our research. A key concern relates to the small sample size, as argued earlier in the Discussion. Note that this also limits the possibility to investigate developmental dynamics in our sample, which requires a larger age range. Also, our behavioral measure was based on contact with children with intellectual disabilities. Future studies should replicate results by using the same disability target for the experimental intervention and the behavioral assessment. Additionally, we did not try to standardize the behavior of children with disabilities, but we instructed them to act naturally, to be able to benefit the most from the interactions.

However, the absence of standardization of their behavior may represent a limitation of the behavioral measure.

In conclusion, the present findings demonstrate that imagined contact can change actual behavior among children, and that effects differ depending on group position in the status hierarchy. We believe these results can be of help to theorists and practitioners interested in finding effective ways to socially include disadvantaged group members in school contexts.

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IMAGINED CONTACT AND INTERGROUP BEHAVIOR

Tables

Table 1. Means of dependent variables in the two cells of the experimental design for high-status and low-status participants (standard deviations are reported in parentheses) ($N = 122$; $N = 84$ for the measure of Distance).

Measure	Condition			
	Imagined contact/ High-status group	Control/ High-status group	Imagined contact/ Low-status group	Control/ Low-status group
Attitudes	4.34 (0.68)	3.59 (1.30)	4.13 (1.05)	4.11 (0.87)
Contact intentions	4.52 (0.62)	3.99 (1.13)	4.18 (1.13)	4.39 (0.75)
Helping intentions	4.84 (0.26)	4.53 (0.76)	4.29 (0.99)	4.74 (0.43)
Distance	0.81 (0.25)	0.98 (0.29)	1.05 (0.40)	0.96 (0.40)

Note. All measures had a 5-step scale ranging from 1 (*absolutely not*) to 5 (*absolutely yes*), with the exception of the measure of Distance, which expresses the average distance in meters from the child with disability during the interaction.

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Table 2. Correlations between variables ($N = 122$).

Variable	1	2	3	4	5	6	7	8
1. Attitudes	-							
2. Contact intentions	.60***	-						
3. Helping intentions	.48***	.58***	-					
4. Distance	.10	.12	.10	-				
5. Gender (1 = males, 2 = females)	.08	.20*	.09	.07	-			
6. Age	.15	-.05	.12	-.01	.02	-		

Note. Correlations for the measure of Distance are based on a sample of 84 participants; because of missing data on the age variable, correlations for this measure are based on a sample of 109 participants (72 for the measure of Distance).

* $p < .05$. ** $p < .01$. *** $p < .001$.

