



Imagining intergroup contact reduces implicit prejudice

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Recent research has demonstrated that imagining intergroup contact can be sufficient to reduce explicit prejudice directed towards out-groups. In this research, we examined the impact of contact-related mental imagery on implicit prejudice as measured by the implicit association test. We found that, relative to a control condition, young participants who imagined talking to an elderly stranger subsequently showed more positive implicit attitudes towards elderly people in general. In a second study, we demonstrated that, relative to a control condition, non-Muslim participants who imagined talking to a Muslim stranger subsequently showed more positive implicit attitudes towards Muslims in general. We discuss the implications of these findings for furthering the application of indirect contact strategies aimed at improving intergroup relations.

According to the contact hypothesis (Allport, 1954), contact between members of opposing groups should lead to more positive out-group attitudes. There has been a great deal of research on intergroup contact in the past half-century, much of it investigating whether contact works in a range of intergroup contexts and with a variety of different target groups (e.g. Pettigrew & Tropp, 2006). Recently, work on intergroup contact has focused on two important issues. First, there is a growing interest in the different *types* of intergroup contact that might be effective at reducing prejudice (e.g. Turner, Hewstone, & Voci, 2007; Wright, Aron, McLaughlin-Volpe, & Ropp, 1997). Second, recent research has investigated the diverse potential *consequences* of intergroup contact, revealing that intergroup contact may be associated with more positive *implicit* out-group attitudes (Aberson & Haag, 2007; Turner, Hewstone *et al.*, 2007). In this paper, we integrate these two areas of research by investigating whether a new indirect form of intergroup contact, *imagined intergroup contact*, predicts more positive implicit out-group attitudes.

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Intergroup contact

Allport's (1954) contact hypothesis proposed that simple contact between groups would not be sufficient to improve intergroup relations. Rather, for contact between groups to reduce prejudice, certain prerequisite conditions must be in place. Specifically, Allport proposed that optimal intergroup contact would be of equal status, involve cooperation to achieve common goals, and should be supported by important societal institutions. Over the past 50 years, much research has been devoted to testing and amending the basic principles of the contact hypothesis and contact is now one of the most widely used psychological interventions for the reduction of prejudice and the improvement of intergroup relations (Oskamp & Jones, 2000).

The theory has had to deal with various controversies over the years. Past debate has focused on whether the proposed optimal conditions are sufficient, or even necessary, for contact to reduce prejudice, and whether the positive effects of successful intergroup contact would generalize from the individuals involved in the contact to the entire out-group. However, a recent meta-analysis of over 500 studies on intergroup contact conducted by Pettigrew and Tropp (2006) found a robust highly significant effect of contact in reducing prejudice, an effect that remained even for contact that did not meet the proposed 'optimal conditions', and for generalized measures of out-group prejudice.

Having confirmed that contact does indeed result in more positive generalized out-group attitudes, researchers have begun to ask some important new theoretical questions. One intriguing line of research considers whether *indirect* forms of intergroup contact, interventions derived from the contact hypothesis but not involving face-to-face contact, are sufficient to reduce prejudice. A second distinct area of investigation involves considering whether intergroup contact can predict more positive implicit, as well as explicit, out-group attitudes. Below we expand on these two developments.

Indirect intergroup contact

One of the most significant recent advances in contact research is the finding that perceivers need not have actually experienced contact with the out-group themselves to develop more positive out-group attitudes. Two types of indirect intergroup contact have been identified to date: extended contact and imagined contact.

Extended contact

Wright *et al.* (1997) argued that extended contact – the mere knowledge that in-group members have friends in the out-group – can reduce prejudice. When an out-group member is observed being friendly and positive to in-group members, expectations about intergroup interactions may be more positive, while seeing an in-group member showing tolerance towards the out-group may have a positive influence on the attitudes of other in-group members. The positive relationship between extended contact and out-group attitude has been shown in a number of studies, using cross-sectional (Paolini, Hewstone, Cairns, & Voci, 2004; Turner, Hewstone *et al.*, 2007; Turner, Hewstone, Voci, & Vonofakou, 2008; Wright *et al.*, 1997; Studies 1 and 2) and experimental methodologies (Cameron, Rutland, Brown, & Douch, 2006; Wright *et al.*, 1997; Studies 3 and 4).

Extended contact has a distinct advantage over direct, face-to-face contact. Direct contact can only be used as an intervention to reduce prejudice when group members have the *opportunity* for contact in the first place (e.g. Phinney, Ferguson, & Tate, 1997; Turner, Hewstone *et al.*, 2007). Unfortunately, however, there are many examples of

opposing groups that have few such opportunities (e.g. Catholics and Protestants in Northern Ireland; Israelis and Palestinians in the Middle East). Extended contact, on the other hand, may be especially useful in situations where there is less opportunity for contact, as it implies that actual *experience* of contact with out-groups is not a necessary component of contact interventions. The importance of this basic idea for policy makers and educators seeking to develop interventions designed to change out-group attitudes cannot be understated because it suggests that contact may be a far more powerful and flexible means of improving intergroup relations than previously thought.

Imagined intergroup contact

Our research on imagined contact considers whether it is even necessary to know in-group members who have friends in the out-group in order for contact to exert a positive effect. Specifically, we have argued that imagining an intergroup interaction may have positive effects consonant (although perhaps less pronounced) with the benefits of actual intergroup contact (see Crisp & Turner, 2009; Turner, Crisp, & Lambert, 2007). There are several reasons to expect this to be the case. Mental imagery has been found to elicit similar emotional and motivational responses as the real experience (Dadds, Bovbjerg, Redd, & Cutmore, 1997) and neuropsychological studies have shown that it shares the same neurological basis as perception and employs similar neurological mechanisms as memory, emotion, and motor control (Kosslyn, Ganis, & Thompson, 2001). More specifically within social psychology, research has found that after imagining a (counter-stereotypic) strong woman, participants demonstrated less implicit stereotypes than participants who engaged in neutral or stereotypic mental imagery (imagining a weak woman or a strong man), or participants who had not engaged in any imagery (Blair, Ma, & Lenton, 2001). Other research has investigated the role of imagining a social context on the *bystander apathy effect*, the idea that we are less likely to help others if there are other people present. Garcia, Weaver, Moskowitz, and Darley (2002) found that simply imagining being in a large group led to significantly less helping behaviour on a subsequent task.

We have extended research on the benefits of mental imagery to the domain of intergroup relations. To test the impact of imagined contact, we conducted a series of studies in which participants were asked to imagine encountering an out-group member before reporting their attitude towards the out-group in general (Turner, Crisp *et al.*, 2007; see also Stathi & Crisp, 2008). In Expt 1, young participants who imagined talking to an elderly person subsequently showed lower levels of intergroup bias than participants who imagined an outdoor scene. In Expt 2, young participants who imagined talking to an elderly person subsequently showed lower levels of intergroup bias than participants who simply thought about elderly people. In Expt 3, heterosexual men who imagined talking to a homosexual man subsequently evaluated homosexual men more positively, had greater perceptions of variability among homosexual men, and experienced less intergroup anxiety compared to a control group. The effect of imagined contact on out-group evaluations was mediated by reduced intergroup anxiety, in parallel to the processes underlying direct intergroup contact (e.g. Islam & Hewstone, 1993; Paolini *et al.*, 2004).

There are two key elements that are critical for imagined contact to improve attitudes. First is the instruction to engage in simulated contact. We have found that running through the mental script of an interaction is critical for observing positive effects (thinking, in contrast, of just an out-group member in the absence of any

simulated interaction has no positive effects on attitudes; Turner, Crisp *et al.*, 2007). Second is a positive tone. Empirically, we have shown that imagined contact works better when it is positive compared to neutral contact (Stathi & Crisp, 2008; Expt 1). A positive tone is also important to guard against a possible *negative* default, which might emerge if participants are left to draw upon negative preconceptions about intergroup interactions (which may be likely, especially in contexts of conflict or extreme segregation). Other than these two core elements we have found that other embellishments have very little impact on the basic effect. For instance, describing the imagined encounter as 'interesting' has no additional impact (Stathi & Crisp, 2008; Expts 1 and 3). In our research, we have also used a variety of control groups, including imagining an out-group scene (Turner, Crisp *et al.*, 2007; Expts 1 and 3), imagining a friendly encounter with a stranger (Stathi & Crisp, 2008; Expt 2), and imagining neutral contact with an out-group member (Stathi & Crisp, 2008; Expt 1). The use of a wide range of control conditions provides increased confidence in the unique benefits of mentally simulating positive contact experiences with out-group members, and provides a clear guide for successful implementation (see Crisp, Stathi, Turner, & Husnu, 2008, for a detailed specification of these task variants and recommendations for adaptation of the paradigm in various research and applied domains).

Intergroup contact and implicit out-group attitudes

Although there is now compelling evidence for the impact of imagined contact on *explicit*, self-reported out-group attitudes, research has not yet considered its impact on *implicit* out-group attitudes. Whereas explicit attitudes are conscious, deliberative, and controllable (and are usually captured by traditional self-report measures), implicit attitudes are unintentionally activated by the mere presence (actual or symbolic) of an attitude object, and are therefore less likely to be influenced by social desirability than are explicit measures. We have already demonstrated the benefits of imagined contact on explicit out-group attitudes and perceived out-group variability (Turner, Crisp *et al.*, 2007), but if we can also show its effect on implicit attitudes, which are thought to be more difficult to change than explicit attitudes (Wilson, Lindsey, & Schooler, 2000), this will considerably strengthen confidence in the efficacy of imagined contact as a prejudice-reduction intervention.

As well as being critically important for demonstrating the extent of imagined contact's effectiveness, showing an impact on implicit attitudes will also be important because it will provide the basis for further theoretical and empirical development. While explicit attitudes are associated with deliberative behaviours, implicit measures are associated with more subtle, indirect, and spontaneous non-verbal behaviours (e.g. McConnell & Leibold, 2001). These behaviours associated with implicit attitudes are the subtle bastions of prejudice, maintaining biases in even overtly egalitarian societies. Of equal importance, if imagined contact can reduce negative non-verbal behaviour, it may help produce smoother, more successful face-to-face encounters with out-group members in the future. Thus to both fully address the problem of prejudice, and create the basis for more positive intergroup interactions when they occur in person, it is critical to test whether imagined contact can improve implicit attitudes.

So why might we expect imagined contact to result in more positive implicit attitudes? In our research on direct contact (Turner, Hewstone *et al.*, 2007), we found across three studies that while the relationship between direct contact and explicit attitude was mediated by several processes (e.g. self-disclosure, anxiety, empathy, and

trust), contact consistently had a direct, *unmediated* effect on implicit out-group attitudes, measured using the implicit association test (IAT; Greenwald, McGee, & Schwartz, 1998; see also Aberson & Haag, 2007; Shook & Fazio, 2008). These findings suggest that contact affects implicit and explicit attitudes via two distinct routes. According to dual attitude accounts (e.g. Fazio & Olson, 2003; Wilson *et al.*, 2000), individuals hold both a spontaneous, automatic, implicit attitude (which is more difficult to control), and a deliberative, explicit attitude (which is more open to control). Applied to the imagined contact paradigm, when a person simulates an intergroup interaction this might prompt them to reflect on their own attitudes towards future interaction. They may then come to feel more comfortable (less anxious) at the prospect of future interactions with an out-group member. Such deliberative processes predict explicit out-group attitudes: indeed, previous research has found that the effect of imagined contact on explicit out-group attitude is mediated by reduced intergroup anxiety (Turner, Crisp *et al.*, 2007). However, when a person imagines intergroup contact, they are mentally gaining greater exposure to the out-group. This imagined exposure should exert a direct influence on implicit attitudes, as it does with actual contact and implicit attitudes in intergroup contexts (Turner, Hewstone *et al.*, 2007) and more generally in attitudes research (Fazio & Olson, 2003). Exposure to the out-group may be particularly likely to directly produce more positive *implicit* out-group attitudes; Dasgupta and Asgari (2004), for example, found that participants exposed to pictures and biographies of famous women leaders were subsequently more likely to associate women with leadership qualities on a measure of implicit gender bias.

An additional benefit of including an implicit attitude measure is that it will help to rule out an alternative explanation for our findings. It may be possible that participants in previous imagined contact studies have been influenced by demand characteristics: that is, participants may respond more positively in the imagined contact condition because they guess the rationale of the experiment and behave in accordance with the perceived expectations of the experimenter. Given that it is less easy to control responses on implicit measures than on explicit measures, observing an impact of imagined contact on IAT response times should go some way to ruling out this demand characteristics explanation.

The current research

We undertook two studies to investigate the effects of imagined contact on implicit out-group attitudes. The first investigating imagined contact with the elderly among young participants, and the second imagined contact with Muslims among non-Muslim participants.

STUDY I

A large-scale British survey recently carried out by Age Concern (2005) found that people reported suffering from more age discrimination than any other form of discrimination, and participants aged 55 years and over were almost twice as likely to experience age discrimination as any other form of discrimination. Unsurprisingly, ageism has negative consequences for elderly people, in terms of their psychological and physical health (Levy & Banaji, 2002; Ryan, Giles, Bartolucci, & Henwood, 1986). We, therefore, considered whether imagined contact with an elderly person would

change young people's perceptions of the elderly. Young participants were either instructed to imagine interacting with an elderly person or, in a control condition, to imagine an outdoor scene, prior to completing measures of implicit and explicit out-group attitude. We expect imagined contact to have a positive impact on both explicit and implicit attitudes towards the elderly.

Method

Participants

Twenty-five female undergraduate students, aged between 18 and 23 were randomly allocated to either the imagined contact condition or a control condition. Participants received course credit for taking part in the research. In our previous research (Turner, Crisp *et al.*, 2007; Study 2), conducted with equal numbers of female and male participants, we find no gender differences in the impact of our manipulation.

Procedure

Prior to the start of the experiment, the researcher told each participant that they were running a pre-test for a possible later experiment and needed to gain some information for the construction of materials. We created two sets of instructions, designed to either invoke participants' imagination of a detailed interaction with an out-group member, or their imagination of something totally unrelated to a contact encounter. Participants assigned to the *imagined contact condition* were asked: 'We would like you to spend the next 2 min imagining yourself meeting an elderly stranger for the first time. Imagine that during the encounter, you find out some interesting and unexpected things about the person'. Participants assigned to the *control condition* were asked: 'We would like you to spend the next 2 min imagining an outdoor scene. Try to imagine aspects of the scene about you (e.g. is it a beach, a forest, are there trees, hills, what's on the horizon)'. In both conditions, participants were given exactly 2 min for the imagination task. Participants in the *imagined contact condition* were then instructed to 'List the interesting and unexpected things you learnt about this person', whereas participants in the *control condition* were instructed to simply 'List the different things that you saw in the scene you just imagined'. This was designed to reinforce the effect of the imagery task.

Following this manipulation, participants completed a measure to assess their explicit out-group attitude. They were asked to indicate how they felt about elderly people in general on six seven-point semantic-differential scales (*cold-warm*, *suspicious-trusting*, *positive-negative*, *friendly-hostile*, *respect-contempt*, and *admiration-disgust*; reverse scoring on the last four items). Finally, participants were asked to complete a measure of *implicit* intergroup bias, for which we used the IAT (Greenwald *et al.*, 1998). We used a young-elderly version of the IAT, in which participants were required to simultaneously categorizing target stimuli (typical young names like Brad, Zack, and Lucy, and typical old names such as Cyril, Arthur, and Mildred) and attribute stimuli (positive words like smile, and paradise, and negative words like slime and pain) which appeared one at a time on the computer screen (see Turner, Hewstone *et al.*, 2007 for a detailed description of the IAT). We expected that young participants would show faster reaction times when required to sort young names and positive words with one key, and elderly names and negative words with the other, than when required to sort young names and negative words with one key and elderly names and positive words with the other. The side of the screen on which

stimuli were presented and the order of the critical trials were counterbalanced. Internal reliability of the IAT, assessed by considering the relationship between the practice and test trials, was acceptable ($r = .58, p < .003$). After completing the dependent measures, participants were asked what they thought the aim of the study was, and whether they were at all suspicious that the pre-test was looking at anything other than what was stated. After providing demographic information, participants were then thanked and debriefed.

Results

The raw IAT data were transformed using the Greenwald, Nosek, and Banaji (2003) improved scoring algorithm, which recommends that practice and test trials are included in the analysis; trials which have latencies greater than 10,000 ms are removed from analyses and participants who have more than 10% of trials with any latencies less than 300 ms are removed. A difference score between latencies for attitude-congruent trials (speed of correctly classifying stimuli as 'pleasant or young' and 'unpleasant or old') and attitude-incongruent trials (speed of correctly classifying stimuli as 'pleasant or elderly' and 'unpleasant or young') was then computed. The final IAT measure is a standardized score (d). A positive score on the IAT indicates intergroup bias, a positive implicit attitude towards the in-group relative to the out-group.

To determine whether imagining intergroup contact with an elderly person changed explicit and implicit out-group attitudes compared to a control condition in which participant simply imagined an outdoor scene, we conducted one-tailed t tests. In line with predictions, participants in the imagined contact condition showed more positive explicit attitudes towards the elderly than participants in the control condition ($M_s = 5.88$ and 5.42), $t(23) = -2.06$, $p = .028$. Most importantly, on the implicit measure participants in the imagined contact condition were less biased ($M = 0.46$) than participants in the control condition ($M = 0.87$), $t(23) = 2.88$, $p = .0005$.¹ Feedback following the experiment revealed that none of the participants were suspicious about its purpose, nor did any of them successfully guess the aims of the research.

These findings support the hypothesis that imagined contact can improve implicit as well as explicit out-group attitudes. In Study 2, we aimed to build on these findings by extending our investigation to an alternative intergroup domain, and to rule out alternative explanations for the observed effects.

STUDY 2

There are 1.6 million Muslims in the UK (2.8% of the British population), making it the largest minority religious group in the country. Unfortunately, there has been an increase in Islamophobia in the UK in recent years (e.g. MORI, 2003), exacerbated by the terrorist attacks of 11 September 2001 in New York and Washington, and 7 July 2005 in London, thought to be carried out by a Muslim extremist group. In the month following

¹ In order to investigate the relationship between stereotypicality of the imagined out-group member and intergroup attitude, two independent coders (inter-rater reliability, $r = .80$) rated descriptions produced by participants in the imagined contact condition for how stereotypical they were of elderly people, on a scale of 1 (not at all stereotypical) to 7 (very stereotypical). However, there was no significant correlation between stereotypicality and either implicit ($r = .21$, $p = .50$) or explicit attitude ($r = -.18$, $p = .55$).

the London bombings, for example, there was a six-fold increase in religious hate crimes against Muslims in the London area (BBC Online, 2005a). There is also an enduring negative stereotype about Muslims in the UK that they do not want to integrate with other sections of the community (BBC Online 2005b, 2006). Countering negative attitudes towards the Muslim community in the UK is therefore a critical and pressing social issue. Accordingly, in our second study we turned our attention to examining the potential benefits of imagined contact for improving attitudes towards Muslims.

As well as extending the applicability of imagined contact, in this study, we also aimed to address some potential criticisms of the design used in Study 1. First, in Study 1 we measured explicit attitudes prior to implicit attitudes. It is, therefore, possible that the (well established) changes in explicit attitudes observed following imagined contact may account for the corresponding impact on implicit attitudes, rather than the predicted direct impact that has also been observed in research employing self-reports of actual contact. To rule out this possibility in Study 2 we focused only on the impact of imagined contact on implicit attitudes. One could also argue that the control condition used in Study 1 (thinking about an outdoor scene) may not rule out the possibility that simply thinking about the out-group is enough to elicit the positive effects we observed. While we have ruled out this possibility in previous research using explicit measures (Turner, Crisp *et al.*, 2007), it is important to demonstrate that it is, uniquely, the simulation of the intergroup encounter (not thinking about the out-group *per se*) that has a positive impact on *implicit* attitudes.

Method

Non-Muslim participants were instructed either to imagine interacting with a Muslim person or, in a control condition, to think about Muslims, prior to completing a measure of implicit out-group attitude. We expect imagined contact to have a positive impact on implicit attitudes towards Muslims.

Participants

Twenty-nine female and 11 male undergraduate students, aged between 18 and 25, from a British University, were randomly allocated to either the imagined contact condition or a control condition. All participants indicated that they were not of Muslim faith. Participants were given a small monetary payment for taking part in the research.

Procedure

The procedure was identical to Study 1 except in the following ways. In the *imagined contact condition*, participants were asked: 'We would like you to spend the next 2 min imagining yourself meeting someone who is a Muslim for the first time. Imagine that the interaction is relaxed, positive, and comfortable'. They were subsequently asked to 'List as many things as you can about the interaction that you just imagined'. In the *control condition*, participants were asked: 'We would like you to spend 2 min thinking about Muslims'. These changes to the imagination and control tasks enable us to confirm first, that it is imagining a positive encounter, rather than imagining an unexpected or atypical out-group member, that has a positive impact. Second, it enables us to check that the effect of the manipulation on implicit attitude is not simply due to out-group priming. We already know that more general positive affect evoked by an imagined positive

interaction is not responsible for the imagined contact effect (Stathi & Crisp, 2008). This out-group prime control therefore allows us to test for the unique effects of *simulated* contact with an out-group member (compared to simply *thinking about* an out-group member). We used a Muslim–non-Muslim version of the IAT, which was identical to the measure used in Study 1, except that typical young and old names were replaced with typical British Muslim names (e.g. Mohammed, Fatima, and Yusra) and British non-Muslim names (for this we used biblical names, e.g. Matthew, Luke, and Eve). The categories for classifying these names were ‘Muslim’ and ‘Not Muslim’. Internal reliability of the IAT, assessed by considering the relationship between the practice and test trials, was good ($r = .82, p < .0005$).

Results

The raw IAT data were transformed as for Study 1, with a positive score indicating intergroup bias, a positive implicit attitude towards the in-group relative to the out-group. Data were analysed using a one-tailed t test. In line with predictions, there was a strong effect of condition on implicit attitude. Participants who imagined contact with a Muslim were less biased ($M = -0.63$) than participants in the control condition who simply thought about Muslims ($M = 0.49$), $t(38) = -7.50, p = .0005$. Indeed, while participants in the control condition showed implicit in-group-favouring bias, this bias was eliminated in the imagined contact condition and participants actually became out-group-favouring.² Feedback following the experiment revealed that although one participant was suspicious about its purpose, no one successfully guessed the aims of the research.

Why should imagined contact have produced out-group favouring bias in this study? It is likely that the locus of the effect may simply reflect the use of different target groups our two studies. However, the IAT D -scores are relative measures, and what is important is that in both Studies 1 and 2, we obtained the predicted *reduction* in implicit bias. Observing out-group bias also suggests an interesting caveat to the imagined contact effect.

Elsewhere we have argued that imagined contact should not only promote more positive evaluations of out-groups, but also a greater *interest* in, and positive inclination towards, *engaging* in intergroup contact (Crisp & Turner, 2009; see also Husnu & Crisp, 2009). It is therefore possible that, for a short time, imagined contact promotes a *greater* preference for out-groupers (and out-group contact) than for in-groupers, as a positive contact norm becomes temporarily hyper-accessible.

GENERAL DISCUSSION

In two studies we have shown, for the first time, that imagining intergroup contact can reduce implicit prejudice. In Study 1, participants who imagined contact with an elderly person showed less implicit bias in favour of the young over the elderly compared to

² Descriptions produced by participants in the imagined contact condition were coded for how stereotypical there were of Muslims (inter-rater reliability, $r = .90$). Again, no significant correlation emerged between stereotypicality and implicit attitude ($r = -.29, p = .22$). We are, however, tentative about drawing any firm conclusions about these results, as the analysis is exploratory. Future investigations into the stereotypicality of imagined out-group members might be an interesting avenue for future research.

participants in the control condition. In Study 2, non-Muslim participants who imagined contact with a Muslim stranger showed significantly less implicit bias in favour of non-Muslims over Muslims compared to participants in a control condition who simply thought about Muslims as a group.

We believe that imagining intergroup contact changes explicit out-group attitudes by activating conscious processes that parallel the processes involved in actual intergroup contact, for example thinking about what they would learn from the encounter and how that encounter would make them feel. In contrast, imagined contact may affect implicit out-group attitudes as a direct consequence of exposure, consistent with contemporary dual models of attitude change (e.g. Fazio & Olson, 2003; Wilson *et al.*, 2000).

Implications of the findings

The current findings have several important implications. The fact that imagined contact influences not only explicit out-group attitudes and perceived out-group variability (Turner, Crisp *et al.*, 2007) but also implicit out-group attitudes suggests that imagined contact can have diverse benefits for intergroup relations. Given that implicit attitudes are less easy to change than explicit out-group attitudes (Wilson *et al.*, 2000), these findings suggest that imagined contact is a powerful intervention to reduce prejudice.

Our findings also provide further evidence that imagined contact has similar consequences to direct intergroup contact. In parallel, to research on direct contact (Aberson & Haag, 2007; Shook & Fazio, 2008; Turner, Hewstone *et al.*, 2007), imagined contact had a direct positive effect on implicit out-group attitudes. Given that direct intergroup contact is a highly effective means of reducing prejudice (Pettigrew & Tropp, 2006), these findings suggest that imagined contact is an exciting alternative to direct contact that can be used in contexts where face-to-face contact is not possible.

In addition, we have demonstrated here that imagined contact can prove effective at improving attitudes in a wider range of domains, even those thought to be associated with relatively high levels of uncertainty and mistrust. Previous research has demonstrated the effects of imagined contact with groups with whom there is pervasive discrimination, but not necessarily high levels of societal tension, for example the French, the elderly, and gay people. In the current research, we find that imagined contact can reduce prejudice towards Muslims, a group to which there currently exists considerable animosity in the UK. This strengthens the imagined contact paradigm by demonstrating its versatility, and ability to generalize across diverse contexts. Moreover, it should also leave us optimistic about the potential of imagined contact to be used as an applied intervention to reduce prejudice even in contexts characterized by tense intergroup relations.

Finally, given that it is more difficult for people to control their responses on implicit measures than on explicit measures (Greenwald *et al.*, 1998), the current findings help rule out the alternative explanation that those in the imagined contact condition report more positive attitudes because they believe that this is what the experimenter expects from them.

Suggestions for future research

Research has shown that while explicit attitudes are associated with deliberative behaviours, implicit measures are associated with subtle, indirect, and spontaneous non-verbal behaviours (e.g. McConnell & Leibold, 2001). One future line of inquiry is to

consider whether imagined contact produces more positive deliberative and subtle behaviours, and whether these relationships are mediated by explicit and implicit attitudes, respectively. This is important because, unlike the deliberate behaviours associated with explicit out-group attitudes, behaviours associated with implicit attitudes may be difficult to monitor and inhibit, yet may influence others' perceptions of us. Indeed, if we display negative non-verbal behaviours towards out-group members, for example smiling less and avoiding eye-contact with them, this may, reciprocally, lead to a negative response from them (Chen & Bargh, 1997). If imagined contact can reduce such negative non-verbal behaviours, it may help produce smoother, more successful face-to-face encounters with out-group members in the future.

It is important to acknowledge recent debate over what it is that the IAT measures. Some have argued that the IAT is simply a measure of association (Karpinski & Hilton, 2001), rather than a measure of implicit attitudes (Fazio & Olson, 2003; Wilson *et al.*, 2000). The argument is that in-group-positive, out-group-negative response time advantages reflect greater exposure to these associations (reflecting cultural stereotypes), rather than individual attitudes. Although these debates are critical to interpreting the specific nature of IAT effects, the aim of the experiments reported above was not to speak directly to this debate. Instead, our aim was, more broadly, to investigate whether imagined contact can have a positive effect on an implicit attitude, matching its positive impact on explicit attitudes. The IAT undoubtedly taps important psychological response tendencies that have, at least on some level, important implications for intergroup relations. Regardless of whether the IAT measures attitudes, associations, or culturally held stereotypes, the intervention reported here demonstrates that these biased tendencies can be reduced even at an implicit level. Thus, while the debate may continue and change some aspects of the interpretation of the IAT, the findings we observed remain highly important for attempts to develop imagined contact means of improving intergroup relations. Nonetheless, future research might consider examining the impact of imagined contact on alternative implicit attitude measures.

Finally, it is important to consider the relationship between direct and imagined intergroup contact. Two diverging predictions can be made here. On the one hand, people who have experienced positive imagined contact should have lower levels of explicit and implicit prejudice, and lower levels of anxiety, which should increase the likelihood that, where the opportunities exist, people will engage in rather than avoid direct intergroup contact (Turner, Crisp *et al.*, 2007). On the other hand, people with experience of intergroup contact may find it easier to imagine intergroup contact, having already experience interacting with out-group members. Future work is necessary to investigate and untangle this possible reciprocal relationship.

Summary

Despite its parallels with face-to-face contact, we acknowledge that imagined contact may not have as powerful or long lasting an effect. Direct experiences are thought to produce stronger attitudes on an issue than indirect experiences (Fazio, Powell, & Herr, 1983; Stangor, Sullivan, & Ford, 1991). Supporting this premise, research comparing direct and extended contact typically shows direct contact to have the stronger impact on prejudice (e.g. Paolini, Hewstone, & Cairns, 2007). Accordingly, we might expect it to have a weaker and more temporary effect on out-group attitudes than either of these interventions.

Nevertheless, imagined contact has two distinct advantages over direct contact. First, it may be particularly useful in contexts where intergroup conflict and segregation are high and the opportunity for contact is low as, like with extended contact, an individual does not need to *know personally* an out-group member. Second, imagined contact holds a further advantage over *both* direct and extended contact. Although extended contact can be implemented more widely than direct contact, because an individual only needs to know of an in-group member who has experienced out-group contact, imagined contact goes one step further: no experience of out-group contact, either direct or extended, is necessary to observe improved out-group attitudes. In sum, imagined contact may have a less powerful effect than direct contact, but it can be used as an intervention in contexts where direct contact, and even extended contact, cannot and begin to pave the way to more positive intergroup relations.

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