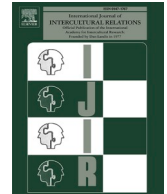




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We both wanted it! The impact of contact meta-perceptions on the effectiveness of an imagined contact task

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ABSTRACT

The present study examined if and how contact meta-perceptions might affect the impact of imagined contact on a wide range of intergroup outcomes. 260 Italian university students were randomly allocated to imagine an encounter with a Chinese immigrant (experimental group) or an ingroup member (control group). We then examined if believing that the encounter had been sought only by themselves or by both themselves and the outgroup member (i.e., contact meta-perceptions) could affect the effectiveness of the imagination task, considering also the role of previous direct contact. A significant condition x contact meta-perceptions interaction effect emerged on many intergroup outcomes (i.e., emotions, empathy, trust, outgroup norms, stereotypes, and self-disclosure). Imagined contact was more effective when participants perceived that both themselves and the outgroup member desired contact, with previous direct contact having limited influence. These findings highlight the importance of mutual desire for contact in improving intergroup relations.

Introduction

In a world that is increasingly interconnected and diverse, understanding and fostering positive interactions between different social groups has become crucial for building inclusive societies and promoting social harmony. Intergroup contact theory posits that, under favourable conditions, interactions between members of different groups could reduce prejudice and improve intergroup relations (Allport, 1954). A massive number of studies demonstrated that direct, face-to-face intergroup contact is associated with lower levels of prejudice (Pettigrew & Tropp, 2006). The beneficial effects of contact are mostly conveyed by positive affective states, in particular higher empathy and lower anxiety toward the outgroup (Pettigrew & Tropp, 2008).

Despite intergroup contact having numerous beneficial outcomes, face-to-face contact between members of different groups is often limited by factors such as physical barriers, social norms, and individual differences (Paolini et al., 2018). These physical and psychological barriers can reduce opportunities for positive and meaningful intergroup interactions. To overcome these barriers, social psychology researchers have developed and tested alternative, indirect, forms of contact that do not require face-to-face interactions (White et al., 2021). One such alternative that has gained considerable interest and is now well-established in the literature is imagined intergroup contact (Turner et al., 2007). Imagined contact refers to a mental simulation or visualisation of positive interactions with members of an outgroup, even in the absence of actual face-to-face encounters. By engaging individuals in the imaginative process of

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mentally simulating positive interactions with outgroup members, imagined contact aims to create a favourable environment for intergroup empathy, thus fostering positive perceptions of outgroup members and more favourable intergroup attitudes (Vezzali et al., 2013). The present study contributes to the literature on imagined contact by identifying meta-cognitive factors that can affect the effectiveness of this technique in reducing intergroup bias.

A substantial body of empirical research supports the effectiveness of imagined contact as a means of prejudice reduction and attitude change. Experimental studies have consistently demonstrated the positive impact of imagined contact across a variety of contexts and target groups (see Miles & Crisp, 2014 for a meta-analysis). For instance, imagined contact was found to be related to more favourable attitudes towards individuals with different ethnic background (e.g., Husnu & Crisp, 2010; Stathi et al., 2014), nationality (e.g., Stathi & Crisp, 2008), religion (e.g., Birtel & Crisp, 2012), age (e.g., Turner et al., 2007), mental health (e.g., West & Bruckmüller, 2013), sexual orientation (e.g., Turner et al., 2007; Turner et al., 2013), and weight (e.g., Turner & West, 2012). The power of imagined contact also extends beyond its effects on outgroup evaluation encompassing a wide array of intergroup outcomes. Research has demonstrated that engaging in imagined contact with an outgroup member reduces feelings of intergroup anxiety (Vezzali et al., 2013; Turner et al., 2007) and promotes the development of empathy (Kuchenbrandt et al., 2013) and trust toward the outgroup (Vezzali et al., 2012).

Since imagined contact has been conceived as an intervention to prepare individuals for real-life contact experiences, it could be particularly valuable for people with limited direct contact opportunities. Supporting this idea, some research has demonstrated that imagined contact effects are stronger among those with little prior contact (Hoffarth & Hodson, 2016) and that imagining an interaction with an outgroup member can foster individuals' intentions for future contact with members of that outgroup (Husnu & Crisp, 2010).

Multiple factors related to the scenario (e.g., the vividness of the imagery; Husnu & Crisp, 2011) or to the outgroups' characteristics (e.g., typical versus atypical imagined outgroup; Stathi et al., 2011) can also account for the association between imagined contact and the increase of positive attitudes toward outgroup members. Nothing is known, however, about the role played by meta-perceptions evoked by the imagination task. Through the present study, we aimed to fill this gap by examining if and how contact meta-perceptions might affect the impact of imagined contact on several intergroup outcomes.

Contact meta-perceptions

Meta-perceptions encompass various aspects of intergroup relations and generally refer to individuals' cognition of how outgroup members perceive their ingroup (Frey & Tropp, 2006). For instance, while stereotypes reflect actual beliefs that people hold toward specific groups, meta-stereotypes refer to individuals' thoughts regarding the potential beliefs that members of outgroups may have toward their ingroup (Vorauer et al., 1998; Putra & Wagner, 2017). These meta-perceptions can deeply shape our relations. If we think that other people have a positive opinion about us, we will probably adopt a more positive stance, based on our meta-perception. At the same time, if we suppose that individuals belonging to other groups do not see us favourably or hold negative stereotypes about our ingroup, we will be more likely to show attitudes that are in line with these negative meta-stereotypes (Frey & Tropp, 2006; Kamans et al., 2009). Such a link between meta-stereotypes and intergroup outcomes has been clearly established not only by correlational evidence (e.g., Matera & Catania, 2021; Tropp & Bianchi, 2006) but also by a number of experimental studies (e.g., Matera et al., 2015; Matera et al., 2018).

Besides meta-stereotypes, other forms of meta-perceptions are especially important for intergroup relations. In this regard, recent research has highlighted the pivotal role of meta-perception related to intergroup contact in shaping its effects (Stathi et al., 2020). According to Stathi and colleagues (2020), this kind of meta-perception refers to the expectations regarding the outgroup's desire to engage in contact with the ingroup or vice versa. The authors conducted three correlational studies in which the association between contact meta-perceptions, positive intergroup contact, and outgroup attitudes was examined across a variety of intergroup contexts and relations. The results of these studies consistently indicated that perceived outgroup desire for contact with the ingroup (i.e., outgroup contact meta-perceptions) was associated with higher intergroup contact and more positive intergroup attitudes. The perception of ingroup members' desire for contact with the outgroup (i.e., ingroup contact meta-perceptions) was not significantly associated with intergroup contact, although it was linked to intergroup anxiety, which is a key affective factor crucially linked to intergroup attitudes.

Although the correlational nature of these studies does not allow to make conclusions about the directionality of the relationship between contact meta-perceptions and intergroup contact, the findings by Stathi et al. (2019) are in line with other empirical evidence concerning interethnic relations, which suggests that immigrants are more appreciated if they are perceived to desire to have contact with majority members (Zagefka et al., 2007). Indeed, a substantial body of experimental evidence demonstrated that immigrants' perceived desire for contact is a very strong predictor of majority members' attitudes toward them across a variety of contexts and target groups (Celeste et al., 2014; Matera et al., 2011, 2012, 2015, 2020; Olsson et al., 2019). Moreover, other studies revealed that fear of being rejected by the outgroup could be especially important in shaping one's future interactions with outgroup members (Shapiro et al., 2011).

Besides the importance of perceiving that the outgroup member desires to be in contact with our ingroup, some research has suggested that intergroup contact is more effective if it is perceived as intentional and actively chosen by the individual (i.e., volitional contact; Bageci et al., 2021). Volitional contact was found to be related to more positive outgroup attitudes through more contact intimacy and positivity compared to contingent contact – i.e., a type of contact which is formed and maintained as a function of specific situational conditions. Consistently, when participants freely chose to imagine a positive intergroup scenario they reported more positive outgroup evaluations, higher trust, more contact seeking, and positive action tendencies (Husnu et al., 2023). Taken together,

these results highlight the importance of considering one's beliefs about both outgroup members' and one's own desire for engaging in contact to better understand the mechanism through which intergroup contact can foster positive relationships between two groups.

Based on the research findings obtained so far, we can speculate that contact meta-perceptions might be relevant not only for direct contact with outgroup members, but also for *imagined* intergroup interactions. Given that an imagined interaction was proved to resemble a real contact situation, with analogous positive effects on intergroup relations (Dadds et al., 1997), it is reasonable to believe that also the meta-perceptions associated with imagined interaction might be as influential as the ones that occur during direct contact experiences. Nevertheless, we should note that previous research did not consider meta-perceptions developed *during* the contact experience. Indeed, Stathi et al. (2019) assessed participants' quality and quantity of everyday contact with the outgroup and the extent to which they thought the outgroup/ingroup wanted to interact with ingroup/outgroup members, but they did not measure the meta-perceptions emerged during or immediately after the contact experience. Analogously, in the studies mentioned above with respect to interethnic relations (e.g., Matera et al., 2011), participants were presented with a vignette describing outgroup members who showed low versus high desire for intergroup contact, but they did not meet them directly. We can therefore state that there is no empirical evidence about the role that the meta-perceptions developed during the contact experience can have on its effectiveness in improving intergroup attitudes. Our study contributed to filling this gap, by examining if and how meta-perceptions *during an imagined* interaction might affect the impact of the imagination task on individuals' emotions, attitudes, and behavioural intentions towards a target group. Given that previous research has shown that imagined contact effects are stronger among people with little prior contact (Hoffarth & Hodson, 2016), we will also consider the role of previous direct contact with the outgroup.

Intergroup context

The present research has been conducted in the Italian context and Chinese immigrants in Italy were considered as the target group. Italy is currently one of the most popular destinations in Europe for Chinese migrants. Nowadays there are widely dispersed ethnic Chinese communities in Italy, all independent from each other, but all equally well-integrated into their respective local economies (Battilani & Fauri, 2018). Nevertheless, Italy is one of the European countries more concerned about immigration (Nese, 2023). Prejudice towards immigrants is still high in this country; a European survey revealed that 59.9% of people living in Italy believe that immigrants suffer discrimination (ISTAT, 2012). The great majority of the sample (80.8%) reported that it is difficult for an immigrant to be inserted into Italian society and according to 2.4% it is impossible (ISTAT, 2012). 80% of young migrants and refugees in Italy surveyed in a poll by UNICEF said they have been victims of, or witnessed, prejudice. A total of 62% said the prejudice was due to the colour of their skin, 12% said it was due to language, and 10% to conditions of poverty (ANSA, 2023). Chinese immigrants, in particular, are seen as perpetual strangers in Italy (Marsden, 2022). A more recent poll revealed that, among Italians, about 43% saw immigrants as a public health threat, and 37% believe they contributed to more COVID-19 cases (We World, 2020). As a matter of fact, prejudice towards the Chinese population has dramatically increased following the COVID-19 pandemic (e.g., Ahmed et al., 2021; Huber et al., 2022; Valtorta et al., 2022), which makes it especially urgent to find strategies useful for improving intergroup outcomes just with respect to this group.

The present study

The aim of the present study was to examine whether the effects of imagining a positive interaction with an outgroup member could vary as a function of the contact meta-perceptions produced during such an interaction. Given that no previous study has examined contact meta-perceptions during either direct or indirect contact, the first question we aimed to answer was whether individuals differ in their perception of who has desired most the encounter in the imagined contact situation: is intergroup contact mainly desired by themselves, the outgroup member, or by both themselves and the outgroup member? Second, and more important, we aimed to investigate if such a meta-perception might moderate the impact of the imagination task on individuals' attitudes, emotions, and behavioural intentions toward the outgroup. Based on the evidence we presented above (e.g., Stathi et al., 2019), we predicted that believing that the encounter was desired by the outgroup member would be especially important in determining its effect. At the same time, we considered it important that individuals perceived the encounter as desired also by themselves (Bagci et al., 2020).

We thus hypothesised that the imagined contact task would be more powerful in predicting positive outgroup outcomes when individuals perceived that both the outgroup members and themselves wanted to engage in that encounter, rather than only one of them. Moreover, we aimed to examine the effects of contact meta-perceptions on a wide array of intergroup outcomes. Thus, besides the effects on outgroup attitudes, intergroup anxiety, and stereotypes, which have been already examined by Stathi et al. (2020), we considered other affective (i.e., emotions, empathy, and trust towards the outgroup), cognitive (i.e., outgroup norms), as well as behavioural outcomes (i.e., self-disclosure, behavioural investment).

As stated above, apart from considering the role of contact meta-perception, we also explored the moderating role of past direct contact experiences with the outgroup. Previous research suggested that the imagined contact experience might be more useful for people with limited previous direct contact with the target group, although empirical evidence is somewhat inconsistent. For instance, Hoffarth and Hodson (2016), who examined the effects of extensive positive contact among heterosexual people, found that imagined intergroup contact was more effective for individuals with fewer contact experiences with gay people, but these effects were not replicated when the outgroup was a religious minority (i.e., Muslim people).

Method

Raw data and codes of this study are publicly available through the Open Science Framework, at the link [osf link in title page, for anonymity].

Design and participants

Initially, the study had a 2 (Imagined contact; experimental versus control) x 3 (Contact meta-perception; encounter desired by oneself versus the outgroup member versus both) x 2 (Direct contact; yes versus no) between-subject design. A power analysis using the G*Power computer program (Erdfelder et al., 1996) indicated that a minimum sample of 251 would be needed to detect small to medium effects (Cohen's $f=.20$) with 80% power using a multivariate ANOVA (12 groups, 2 df) with alpha at .05.

Participants were randomly assigned to the imagined contact or control condition, while direct contact and contact meta-perceptions were assessed and not manipulated variables. Unfortunately, based on the answers provided by the participants on the contact meta-perceptions measure, only 15 of them could be allocated to the "encounter desired by the outgroup member" condition. Being underrepresented, this condition could not be considered. As a consequence, our design turned out to be a 2 (Imagined contact; experimental versus control) x 2 (Contact meta-perception; encounter desired by oneself versus both) x 2 (Direct contact; yes versus no) between-subject design.

The final sample was composed of 260 university students ($M_{\text{age}}=25.94$, $SD_{\text{age}}=10.41$, range: 19–70 years) who provided their demographic information. Participants were asked to indicate their sex (78.8% women, 21.2% men), nationality, and place of birth. Most of the participants were born in Central Italy (74.6%), followed by those born in Southern (15%) and Northern (8.9%) Italy. A small number of participants (1.5%) were born abroad (i.e., Albany, Bahamas, and Morocco). All participants had Italian nationality.

Materials and procedure

Participants were recruited from public places, such as universities, libraries, leisure centers, and reading rooms, and were invited to take part in a study on attitudes and opinions towards people belonging to different cultural groups. The questionnaire was completed autonomously by participants in locations (e.g., classrooms, rooms) that guaranteed their privacy. Throughout the entire questionnaire completion time, at least one experimenter was present to distribute and collect the questionnaire and, if necessary, answer participants' questions. No incentives were offered to participants. Before completing the paper-and-pencil questionnaire, participants were informed that all data were confidential and that their responses would be recorded anonymously. Informed consent was given by all the respondents. The survey took about 25 min to complete. Participants were asked to complete a questionnaire which was articulated in different sessions. The study complied with the ethical principles of the 1995 Declaration of Helsinki and was conducted following APA ethical standards.

Independent variables

Direct contact

First, participants' level of positive direct contact with Chinese immigrants was measured through two items (Voci & Hewstone, 2003), which assessed respectively the quantity (i.e.: "How many Chinese immigrants do you know?") and the quality of previous contact (i.e., "If you know some Chinese immigrants, with how many of them do you have a good relationship?") with Chinese immigrants. Items were rated on a 6-point Likert scale from "none" (= 1) to "many" (= 6). Total contact was computed by multiplying the scores obtained on the two items (Voci & Hewstone, 2003). Participants were therefore left with an overall contact score, ranging from 1 to 36. Looking at the distribution of the responses concerning the measures of direct contact, we noticed that the frequency of participants who never had previous contact with Chinese immigrants was very high, generating substantial asymmetry in the contact variable. In particular, the percentage of participants who reported zero direct contact experiences was 62%, while the percentage of participants with at least one contact was 38%. Therefore, to obtain a balanced distribution of respondents across the two conditions, we decided to compute a new dichotomous direct contact variable taking value 1 for individuals who had no contacts at all with the target group and value 2 for individuals who had at least one contact with Chinese immigrants. As a result of such a dichotomization, 161 participants were included in the no-contact condition and 98 in the previous contact one.

Imagined contact

Respondents were then presented with the imagination task. In order to enhance interpersonal similarity (Ioannou & Panagiotou, 2020) between participants and the imagined outgroup member, the latter was described as having common interests (e.g., they shared a passion for the same writer) and the same sex (i.e., male participants imagined meeting a man, while female respondents imagined meeting a woman). This is consistent with the similarity-attraction hypothesis (Byrne & Griffitt, 1969), which posits that the similarities between two individuals further amplify their mutual attraction and likability. In the imagined contact condition they were given the following instructions: "Imagine you are going to visit a friend living outside the city. You get on the train and look for a seat. In the front seat, there is a Chinese woman/man of your age; she/he is reading the latest book by your favourite author, that you recently bought too. You introduce yourself to the woman/man, whose name is Feng/Cheng, you tell her/him that you bought the book as soon as it came out and you read everything about the author. Thus, begins a pleasant and entertaining conversation, in which you exchange opinions about your literary tastes. During the conversation, many pleasant aspects and unexpected common interests

emerge. You ask Feng/Cheng something more about her/him and learn that she/he was born in China and has lived in Italy for ten years. You make sure that chat pleasantly engages all travel time. Once you arrive at your destination, you propose an exchange of phone numbers to stay in touch. You say goodbye to Feng/Cheng and get off the train.” In the control condition, participants read the same instructions but they were told to imagine that the interaction occurred with an Italian individual (i.e., Paola/Paolo). All participants were then told to think for 5 min about the encounter they had imagined and to write down some of their thoughts and impressions. 134 participants were allocated in the experimental condition and 126 in the control one.

Contact meta-perceptions (i.e., beliefs about the willingness to engage in the imagined encounter). After completing the imagination task, contact meta-perceptions were assessed with a single item: “In the situation you have just imagined, in your opinion, who mainly desired the interaction?”. Participants could choose between three options: “me”, “Feng/Cheng/Paola/Paolo” or “both of us”, according to which they were divided into three conditions: encounter desired by oneself versus the outgroup member versus both. 169 participants reported that the encounter had been desired by themselves and 91 reported that the encounter had been wanted by both. As we reported above, only 15 participants declared that the encounter had been desired by the outgroup member, thus this condition could not be considered in further analyses.

Manipulation check

To test if the imagination task was equally pleasant in the experimental and control conditions, participants were asked to rate how positive the imagined interaction had been, using three semantic differentials on a 7-point scale (i.e., unpleasant/pleasant; stressful/relaxing; negative/positive; $\alpha = .73$).

Dependent variables

Outgroup attitudes

Eight semantic differentials on a 7-point scale were used to measure participants' attitudes toward Chinese immigrants (i.e., nice-awful, pleasant-unpleasant, enjoyable-unenjoyable, useful-useless, beneficial-harmful, desirable-undesirable, wise-foolish, and agreeable-disagreeable) (Matera et al., 2011). The resulting scale was scored in a positive direction ($\alpha = .91$).

Emotions toward the outgroup

To measure emotions toward the outgroup respondents were asked to express their feelings towards Chinese immigrants; they were presented with a list of 8 positive emotionally laden terms (i.e., sympathy, happiness, admiration, curiosity, attractiveness, friendliness, solidarity, and trust) already used in previous studies (Celeste et al., 2014; Kosic et al., 2005). Emotions toward the outgroup were measured on a 7-point scale (1 = *not at all* to 7 = *very much*; $\alpha = .90$).

Intergroup anxiety

Intergroup anxiety was measured through ten semantic differentials adapted from Stephan and Stephan (1985) and used in previous studies (Aronson et al., 2016). Participants were asked to indicate how they would feel if they interacted with Chinese immigrants (e.g., sad/happy, uncomfortable/comfortable, worried/unworried). Responses were rated through a 5-point scale ($\alpha = .84$).

Trust toward the outgroup

Trust towards Chinese immigrants was assessed through a scale composed of 7 items (e.g., “I do not trust Chinese people”) taken from previous studies (Capozza et al., 2014; Pagotto et al., 2012). Responses were given on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*; $\alpha = .77$).

Empathy toward the outgroup

Empathy toward Chinese immigrants was assessed using a scale composed of 4 items (e.g., “When you think about Chinese people, to what extent do you feel in harmony with them?”) taken from Capozza et al. (2013). Items were rated on a 5-point scale (1 = *not at all*, 5 = *very much*; $\alpha = .86$).

Outgroup norms

Outgroup norms were assessed using a 3-item scale adapted from Aronson et al. (2016). Items (e.g., “Chinese immigrants have positive feelings toward Italians”) were rated on a 5-point scale (1 = *completely untrue*, 5 = *completely true*; $\alpha = .82$).

Stereotypes

Nine traits were used to measure participants' positive stereotypes towards Chinese immigrants (Brambilla et al., 2013). For each trait, respondents were asked to indicate on a 7-point scale what they thought Chinese immigrants were like (1 = *not at all* to 7 = *very much*; $\alpha = .90$).

Self-disclosure

Ten items from the Self-Disclosure Index (Miller et al., 1983) were used to examine the extent to which participants would disclose themselves to Chinese immigrants. This index asks participants how much they would discuss ten self-related topics, such as their personal habits and worst fears, with Chinese immigrants. A five-point Likert scale was used (1 = *not at all*, 5 = *very much*; $\alpha = .93$).

Table 1
Descriptive statistics.

			Outgroup attitudes	Emotions	Intergroup Anxiety	Trust	Empathy	Outgroup norms	Stereotypes	Self-disclosure	Behavioural investment
Condition	Meta-perception	Direct contact	<i>M(SD)</i>	<i>M(SD)</i>	<i>M(SD)</i>	<i>M(SD)</i>	<i>M(SD)</i>	<i>M(SD)</i>	<i>M(SD)</i>	<i>M(SD)</i>	<i>M(SD)</i>
Experimental	Themselves	Yes	4.55(1.25)	3.79(1.22)	2.68(0.59)	3.03(0.83)	2.51(0.76)	2.72(0.90)	4.06(1.09)	2.67(0.97)	4.76(1.07)
		No	4.98(0.89)	4.6(0.99)	2.66(0.59)	3.19(0.54)	2.60(0.69)	3.01(0.65)	4.47(0.81)	3.11(0.87)	5.16(1.21)
	Both	Yes	5.25(1.06)	4.68(0.91)	2.57(0.58)	3.55(0.52)	3.21(0.59)	3.25(0.84)	4.78(0.81)	3.33(0.81)	5.15(1.21)
		No	4.84(0.83)	4.19(0.78)	2.77(0.53)	3.32(0.54)	2.89(0.76)	3.11(0.65)	4.49(0.70)	3.18(1.12)	4.95(1.36)
Control	Themselves	Yes	4.84(1.03)	4.17(1.28)	2.36(0.72)	3.25(0.63)	2.87(0.76)	3.05(0.81)	4.35(0.97)	3.39(0.75)	5.43(1.53)
		No	4.66(0.92)	3.94(0.97)	2.80(0.59)	3.18(0.56)	2.45(0.78)	3.01(0.59)	4.26(0.85)	3.25(0.99)	4.71(1.23)
	Both	Yes	4.89(0.57)	4.13(1.04)	2.40(0.50)	3.11(0.60)	2.68(0.74)	2.90(0.69)	4.22(1.21)	2.89(0.91)	5.43(1.07)
		No	4.48(0.91)	3.67(1.16)	2.78(0.66)	3.19(0.61)	2.49(0.93)	2.62(0.71)	4.12(1.02)	2.92(0.98)	4.77(1.61)

Notes. *M* = mean; *SD* = standard deviation

Behavioural investment

Participants' intention to have contact with Chinese immigrants was assessed using a 12-item behavioural investment scale asking participants how likely they were to invite a hypothetical Chinese colleague called Dong/Dan to do something together (e.g., "Imagine you want to go to the cinema with one friend of yours. How likely is it that you will invite Dong/Dan?"), adapted from previous studies (Celeste et al., 2014; Matera et al., 2018; Tip et al., 2012). Responses were provided on a 7-point scale (1 = not at all; 7 = very much). This scale showed high internal consistency ($\alpha = .94$).

Results

Manipulation check

A 2 (Imagined contact; experimental versus control) x 2 (Contact meta-perception; encounter desired by oneself versus both) x 2 (Direct contact; yes versus no) ANOVA on participants' responses on the manipulation check was performed. As expected, there were no significant differences between conditions regarding perceived positivity ($F_{(1, 251)} = 2.91, p = .089$): the encounter was perceived analogously in terms of pleasantness when it occurred with either a Chinese immigrant ($M = 5.63$) or an Italian ($M = 5.32$). No other significant effect was found.

Dependent variables

A 2 (Imagined contact; experimental versus control) x 2 (Contact meta-perception; encounter desired by oneself versus both) x 2 (Direct contact; yes versus no) multivariate analysis of variance (MANOVA) was subsequently performed to examine mean differences in outgroup attitudes, emotions toward the outgroup, intergroup anxiety, empathy and trust toward the outgroup, stereotypes, outgroup norms, self-disclosure, and behavioural investment (DVs) as a function of imagined contact condition, contact meta-perceptions, and direct contact (IVs).

Descriptive statistics and inter-correlations between all variables are displayed respectively in Tables 1 and 2.

The MANOVA revealed a significant multivariate effect for direct contact (Wilks $\lambda = .93, F_{(9, 241)} = 2.02, p = .038$) and a significant interaction between condition x contact meta-perceptions interaction (Wilks $\lambda = .92, F_{(9, 241)} = 2.42, p = .012$). The multivariate effect of imagined contact manipulation (Wilks $\lambda = .95, F_{(9, 241)} = 1.44, p = .171$), contact meta-perception (Wilks $\lambda = .96, F_{(9, 241)} = 1.13, p = .340$), and the interaction between condition x direct contact (Wilks $\lambda = .95, F_{(9, 241)} = 1.35, p = .212$), contact meta-perceptions x direct contact (Wilks $\lambda = .96, F_{(9, 241)} = 1.09, p = .368$), and condition x contact meta-perception x direct contact (Wilks $\lambda = .98, F_{(9, 241)} = 0.45, p = .909$) were not significant.

Subsequent univariate analyses of variance (ANOVAs) revealed the following effects. For attitudes towards Chinese immigrants, no main effect of either condition ($F_{(1, 250)} = 2.24, p = .136$), contact meta-perceptions ($F_{(1, 250)} = 0.76, p = .383$), or previous direct contact ($F_{(1, 250)} = 1.26, p = .263$) emerged. Nevertheless, a significant direct contact x contact meta-perception interaction effect was found, $F_{(1, 250)} = 4.38, p = .037, \eta_p^2 = .02$. This effect was subsequently explored using simple effect analysis: participants who thought that both themselves and the other person desired the encounter reported more favourable attitudes towards Chinese immigrants when they also had previous direct contact with this outgroup (previous contact: $M = 5.07$; no previous contact: $M = 4.66$). In contrast, when respondents thought that only themselves had wanted the encounter, their attitudes did not vary depending on their previous contact experiences (previous contact: $M = 4.70$; no previous contact: $M = 4.82$).

As regards emotions toward the outgroup, no main effect of either condition ($F_{(1, 251)} = 3.25, p = .073$), contact meta-perceptions ($F_{(1, 251)} = 0.80, p = .373$), or previous direct contact ($F_{(1, 251)} = 1.61, p = .206$) emerged. However, we found a significant condition x contact meta-perception interaction effect, $F_{(1, 251)} = 4.12, p = .043, \eta_p^2 = .02$. Simple effects analysis revealed that participants who thought the encounter to be desired by both themselves and the outgroup reported more positive emotions in the experimental ($M = 4.44$) rather than the control condition ($M = 3.90$). In contrast, when respondents thought the contact was sought only by themselves, there was not a significant difference between the experimental ($M = 4.03$) and control condition ($M = 4.06$). Moreover, in the experimental condition, emotions toward the outgroup were higher when participants thought the encounter was desired by both ($M = 4.44$) rather than only by themselves ($M = 4.03$) while in the control condition, this difference was not observed ($M = 3.90$ versus $M =$

Table 2
Pearson correlations between the variables.

	1.	2.	3.	4.	5.	6.	7.	8.
1. Outgroup attitudes								
2. Emotions toward the outgroup	.59***							
3. Intergroup anxiety	-.44***	-.38***						
4. Trust toward the outgroup	.58***	.64***	-.44***					
5. Empathy toward the outgroup	.41***	.59***	-.29***	.48***				
6. Outgroup norms	.46***	.49***	-.26***	.46***	.44***			
7. Stereotypes	.62***	.68***	-.32***	.66***	.53***	.49***		
8. Self-disclosure	.35***	.48***	-.22***	.45***	.41***	.26***	.42***	
9. Behavioural investment	.45***	.45***	-.43***	.49***	.35***	.31***	.37***	.39***

Note. * * * $p < .001$

4.06). For this outcome, a significant direct contact x contact meta-perception interaction also emerged $F_{(1, 251)} = 4.56, p = .034, \eta_p^2 = .02$. Simple effect analysis showed that when participants perceived that contact was desired both by themselves and the outgroup member they reported more positive emotions toward the outgroup when they also had previous direct contact with this outgroup rather than no contact (previous contact: $M = 4.41$; no previous contact: $M = 3.93$). When they perceived that the encounter was desired only by themselves, no differences based on previous direct contact emerged (previous contact: $M = 3.98$; no previous contact: $M = 4.10$).

For intergroup anxiety a significant main effect of direct contact was found, $F_{(1, 251)} = 9.62, p = .002, \eta_p^2 = .04$. Anxiety was lower for participants having previous ($M = 2.50$) than no direct contact ($M = 2.75$). The main effects of either condition ($F_{(1, 251)} = 1.06, p = .304$) or contact meta-perceptions were not significant ($F_{(1, 251)} = 0.00, p = .976$). A significant condition x direct contact interaction also emerged, $F_{(1, 251)} = 4.03, p = .046, \eta_p^2 = .02$. Simple effect analyses showed that participants in the control condition reported more anxiety when they had no previous direct contact experiences ($M = 2.79$) rather than direct contact with the outgroup ($M = 2.38$). This difference was not significant in the experimental condition (previous contact: $M = 2.63$, no previous contact: $M = 2.71$).

With respect to empathy we found a significant main effect of both contact meta-perception, $F_{(1, 251)} = 4.33, p = .038, \eta_p^2 = .02$, and direct contact, $F_{(1, 251)} = 4.29, p = .039, \eta_p^2 = .02$, while the effect of the condition was not significant ($F_{(1, 251)} = 3.30, p = .067$). When participants perceived that the contact was desired by both themselves and the outgroup member, empathy was higher ($M = 2.82$) than when they thought that only themselves wanted the encounter ($M = 2.61$). Moreover, empathy was higher when participants had past direct contact ($M = 2.82$) rather than no previous contact ($M = 2.61$). Univariate analyses of variance also revealed a significant condition x contact meta-perception interaction effect, $F_{(1, 251)} = 7.96, p = .005, \eta_p^2 = .03$. This effect was subsequently explored using simple effects: participants who believed that the encounter was desired by both themselves and the outgroup member reported higher empathy towards Chinese immigrants in the experimental ($M = 3.05$) rather than the control condition ($M = 2.58$). In contrast, when respondents thought that contact was sought only by themselves, there was not a significant difference between the experimental ($M = 2.56$) and control condition ($M = 2.66$). Consistently, in the experimental condition, empathy was higher when participants thought the encounter was desired by both ($M = 3.05$) rather than only by themselves ($M = 2.56$). This difference was not observed in the control condition (themselves: $M = 2.66$, both: $M = 2.58$).

As regards trust towards Chinese immigrants, no main effect of either condition ($F_{(1, 251)} = 1.39, p = .240$), contact meta-perceptions ($F_{(1, 251)} = 2.59, p = .109$) or previous direct contact ($F_{(1, 251)} = 0.030, p = .863$) emerged. However, a significant condition x contact meta-perception interaction emerged, $F_{(1, 251)} = 5.79, p = .017, \eta_p^2 = .02$. Simple effects analysis showed that, when participants thought that the contact experience was desired by both themselves and the outgroup member, trust was greater in the experimental ($M = 3.44$) than in the control condition ($M = 3.15$). No significant differences emerged between the experimental ($M = 3.11$) and control ($M = 3.21$) conditions when contact was desired only by themselves. Consistently, in the experimental condition trust was higher when participants attributed the desire for contact to both ($M = 3.44$) rather than only to themselves ($M = 3.11$). These differences did not emerge in the control condition (themselves: $M = 3.21$, both: $M = 3.15$).

With respect to outgroup norms, no main effect of either condition ($F_{(1, 251)} = 1.85, p = .174$), contact meta-perceptions ($F_{(1, 251)} = 0.57, p = .456$) or previous direct contact ($F_{(1, 251)} = .21, p = .650$) emerged. Also for this variable, a significant condition x contact meta-perception interaction effect emerged, $F_{(1, 251)} = 9.31, p = .003, \eta_p^2 = .04$. Simple effects analysis revealed that participants who thought the encounter to be desired by both themselves and the outgroup member reported more positive outgroup norms in the experimental ($M = 3.18$) rather than the control condition ($M = 2.76$). Significant differences between the experimental ($M = 2.87$) and control conditions ($M = 3.03$) were not found for respondents who perceived the contact to be desired only by themselves. Moreover, in the experimental condition, outgroup norms were more positive when respondents thought the contact was desired by both ($M = 3.18$) than only by themselves ($M = 2.87$). Significant differences did not emerge for the control condition (themselves: $M = 3.03$, both: $M = 2.76$).

Considering stereotypes about Chinese immigrants, no main effect of either condition ($F_{(1, 251)} = 3.02, p = .083$), contact meta-perceptions ($F_{(1, 251)} = 0.91, p = .342$) or previous direct contact ($F_{(1, 251)} = 0.15, p = .903$) emerged. Again, we found a significant condition x contact meta-perception interaction effect, $F_{(1, 251)} = 4.31, p = .039, \eta_p^2 = .02$. Simple effects analysis showed that participants who thought the encounter to be desired by both reported more positive stereotypes in the experimental ($M = 4.64$) rather than the control condition ($M = 4.17$). In contrast, when respondents attributed the desire for contact only to themselves, there was not a significant difference between the experimental ($M = 4.27$) and control condition ($M = 4.31$). Moreover, in the experimental condition, stereotypic beliefs were more positive when participants attributed the encounter to both ($M = 4.64$) rather than to themselves ($M = 4.26$). This difference was not observed in the control condition (themselves: $M = 4.31$, both: $M = 4.17$).

For self-disclosure no main effect of either condition ($F_{(1, 251)} = 0.91, p = .342$), contact meta-perceptions ($F_{(1, 251)} = 0.40, p = .527$) or previous direct contact ($F_{(1, 251)} = 0.12, p = .728$) emerged. A significant condition x contact meta-perception interaction effect was found, $F_{(1, 251)} = 9.69, p = .002, \eta_p^2 = .04$. Simple effects analysis revealed that participants who thought that the encounter was desired only by themselves reported higher levels of self-disclosure in the control ($M = 3.32$) rather than experimental condition ($M = 2.89$). Conversely, significant differences between the experimental ($M = 3.25$) and control conditions ($M = 2.90$) were not found for respondents who attributed the contact to both. Moreover, in the experimental condition, self-disclosure was higher when respondents believed that the contact was wanted by both ($M = 3.25$) than only by themselves ($M = 2.89$). Opposite results emerged for the control condition ($M = 3.32$ versus $M = 2.90$).

Finally, for behavioural investment, the effect of either condition ($F_{(1, 251)} = 0.23, p = .632$), contact meta-perceptions ($F_{(1, 251)} = 0.12, p = .728$), or previous direct contact ($F_{(1, 251)} = 2.91, p = .089$) was not significant. A significant condition x direct contact interaction effect was found for this variable, $F_{(1, 251)} = 5.20, p = .023, \eta_p^2 = .02$. Simple effects analysis showed that participants who were in the control condition reported higher behavioural investment when they also had previous direct contact ($M = 5.43$) rather

than no contact ($M = 4.74$) while no difference emerged in the experimental condition (previous contact: $M = 4.95$, no contact $M = 5.05$).

Discussion

Our study was the first one examining the impact of meta-perceptions during imagined contact on several affective, cognitive, and behavioural intergroup outcomes, also considering the role of previous direct contact. Our findings clearly demonstrated that meta-perceptions produced during or immediately after the imagination task can moderate the effects of imagined contact on outgroup evaluations. Indeed, an almost consistent pattern of results emerged across the different variables we assessed.

First of all, our results confirmed that people differ in their contact meta-perceptions during an imagination task. Although the imagination task was exactly the same for all of the participants, some of them thought that the encounter had been desired by both themselves and the outgroup member, while some others thought that only themselves had sought intergroup contact. This is an important finding, given that no previous study assessed contact meta-perceptions *during* the contact experience itself. More importantly, such a difference in the attribution of the desire for contact to only oneself or to both the individuals engaged in the contact situation clearly influenced the effects of the imagination task on the intergroup outcomes. Indeed, a significant condition \times contact meta-perceptions interaction effect emerged for emotions, empathy, trust, outgroup norms, stereotypes, and self-disclosure. These findings are consistent in showing that the imagination task was more effective when participants believed that both themselves and the outgroup member desired to be in contact. In other words, to think that a member of the outgroup with whom we are imagining to be in contact personally desires to stay with us, significantly increases the positive effect of such an imagined encounter on the evaluations and behaviours toward that outgroup.

Although our study is the first examining the link between contact meta-perceptions and *imagined* contact, these results are in line with previous evidence showing that perceived outgroup desire for contact with the ingroup was associated with higher intergroup contact and more positive intergroup attitudes (Stathi et al., 2019). Moreover, they are in line with research findings concerning interethnic relations, which showed that immigrants are more appreciated when they are perceived to desire intergroup contact rather than when they are thought to refuse it (Celeste et al., 2014; Matera et al., 2011, 2012, 2015, 2020; Olsson et al., 2019; Zajefka et al., 2007).

We should observe that many different intergroup outcomes (affective, cognitive, and behavioural) resulted in being associated with such meta-perceptions. In terms of affective factors, when both themselves and the outgroup were perceived to have looked for contact, more positive emotions, higher empathy, and trust were felt toward its members. A significant interaction between direct contact and contact meta-perception also emerged for attitudes and emotions toward the outgroup. For both variables, when participants perceived that contact was desired both by themselves and the outgroup member their attitudes toward the outgroup were more favorable and their emotions were more positive when they also had previous direct contact with this outgroup rather than no contact.

For what concerns cognitive factors, the outgroup was perceived to hold norms that favour intergroup contact when the imagined encounter was believed to be wanted by both the respondent and the outgroup member. Moreover, stereotypic beliefs were more positive, so that a more favourable view of the outgroup arose. The same result emerged for self-disclosure, which can be considered a behavioural indicator. Again, participants estimated they were more likely to reveal personal information and establish an intimate relationship with the outgroup when they thought that also the outgroup member was responsible for the imagined encounter.

A condition \times direct contact interaction emerged both for behavioural investment and intergroup anxiety. Behavioural investment was higher and intergroup anxiety was lower when participants had previous direct contact experiences with the outgroup rather than no contact, but only in the control condition. No differences emerged for participants in the experimental condition. We can hypothesise that imagining contact with a Chinese immigrant may have attenuated the differences between those who had or had not experienced prior direct contact, making them equally motivated to have future contact with that outgroup, and with similar levels of intergroup anxiety.

We should observe that previous direct contact with the outgroup was also associated with some of the outcomes considered: previous contact was significantly and directly related to lower anxiety, and higher empathy. These results are in line with a large body of research showing that intergroup contact is associated with intergroup emotions (i.e., less anxiety, and more empathy toward the outgroup) (Fuochoi et al., 2021; Pettigrew & Tropp, 2006).

Despite its innovative and significant findings, the present study suffers from some limitations. First of all, contact meta-perceptions were assessed and not manipulated, which makes our design a quasi-experimental one. As a consequence, we must be cautious in drawing conclusions about the causal nature of the relationship between the variables. For example, it might be possible to hypothesise that participants having more positive attitudes toward Chinese people may perceive them as more willing to engage in intergroup contact. Additionally, we examined the condition in which contact was perceived to be sought by oneself or by oneself and the outgroup member, while we could not consider the condition in which contact was perceived to be desired only by the outgroup member. Therefore, future studies could manipulate participants' meta-perceptions creating different situations in which the encounter is presented as desired only by the outgroup member, only by the participant, or both by the participant and the outgroup member, to compare the effects of such conditions on outgroup outcomes and to test the directionality of these effects. Second, in our study, participants were instructed to imagine an outgroup member who shared their interests and was of the same gender, thus enhancing perceived similarity between the participant and the imagined other (Byrne & Griffitt, 1969). These similarities are expected to foster the positive effects of imagined contact; however, we should acknowledge that results concerning this point are still unclear (Ioannou & Panagiotou, 2020). Unfortunately, we could not test if our findings were different in a scenario in which

participants imagine interacting with an outgroup member of the opposite sex or whose sex is not specified. It would be interesting in future studies to manipulate the imagined outgroup member's sex, thus comparing the effects of imagined contact when the sex of the imagined person is the same, the opposite or left unspecified. Third, we tested our hypothesis on a single target group (i.e., Chinese immigrants), which limits the generalizability of our findings.

In spite of these limitations, thanks to the novelty of the hypotheses we tested and the consistent pattern of results that emerged from our analyses, our study represents an innovative and significant contribution to the literature on intergroup contact and prejudice reduction. These findings have also important practical implications. Interventions aimed at reducing intergroup bias through imagined contact could be improved if they foster the idea that the outgroup member desires the encounter as much as the individual imagining it. In this vein, it could be crucial to manipulate the imagined situation by making it more explicit that the contact was sought by the outgroup member and by themselves. Indeed, rather than leaving an encounter to chance, one can emphasise the intentionality of the action for both parties involved. This means that instead of relying on random or spontaneous interactions, the imagined scenario should represent individuals who can actively plan and pursue meaningful encounters. This intentionality, emphasised in the imagined contact, as in real life contact experiences, can lead to more meaningful connections and outcomes compared to more casual encounters, as already highlighted by Bagci et al., 2020. In conclusion, considering contact meta-perceptions holds the potential to improve an already effective instrument in the reduction of biases between different social or cultural groups, thereby fostering more inclusive and harmonious intergroup relations.

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CRediT authorship contribution statement

Camilla Matera: Writing – review & editing, Writing – original draft, Supervision, Methodology, Conceptualization. **Jessica Boin:** Writing – original draft, Methodology, Formal analysis, Data curation. **Fabio Maratia:** Writing – original draft, Methodology, Formal analysis, Data curation. **Amanda Nerini:** Writing – review & editing, Supervision, Methodology.

Declaration of Competing Interest

The authors declare no competing interests.

Data Availability

Data and spss codes of the study are openly available at https://osf.io/j6stv/?view_only=e7693dfde11448a68603a934282958b4.

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