Article

Enhancing imagined contact to reduce prejudice against people with schizophrenia

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Abstract

Four studies investigated the effect of imagining intergroup contact on prejudice against people with schizophrenia. Experiments 1 and 2 demonstrated that a neutral imagined contact task can have negative effects, compared to a control condition, even when paired with incidental positive information (Experiment 2). Experiments 3 and 4 demonstrated, however, that an integrated positive imagined contact scenario does result in less intergroup anxiety and more positive attitudes, even toward this challenging group. Analyses of participants' descriptions of the imagined interactions in and across the first three studies confirm that positive and high quality imagined contact is important for reducing prejudice, but failing to ensure that imagined contact is positive may have deleterious consequences. We emphasize the importance of investigating the quality of the imagined contact experience, and discuss the implications for using imagined contact as a prejudice-reducing intervention.

Many approaches to reducing intergroup bias focus on ways to improve the quantity or quality of intergroup contact (Hewstone, Rubin, & Willis, 2002), but for some outgroups contact can be difficult to orchestrate, or may involve an element of risk (Corrigan et al., 2002; Schulze & Angermeyer, 2003). Recent research has demonstrated that actual contact may not be necessary to reduce intergroup prejudice; Turner, Crisp, and Lambert (2007) suggested imagined intergroup contact as a means of reducing intergroup bias that is easier and more practical than actual contact. However, despite the promising nature of imagined contact, it has not yet been tested on

the type of targets for whom it has been designed, some of which may pose considerable challenges and, potentially, yield negative rather than positive consequences. In this article, we investigate the possible negative effects of imagined contact with people with schizophrenia. We explore

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modifications to imagined contact in order to increase its effectiveness (and reduce its potential negative effects) in this context.

Imagined intergroup contact

Allport (1954) hypothesized that contact between members of opposing groups, under the right conditions, would lessen intergroup hostility and lead to more positive intergroup attitudes. Over the past 50 years, research involving either actual contact or retrospective reports of past actual contact has widely supported this premise, and contact is now one of the most widely-used social-psychological interventions for the reduction of prejudice and the improvement of intergroup relations (Oskamp & Jones, 2000). However, despite the possible benefits of intergroup contact, the technique is limited in that opportunity for contact is not always available (e.g., Phinney, Ferguson, & Tate, 1997). One solution to this dilemma is to utilize intergroup contact in an indirect manner. One of the most significant recent advances in contact research is the finding that experiencing direct contact may not be necessary for developing more positive intergroup attitudes; simply imagining the intergroup contact may have some of the benefits normally associated with actual contact.

An increasing number of studies have found support for this proposition, demonstrating that imagined contact can reduce intergroup bias and improve both explicit and implicit outgroup attitudes (Turner et al., 2007; Turner & Crisp, 2010), promote the projection of positive traits onto the outgroup (Stathi & Crisp, 2008), and reduce stereotype threat (Abrams et al., 2008). Imagined contact has been characterized as "an inexpensive and practical means of reducing intergroup anxiety and prejudice that would be useful even where direct contact is very limited" (Turner et al., 2007, p. 439; see also Crisp, Stathi, Turner, & Husnu, 2008). However, although imagined contact has been shown to effectively reduce prejudice against certain outgroups, we suggest caution before such a general claim is made. The possibility exists that imagined contact can have negative,

as well as positive, effects, as shown by research on mental imagery, a body of research which can be used to supplement imagined contact.

A wealth of research demonstrates the power of mental imagery. It has a more powerful impact on emotional states than does verbal processing alone (Holmes, Geddes, Colom, & Goodwin, 2008a; Holmes, Mathews, Mackintosh, & Dalgleish, 2008b), provides greater protection against the later induction of opposing moods than verbal processing alone (Holmes, Lang, & Shah, 2009), activates the same areas of the brain as actual perception (Ganis, Thompson, & Kosslyn, 2004; Kosslyn & Thompson, 2003; O'Craven & Kanwisher, 2000), and can be falsely remembered as having really occurred (Thomas, Hannula, & Loftus, 2007).

However, this powerful connection between mental imagery and emotion works in both directions; mental imagery can have negative, as well as positive effects (see Holmes & Mathews, 2010, for a review). While positive imagery increases positive affect more than verbal processing alone (Holmes, Mathews, Dalgleish, & Mackintosh, 2006), it is also true that negative imagery increases negative affect more than verbal processing alone (Holmes & Mathews, 2005). Similarly, Blair, Ma, and Lenton (2001) found that imagining counter-stereotypic images of women led to less implicit bias against women, but they also found that imagining a very "feminine" woman (p. 833) increased implicit bias against women.

Can imagined contact have negative effects?

There are plausible reasons why imagined contact may be ineffective or counter-effective for some of the outgroups for which it was designed; stereotypes about some of these groups, such as people with mental heath problems (Link & Cullen, 1986), are quite unlike stereotypes about other groups for whom imagined contact has been successful, such as homosexual men (Herek, 1986) or the elderly (Brewer, Dull, & Lui, 1981). People with severe mental health problems are stereotyped as dangerous and unpredictable (Angermeyer & Matschinger, 2003),

while homosexual men are seen as effeminate and weak (e.g., Herek, 1986), and the elderly are stereotyped as frail (e.g., Brewer et al., 1981). These differing stereotypes may alter the nature of the imagined contact task, rendering it ineffective or even counter-effective as a prejudice-reducing intervention.

One safeguard against possible *negative* effects has been the recommendation that the imagined contact task be positive, rather than neutral (Crisp et al., 2008). Indeed the increased effectiveness of positive imagined contact tasks, relative to neutral imagined contact tasks, has been empirically demonstrated (e.g., Stathi & Crisp, 2008, Experiment 1). However, most imagined contact research has *not* used the explicitly positive version of the task suggested by Crisp et al. (2008). Researchers largely continue to use a neutral version of the task, similar to the original task used by Turner et al. (2007) (e.g., Abrams et al., 2008; Husnu & Crisp, 2010; Stathi & Crisp, 2008, Experiment 2; Turner & Crisp, 2010, Experiment 1) and have nonetheless found positive results. In four reported studies using a particularly challenging outgroup—people with schizophrenia— we intend to show that neutral imagined contact tasks may indeed have detrimental effects, and that, in the case of this target group, a positive version of the task is not only better, but necessary.

Imagined contact and attitudes toward people with schizophrenia

The stigma of mental illness is devastating (Schulze & Angermeyer, 2003) and ubiquitous (Guimon, Fischer, & Sartorius, 1999; Ng, 1997; Ragurum, Weiss, Channabasavanna, & Devins, 1996; Shibre et al., 2001; Sugiura, Sakamoto, Kijima, Kitamura, & Kitamura, 2000; West, Hewstone, & Holmes, 2010). People with mental illnesses are perceived as dangerous and unpredictable (e.g., Angermeyer & Matschinger, 1996a, 2005; Corrigan, Green, Lundin, Kubiak, & Penn, 2001; Corrigan et al., 2002; Crisp, Gelder, Rix, Meltzer, & Rowlands, 2000; Link & Cullen, 1986; Schulze & Angermeyer, 2003). Moreover, of all people with mental illnesses, persons suffering

from schizophrenia are widely perceived as the most dangerous and suffer the worst stigmatization (Angermeyer & Matschinger, 1996b; Read, 2007; Schulze & Angermeyer, 2003).

Contact with persons suffering from schizophrenia is rare, and members of this group tend to be secretive about their condition in an effort to avoid stigmatization (Schulze & Angermeyer, 2003). Furthermore, in a meta-analysis of all available contact research, Pettigrew and Tropp (2006) reported that the effect of contact on prejudice was weaker for people with mental health problems ($r = -0.184$) than for most other outgroups (e.g., sexual orientation, $r = -0.271$; physically disabled, $r = -0.243$; race, $r = -0.214$). Some research finds that actual contact can have null (e.g., Bell, Johns & Chen, 2006; Crisp et al., 2000) or even negative effects (e.g., Wallach, 2004) on attitudes toward people with mental illnesses.

This renders imagined contact an ideal prejudice-reducing mechanism for this outgroup, but only if it successfully reduces prejudice. However, for the reasons outlined above, this may not be the case; imagined contact with people with schizophrenia may be a very different experience from imagined contact with homosexual men or the elderly, and may consequently have very different effects on prejudice.

Experiment 1

In Experiment 1 we carried out an initial test of the effects of the commonly used neutral imagined contact task on intergroup bias against people with schizophrenia. We followed closely the original study by Turner et al. (2007) in both our instruction set and dependent measures— intergroup anxiety and attitudes toward the outgroup. We instructed participants to imagine interacting with a person with schizophrenia or, in a control condition, to think about people with schizophrenia in general. Intergroup anxiety––a negative state of arousal caused by negative expectations of intergroup interactions (Stephan & Stephan, 1985), and an important mediator of the effects of contact on prejudice (Brown & Hewstone, 2005)—was expected to mediate the

relationship between imagined contact and attitudes.

If the neutral imagined contact task has similar effects on attitudes toward this group as it has on attitudes toward previously studied groups, prejudice against people with schizophrenia should be reduced following the imagined contact task. If not, this imagined contact task may be insufficient to overcome prejudice against this outgroup and, indeed, may even increase prejudice.

Method

Participants and design   Eighty seven undergraduate students at a British university, 33 male and 54 female, aged between 18 and 21 (mean age = 19.84, SD = 0.70), were randomly allocated to one of two conditions, either the imagined contact condition or a control condition. Participants received course credit for taking part in the research.

Procedure   Participants were instructed either to imagine an intergroup interaction with a person with schizophrenia, or to think about people with schizophrenia. These instructions were analogous to the experimental and priming conditions in Experiment 2 of Turner et al. (2007).

We asked participants assigned to the imagined contact condition to take 5 minutes to imagine meeting, for the first time, a stranger who has schizophrenia. They were asked to "Imagine their appearance, the conversation that follows and, from what you learn, all the different ways you could classify them into different groups of people". Participants assigned to the control condition were instructed to complete a priming task as follows: "We would like you to take 5 minutes to think about schizophrenics".

At the same time, both sets of participants also received the following instructions: "We want you to spend the time thinking, but also please write down, from time to time, the things that you imagine. Please write clearly and feel free to write down whatever springs to mind". In both conditions, participants were given 5 minutes to

complete the task. Following this manipulation, participants reported their levels of intergroup anxiety and attitudes toward people with schizophrenia using exactly the same measures used by Turner et al. (2007).

To assess intergroup anxiety, participants were asked to complete a shortened measure based on Stephan and Stephan (1985): "If you were to meet a schizophrenic in the future, how do you think you would feel?" They reported, on a 7-point scale, how "Awkward", "Happy" (reversed), "Self-Conscious", "Competent" (reversed), and "Relaxed" (reversed) they would feel (1 = Not at all, 7 = Very; Cronbach's α = .80).

To measure attitudes, participants were asked, "Please describe how you feel about schizophrenics in general", responding to 6 items (from Wright et al., 1997) on 7-point semantic differential scales: cold–warm, positive–negative (reversed), friendly–hostile (reversed), suspicious–trusting, respectful–contempt (reversed), admiration–disgust (reversed); Cronbach's α = .81.

To assess the quality of the imagined interactions described in the imagined contact condition, two independent raters (unaware of hypotheses and blind to experimental condition) reported, on 7-point Likert scales, how "Pleasant", "Friendly", "Negative" (reversed), "Enjoyable", "Difficult" (reversed), "Cooperative", "Natural" and "Superficial" (reversed) the participants' descriptions of the imagined interactions with the person suffering from schizophrenia had been (1 = Not at all, 7 = Very; Rater 1 α = .75, Rater 2 α = .87).

Participants in the control condition engaged in a cognitive task that was conceptually different from an imagined contact task. Instead of imagining interacting with a person with schizophrenia, they simply thought about the target group. Consequently, it was not possible to rate imagined interactions for participants in the control condition, and comparisons between the tasks in the two conditions were not theoretically meaningful.

After completing the dependent measures and providing demographic information, participants were asked what they thought the aim of the

study was. No participant reported any knowledge or suspicion of our hypotheses. To control for order effects the dependent measures were counterbalanced, and no order effects were detected.

Results and discussion

Comparisons between conditions Table 1 displays the means and standard deviations of all dependent variables in Experiment 1. To determine whether imagining intergroup contact with a person with schizophrenia led to less intergroup anxiety and more positive attitudes we computed planned independent-sample *t*-tests. Participants in the imagined contact condition, in fact, reported *more* intergroup anxiety (*M* = 4.73) than participants in the control condition (*M* = 4.12), *t*(85) = 3.16, *p* = .002, *d* = .69. We also found no difference in reported attitudes between the imagined contact condition (*M* = 4.31) and the control condition (*M* = 4.52,), *t*(85) = 1.30, *p* = .207, *d* = .28.

Analyses of free-response data We hypothesized that negative imagined interactions could increase, rather than decrease, prejudice against people with schizophrenia. We tested this hypothesis in two ways, using the ratings of imagined contact descriptions rated by the two independent coders. First, we investigated the quality of the imagined contact. Quality scores below the midpoint of the scale indicate an overall negative imagined contact experience. Second, we investigated the relationship between quality of imagined contact and both dependent measures—intergroup anxiety and attitudes. The quality of imagined contact ratings were highly correlated between the two raters (*r* = .57,

p = .002). Consequently, we used the mean of the quality of contact scores of the two raters as our index of quality of imagined contact.

Results confirmed that imagined contact had been a negative rather than a positive experience. Using a one-sample t-test, we found that quality of imagined contact scores (*M* = 3.04) were below the midpoint of the scale (4), *t*(33) = 7.93, *p* < .001, *d* = 2.76. Also the quality of imagined contact scores were negatively skewed: scores for 31 of the 34 participants in the imagined contact condition fell below the midpoint of the scale. However, in this experiment, we did not find a relationship between quality of imagined contact and either intergroup anxiety (*r* = −.08, *p* = .49), or attitudes (*r* = −.03, *p* = .71).

In summary, while Turner and colleagues (2007) found less intergroup anxiety and more positive attitudes following the imagined contact task, using similar instructions but a different outgroup we found an *increase* in intergroup anxiety and no change in attitudes following the imagined contact task. Furthermore, the imagined interactions described by participants in our imagined contact condition were mostly negative. These results suggest that imagining contact with people with schizophrenia could be of a different nature than imagined contact with homosexuals or the elderly and may *increase*, rather than decrease, prejudice against them. As it stands this experiment cautions against interventions that use this form of imagined contact to combat prejudice against people with particular mental illnesses. The question remains: can a more positive imagined contact task reduce prejudice against this target group?

Table 1. Means and standard deviations of dependent variables as a function of imagined contact condition (Experiment 1)

	Imagined Contact	Control	*t*	*df*	*p*
Anxiety	4.73 (.74)	4.12 (1.02)	3.16	85	.002
Attitudes	4.31 (.71)	4.52 (.81)	1.30	85	.21
Quality	3.04 (.70)		7.93	33	< .001

Notes: Standard deviations shown in parentheses. Quality of imagined contact in the imagined contact condition is compared to the midpoint of the scale (4).

Experiment 2

In Experiment 1, imagined intergroup contact *increased* intergroup anxiety and did not positively affect attitudes toward people with schizophrenia. Moreover, the imagined interactions described by the participants were overall negative. There are a number of possible explanations for these results, which we addressed in Experiment 2.

First, it is possible that the *priming task* used in the control condition of Experiment 1 *decreased* intergroup anxiety, and not that the imagined contact task increased it. Though category priming usually increases intergroup prejudice (Dovidio, Brigham, Johnson, Gaertner, 1996), it is possible that thinking about members of an outgroup described as *ill* or *suffering* could lead to an increase in empathy and thus more positive attitudes (see Batson et al., 1997). We thus removed the priming task in Experiment 2. Participants in the control condition were not instructed to engage in any mental imagery.

Second, the nature and severity of the stereotypes of people suffering from schizophrenia may have rendered the content of the imagined contact exercise negative, resulting in *increased* intergroup anxiety following the imagined contact task. We consequently attempted to counteract these negative stereotypes by providing participants with positive information before they completed the imagined contact task.

The effectiveness of integrating positivity into the imagined contact task has already been demonstrated with other outgroups (Stathi & Crisp, 2008, Experiment 1; Turner & Crisp, 2010, Experiment 2). However, the effects of positive information external to the task have not yet been tested. Much research indicates that stereotype-inconsistent information can alter stereotypes (for a review see Hewstone, 1994) and that prior information has strong effects on our expectations and interpretations of others (Darley & Gross, 1983). We thus investigated the effect of external stereotype-disconfirming information on the effectiveness of the imagined contact task in Experiment 2.

To do so we gave half the participants positive information about people with schizophrenia before the imagined contact task. We designed this positive information to be the opposite of the commonly-held stereotypes about people who suffer from schizophrenia: that they are dangerous, unpredictable, mentally or emotionally different, and difficult to talk to (Crisp et al., 2000). We thus created four factual vignettes, each one about a different, real person with schizophrenia who did not possess these stereotypical traits. Participants in the neutral information conditions received almost identical vignettes, in which the subjects of the vignettes did not have schizophrenia.

We gave participants factual positive information about real, well known people in order to maximize their belief that the information was true. However, we were aware that this method could also lead to subtyping effects, which occur when the outgroup member has too few traits that identify him or her as stereotypical of the outgroup to which he or she belongs (Brown & Hewstone, 2005; Hewstone, 1994). Participants could subtype the people described in the vignettes, preventing the positive information from affecting the imagined contact task. Alternatively, participants could subtype the people in the vignettes *and* the person in the imagined contact task, preventing the imagined contact task from affecting either intergroup anxiety or attitudes. It is also possible that both of these effects occur to some degree, as they are not mutually exclusive.

Thus in Experiment 2 we predicted that, if positive information alters the nature of the imagined contact task, we would find an interaction between imagined contact and positive information; imagined contact should result in less prejudice in the positive information condition, but not in the neutral information condition. However, if the positive information does not affect the imagined contact task, we should only find two main effects—positive information should reduce prejudice, and imagined contact should increase prejudice, but we should find no interaction. Moreover, if positive

information alters the nature of the imagined contact task, quality of imagined contact should be higher in the positive information condition than in the neutral information condition. If positive information does not affect the imagined contact task, we should find no difference in quality of imagined contact scores between the two conditions.

A final possible criticism of Experiment 1 is that the dependent variables used—intergroup anxiety and attitudes—were generally applicable to all outgroups but did not incorporate any specific aspects of the stigma most commonly associated with schizophrenia. In previous research on imagined contact (see Turner et al., 2007) general measures of attitudes toward outgroups have been combined with more specific measures (in that case, measures of attitudes toward homosexual men) to produce dependent measures that were more relevant for the target group in question.

As mentioned before, people with mental illnesses, especially those with schizophrenia can be perceived as dangerous and unpredictable (Angermeyer & Matschinger, 1996a; 1996b; Crisp et al., 2000). The effect of contact in reducing perceptions of dangerousness has been demonstrated experimentally (e.g., Corrigan et al., 2002). In Experiment 2 we modified the dependent variables to include perceptions of dangerousness, fear and avoidance as well as intergroup anxiety and attitudes. These modifications explored a more relevant set of effects of imagined contact on prejudice against persons with schizophrenia than did the dependent variables in Experiment 1.

Method

Participants and design Ninety-nine undergraduates at a British University, 46 male and 53 female, aged between 18 and 25 (mean age = 19.48, SD = 1.49), were randomly allocated to the four cells of a 2 (Information: Positive vs. Neutral) × 2 (Condition: Imagined contact vs. Control) factorial design. Participants received course credit for taking part in the research.

Materials

For the positive information conditions we created four factual vignettes about counter-stereotypic persons with schizophrenia. All persons described in the vignettes were real people who suffered from schizophrenia, and all facts about them were true. They were described as mentally coherent, in touch with the world, predictable, neat or well dressed, socially skilled and non-aggressive. Participants in the positive information condition read vignettes about Meera Popkin, John Nash, Tom Harell, and Andy Goram.

Participants in the neutral-information conditions received almost identical vignettes, but the subjects of these vignettes did *not* have schizophrenia. These participants read vignettes about Betty Buckley, Rienhard Selten, Arturo Sandoval, and David Beckham (see Appendix 1 for the full vignettes).

Procedure

The procedure was identical to Experiment 1 with two exceptions; all participants were presented with four vignettes before the imagined contact exercise, and participants in the control condition engaged in no imagined activity, rather than a priming task. To ensure that participants thoroughly read the vignettes, they completed measures assessing how much they knew about each person beforehand, and how much they learned from each vignette.

To assess perceptions of dangerousness, fear, and avoidance of persons with schizophrenia, participants responded to nine questions on 7-point Likert scales, three of which measured each construct. The nine questions were presented in one of two randomized orders. These questions were identical to those used by Corrigan et al. (2002), except that the phrase *person with schizophrenia* replaced the phrase *mentally ill person* in each question.

Thus, to assess perceptions of dangerousness, we asked participants to respond to the following statements: "I would feel unsafe around persons

with schizophrenia" (1 = Strongly Agree, 7 = Strongly Disagree) (reversed), "How dangerous do you feel a person with schizophrenia is?" (1 = Not at all, 7 = Very much), and "I would feel threatened by a person with schizophrenia" (1 = Not at all, 7 = Yes, absolutely), (α = .76).

To assess fear, we asked participants to respond to the following statements: "Persons with schizophrenia terrify me". (1 = Not at all, 7 = Very much), "How scared of a person with schizophrenia would you feel?" (1 = Not at all, 7 = Very much), and "How frightened of a person with schizophrenia would you feel?" (1 = Not at all, 7 = Very Much), (α = 0.78).

To assess avoidance, we asked participants to respond to the following statements: "I think persons with schizophrenia pose a risk to other people unless they are hospitalized" (1 = Not at all, 7 = Very much), "I would try to avoid a person with schizophrenia". (1 = Definitely, 7 = Definitely not) (reversed), "If I were a landlord, I probably would rent an apartment to a person with schizophrenia". (1 = Definitely, 7 = Definitely not), (α = 0.75).

In the Corrigan et al. (2002) paper from which the perceptions of dangerousness, fear and avoidance measures were taken, the direct effect of perceptions of dangerousness on fear was unusually high (β = .99, p < .001). We therefore suspected that all these items, in fact, loaded on the same factor. We therefore conducted a factor analysis of the 6 items, which revealed only 1 factor with an eigenvalue over 1. Consequently we combined all 6 items into a single *Fear* scale (α = .88). This new 6-item Fear scale was then combined with the 5-item intergroup anxiety scale used in Experiment 1. This produced a reliable 11-item intergroup anxiety scale (α = 0.91). Factor analysis on all 11 items revealed only 1 factor with an eigenvalue over 1.

Similarly, the 3 items in the avoidance scale used by Corrigan et al. (2002) describe a desire to maintain distance between the self and persons with schizophrenia, but only 1 includes a behavioral intention related to avoidance. None assesses either past behavior or expected future behavior. Consequently we reverse-coded these 3 items and added them to the 6-item attitudes scale used in

Experiment 1. This produced a reliable 9-item attitude scale (α = 0.78). Factor analysis revealed 2 factors with eigenvalues greater than 1, but all items loaded more heavily on the first factor than on the second. When forced into a 1-factor solution, all items loaded well on that factor (0.48 < λ < 0.72). We thus used the 11-item intergroup anxiety scale and the 9-item attitudes scale for all analyses instead of the scales used in Experiment 1. Combining separate scales in this manner to produce intergroup anxiety and attitude measures that are more relevant to the group at hand has been done successfully in previous imagined contact research (see Turner et al., 2007).

Quality of imagined interaction in the imagined contact condition was assessed as it was in Experiment 1, using the same scale that was used in Experiment 1, and using two raters blind to experimental condition and unaware of hypotheses (Rater 1, α = 0.93; Rater 2, α = 0.93). Participants in the control condition did not engage in an imagined activity, which rendered ratings of imagined contact in the control condition and comparisons between the imagined contact and conditions impossible.

After completing the dependent measures and providing demographic information, participants were asked what they thought the aim of the study was. No participant reported any knowledge or suspicion of our hypotheses. To control for order effects the dependent measures were counterbalanced, and no order effects were detected.

Results and discussion

Table 2 displays the means and standard deviations of all dependent variables in Experiment 2. We investigated the effects of positive information and imagining intergroup contact on the dependent measures by conducting a 2 (Information: Positive vs. Neutral) × 2 (Condition: Imagined contact vs. Control) between-subjects analysis of variance (ANOVA).

Comparisons between conditions
Intergroup anxiety We found a main effect of positive information; participants in the positive

Table 2. Means and standard deviations of all dependent variables as a function of information type and imagined contact (Experiment 2)

	Positive Information		Neutral Information	
	Imagined Contact	Control	Imagined Contact	Control
Anxiety	3.19 (1.12)	2.88 (.72)	3.92 (.74)	3.52 (.83)
Attitudes	4.91 (.81)	5.02 (.63)	4.41 (.55)	4.46 (.77)
Quality	4.56 (1.19)		3.89 (1.07)	

Note: Standard deviations shown in parentheses.

information condition reported less intergroup anxiety toward people suffering from schizophrenia ($M = 3.03$) than did participants in the neutral information condition ($M = 3.72$), $F(1, 98) = 15.63$, $p <. 001$, $\eta_p^2 = .14$. We also found a main effect of imagined contact; as in Experiment 1, participants in the imagined contact condition reported *more* intergroup anxiety ($M = 3.55$) than did participants in the control condition ($M = 3.20$), $F(1, 98) = 4.02$, $p = .048$, $\eta_p^2 = .041$. There was no interaction of positive information and imagined contact on intergroup anxiety, $F(1, 98) = .064$, $p = .80$, $\eta_p^2 = .001$.

Attitudes We found a main effect of positive information; participants in the positive information condition reported more positive attitudes toward people suffering from schizophrenia ($M = 4.97$) than did participants in the neutral information condition ($M = 4.44$), $F(1, 98) = 14.07$, $p < .001$, $\eta_p^2 = .13$. As in Experiment 1, we did not find a main effect of imagined contact; we found no difference in attitudes between participants in the imagined contact condition ($M = 4.66$) and those in the control condition ($M = 4.74$), $F(1, 98) = .32$, $p = .57$, $\eta_p^2 = .003$. There was no interaction of positive information and imagined contact on attitudes $F(1, 98) = .037$, $p = .85$, $\eta_p^2 < .001$.

Mediational analyses We investigated whether the effect of positive information on attitudes was mediated by intergroup anxiety using the procedure recommended by Baron and Kenny (1986). Across the imagined contact and control conditions, there was a significant path between positive information and attitudes, $\beta = .53$, $p < .001$. Positive information also predicted the mediator, intergroup anxiety, $\beta = -.69$, $p < .001$. The path between intergroup anxiety and attitudes, while controlling for the predictor, was significant $\beta = -.48$, $p < .001$, and when the mediator was controlled the path between positive information and attitudes became nonsignificant, indicating complete mediation, $\beta = .21$, $p = .092$. A Sobel test was significant, $Z = 3.44$, $p < 0.001$.

Analyses of free-response data As in the previous experiment, quality of imagined contact ratings made by two independent raters were highly correlated ($r = .79$, $p < .001$). Consequently, we used their mean score as our index of quality of imagined contact.

We investigated whether positive information altered the imagined contact exercise by comparing the quality of the imagined interaction in the positive information condition to that in the neutral information condition. If the positive information affected the nature of the imagined contact task, the quality of the imagined interaction in the positive information condition should be higher than in the neutral information condition. However, the difference in quality of imagined contact scores between the positive information condition ($M = 4.51$) and the neutral information condition ($M = 3.89$) only approached significance $t(41) = 1.78$, $p = .083$, $d = .56$. This finding is consistent with our proposition that the positive exemplars may have been subtyped, preventing the positive information from significantly affecting the imagined contact task.

We also investigated the relationship between quality of imagined contact and both dependent variables—intergroup anxiety and attitudes. Across both the positive and neutral information conditions, quality of imagined contact predicted both attitudes, $\beta = .36$, $p < .001$, and the mediator intergroup anxiety, $\beta = -.53$, $p < .001$. The path between intergroup anxiety and attitudes, while controlling for quality of imagined contact, was significant $\beta = -.41$, $p < .001$, and when the mediator was controlled the path between quality of imagined contact and intergroup anxiety became nonsignificant, indicating complete mediation, $\beta = .15$, $p = .086$. A Sobel test was significant; $Z = 3.22$, $p < .001$.

To summarize, in Experiment 2, using a more detailed set of response scales, we found that positive information improved attitudes toward people with schizophrenia, and that this relationship was mediated by a decrease in intergroup anxiety. However, as in Experiment 1, imagined contact *increased* intergroup anxiety toward people with schizophrenia, and had no effect on attitudes. There was no interaction between positive information and imagined contact, indicating that the positive information about people with schizophrenia, given before the imagined contact task, did not affect responses to the imagined contact task. This result was bolstered by the finding that positive information did not significantly alter the rated quality of the imagined interaction described by the participants.

We did, however, find some promising evidence for this kind of intervention in that the effectiveness of the imagined contact task depended on the quality of the imagined interaction: higher quality of imagined contact predicted more positive attitudes, and this relationship was mediated by a decrease in intergroup anxiety.

Experiment 3

In Experiments 1 and 2 we found that the widely-used neutral imagined contact task had a negative effect on intergroup anxiety and no effect on attitudes, despite giving participants positive information about persons with schizophrenia before the imagined contact task (Experiment 2). Positive information had positive effects on the measures of both intergroup anxiety and attitudes, but did not appear to alter the effectiveness of the imagined contact task.

We then investigated whether positive information integrated into the imagined contact task would render it more effective in reducing prejudice against this outgroup. Integrating positivity into the imagined contact task has been shown to produce more positive effects (Stathi & Crisp, 2008, Experiment 1), but only for target groups for whom the neutral task also produced positive effects. Integrating positivity into the task has never been tested for an outgroup with whom the neutral imagined contact task failed, or produced negative effects. We tested this idea in Experiment 3 by creating a more specific, explicitly positive imagined contact scenario involving a real person with schizophrenia.

In Experiment 2, the positive information did not significantly affect the nature of the imagined contact task, possibly because the celebrities used as positive information were subtyped. For this reason we did not use celebrities for the imagined contact task in Experiment 3. Instead we constructed a scenario based on another real, but less atypical, person with schizophrenia—Dr Rufus May. Student participants in this condition were instructed to imagine that the Rector of their college had invited them to dine with the faculty at their college (a prestigious event for any student), and that the Rector's friend, Dr Rufus May, would be dining with them. Dr Rufus May was factually described as a clinical psychologist who was diagnosed with schizophrenia at age 18, and a leading expert in psychiatric treatment. Very little information was given about Dr Rufus May in order to avoid both subtyping effects and giving participants explicitly positive information about the person, rather than the scenario.

It is, however, possible that something in the explicitly positive imagined contact scenario other than the imagined contact task itself could lead to a reduction in prejudice. In Experiment 3 we controlled for this possibility by giving participants in the control condition an explicitly

positive imaginary scenario almost identical to that of the imagined contact condition. Participants in the control condition also imagined dining with the Rector and the Rector's friend; however, in this case the Rector's friend was Mr Jay Wright, a poet who did not suffer from schizophrenia.

Thus, in this experiment, participants in both the imagined contact and control conditions engaged in an imagined interaction task, the former with a person with schizophrenia, the latter with a person who did not have schizophrenia. Consequently, it was possible to compare the quality of the imagined interaction between the two conditions. We predicted that quality of the imagined interaction would be high in both the imagined contact and control conditions. Furthermore, quality of imagined contact should affect both intergroup anxiety and attitudes in the imagined contact condition. However, quality of imagined contact in the control condition should have no effect on either of the two dependent variables because the interaction partner is not a member of the chosen target group.

We hypothesized that our new, positive imagined contact task would result in more positive attitudes and that the effect of imagined contact on attitudes would be mediated by a reduction in intergroup anxiety. In other words, though the imagined contact task used in Experiments 1 and 2 resulted in more intergroup anxiety and no change in attitudes, even when preceded by positive information about the target group (Experiment 2), we hypothesized that the modified imagined contact task in Experiment 3 would successfully decrease intergroup anxiety and improve attitudes toward people with schizophrenia. Moreover, we predicted that the effectiveness of this modified imagined contact task would be due to the improved quality of the imagined interaction, relative to the imagined interactions in Experiments 1 and 2.

Method

Participants and design Thirty-eight undergraduate students at a British university, 8 male and 30 female, aged between 17 and 21 (mean age = 18.53, SD = 0.86), were randomly allocated to either an imagined contact condition with a person with schizophrenia or a control condition involving imagined contact with a person without schizophrenia. Participants received course credit for taking part in the research.

Procedure The procedure was identical to that of Experiment 1 with two exceptions; the situation in the imagined contact scenario with the person with schizophrenia was altered to be less vague and explicitly positive, and participants in the control condition engaged in an explicitly positive imagined scenario (but not with a member of the outgroup) instead of a priming task (see Appendix 2 for full instructions given). Dependent variables were the same 11-item intergroup anxiety (α = .93) and 9-item attitudes scales (α = .86) used in Experiment 2. Quality of imagined interaction was assessed as it was in Experiments 1 and 2 (Rater 1, α = .76; Rater 2, α = .88).

Results and discussion

Table 3 displays the means and standard deviations of all dependent variables in Experiment 3. Because our sample contained far fewer males than females, we first tested whether males and females were unequally distributed across the two groups and whether gender predicted either of the dependent measures. The difference between the gender distribution in the imagined contact condition (2 males, 18 females) and in the control condition (6 males, 12 females), only approached significance χ^2 = 3.10, p = .078.

Furthermore, males (M = 3.06, SD = .56) did not differ from females (M = 3.47, SD = 1.17) in their intergroup anxiety scores, $t(36)$ = .97, p = .34. Nor did males (M = 4.92, SD = .51) and females (M = 5.04, SD = .93) differ in their attitude scores, $t(36)$ = .37, p = .71.

Comparisons between conditions To determine whether imagining intergroup contact led to less intergroup anxiety and more positive attitudes

Table 3. Means and standard deviations of all dependent variables as a function of imagined contact condition (Experiment 3)

	Imagined Contact	Control	t	df	p
Anxiety	3.01 (.91)	3.80 (1.12)	3.16	36	.021
Attitudes	5.37 (.71)	4.63 (.86)	2.91	36	.006
Quality	5.21 (.77)	5.28 (.93)	0.28	37	.78

Notes: Standard deviations shown in parentheses.

toward people with schizophrenia, we conducted planned independent-sample *t*-tests. Participants in the imagined contact condition ($M = 3.01$) reported less intergroup anxiety than participants in the control condition ($M = 3.80$), $t(36) = 2.41$, $p = .021$, $d = .80$, and also reported more positive attitudes toward people with schizophrenia ($M = 5.37$) than did participants in the control condition ($M = 4.63$), $t(36) = 2.91$, $p = .006$, $d = .97$.

Mediational analyses   There was a significant path between imagined contact and attitudes, $\beta = .74$, $p = .006$. Imagined contact also predicted the mediator intergroup anxiety, $\beta = -.79$, $p = .021$. The path between intergroup anxiety and attitudes while controlling for imagined contact was significant $\beta = -.61$, $p < .001$, and when the mediator was controlled the path between imagined contact and intergroup anxiety became nonsignificant, indicating complete mediation, $\beta = .25$, $p = .15$. A Sobel test was significant; $Z = 2.29$, $p = .01$.

Analyses of free response data in experiment 3   As in the previous experiments, quality of imagined contact ratings were were rated by two independent raters, blind to experimental condition and unaware of hypotheses; the two raters' ratings were highly correlated, $r = .81$, $p < .001$, and we used the mean of the scores of the two raters as our index of quality of imagined contact.

As expected, we found no differences in quality of imagined interaction between the imagined contact condition ($M = 5.21$) and the control condition ($M = 5.28$), $t(37) = .28$, $p = .78$, $d = .09$. Results also confirmed that, unlike in Experiment

1, imagined contact had been a positive rather than a negative experience. Using a one-sample *t*-test, we found that quality of imagined contact scores were significantly higher than the midpoint of the scale in both the imagined contact condition, $t(19) = 7.02$, $p < .001$, $d = 3.22$, and the control condition, $t(18) = 6.05$, $p < .001$, $d = 2.85$. Also the quality of imagined contact scores were positively skewed: scores for all participants in the imagined contact condition fell above the midpoint of the scale. We did not, however, find relationships between quality of imagined contact and either intergroup anxiety ($r = -.25$, $p = .14$) or attitudes ($r = .18$, $p = .29$).

Analyses of free response data across experiments 1–3   We specifically hypothesized that the effectiveness of the imagined contact task in Experiment 3, and the ineffectiveness of the task in Experiments 1 and 2, would be explained by a higher quality of imagined interaction in Experiment 3 relative to Experiments 1 and 2. We tested this hypothesis in two ways, again using two independent raters (blind to experimental condition) to rate the imagined contact descriptions. First, we tested whether the quality of imagined contact was higher in Experiment 3 than in Experiments 1 and 2. Second, we tested whether the quality of imagined contact predicted attitudes toward people with schizophrenia across all three experiments, and whether intergroup anxiety mediated this relationship.

For the purposes of analysing the free-response data, we used only the imagined contact conditions from all three experiments. The control tasks in all three experiments were conceptually quite different which would prevent a meaningful comparison: in Experiment 1

participants in the control condition thought about "schizophrenics"; in Experiment 2 they engaged in no imagined activity at all; and in Experiment 3 they imagined a pleasant dinner conversation with a poet who did not suffer from schizophrenia. Of the imagined contact conditions in Experiment 2, only the positive information condition was included. The positive information condition was more relevant to these analyses than was the neutral information condition, as it was the condition in which the imagined contact task was modified to be more positive.

The quality of imagined contact scale was reliable (Rater 1, $\alpha = .94$, Rater 2, $\alpha = .93$), and highly correlated between the two raters ($r = .84$, $p < .001$) across all three experiments. We used the mean of the scores of the two raters as our index of quality of imagined contact.

Comparisons between experiments We investigated the differences in quality of imagined contact between the three experiments by conducting a one-way ANOVA, using 'experiment' as the independent variable and quality of imagined contact as the dependent variable. As expected, the mean quality of imagined contact scores differed across the three experiments, $F(2, 77) = 41.58$, $p < .001$, $\eta_p^2 = .53$. Post-hoc simple main effects tests revealed that the quality of imagined contact in Experiment 3 ($M = 5.21$) was higher than the quality of imagined contact both in Experiment 1 ($M = 3.04$, $p < .001$) and Experiment 2 ($M = 4.51$, $p = .036$).

The quality of imagined contact in Experiment 2 was higher than the quality of imagined contact in Experiment 1 ($p < .001$), suggesting that the positive information in Experiment 2 did have some effect on the imagined interaction. However, the higher quality of imagined interaction in Experiment 3, relative to Experiment 2, is consistent with the possibility that the positive exemplars used in Experiment 2 were subtyped to some extent.

Mediational analyses Across all three experiments there was a significant path between quality of imagined contact and attitudes, $\beta = .35$, $p < .001$.

Quality of imagined contact also predicted the mediator, intergroup anxiety, $\beta = -.67$, $p < .001$. The path between intergroup anxiety and attitudes, while controlling for quality of imagined contact, was significant $\beta = -.43$, $p < .001$, and when the mediator was controlled the path between quality of imagined contact and intergroup anxiety became nonsignificant, indicating complete mediation, $\beta = .063$, $p = .41$. A Sobel test was significant; $Z = 4.56$, $p < .001$.

To summarize, in Experiment 3, the quality of the imagined interaction with the person with schizophrenia was overall high, and imagined contact resulted in more positive attitudes toward people with schizophrenia; and this effect was mediated by a reduction in intergroup anxiety. Comparing the results across all three studies showed that quality of imagined contact in Experiment 3 was higher than in Experiments 1 and 2, that higher quality of imagined contact led to improved attitudes across all three experiments, and a reduction in intergroup anxiety mediated this relationship.

Experiment 4

In Experiment 3 we found that a modified, explicitly positive imagined contact task reduced intergroup anxiety and led to more favourable attitudes toward people with schizophrenia. Nonetheless, there remain some possible criticisms of Experiment 3 that leave the results open to alternative explanations.

One possible criticism is that the contact task used in Experiment 3 inadvertently provided participants with positive information. Though that was not our intention, it is possible that the knowledge that the interaction partner who had schizophrenia was working as a psychotherapist was enough information to counteract some of the negative stereotypes associated with schizophrenia. Thus, in Experiment 3 there may have been a confound between imagined contact and positive information, and it consequently remained unclear whether the imagined contact task was having any effects beyond that of giving participants positive information. In Experiment

4, to rule out this possible confound, we gave participants in both the imagined contact and control conditions exactly the same information.

Another criticism of Experiment 3 is that it only demonstrates the usefulness of an extremely specific, extremely positive imagined contact scenario with one interaction partner. In Experiment 4, to investigate whether positive imagined contact can reduce prejudice using a less extreme scenario, we reduced the explicit positivity of the situation by changing it from a congratulatory dinner to a chance meeting in a train station. Furthermore, to investigate whether an imagined interaction with a different person who had schizophrenia would also have positive effects, we used another person—Tom Harell—instead of Dr Rufus May, the imagined interaction partner in Experiment 3.

Participants in both conditions were asked to imagine that they were waiting for a train, and that they saw two very similar men walk into the train station—Tom Harrell (who has schizophrenia) and Arturo Sandoval (who does not have schizophrenia). Participants in the imagined contact condition were then asked to imagine that Arturo Sandoval boarded his train and left, while Tom Harrell took the seat next to them and engaged in a pleasant conversation. By contrast, participants in the control condition were asked to imagine that Tom Harrell boarded his train and left while Arturo Sandoval took the seat next to them and engaged them in a pleasant conversation (for full instructions see Appendix 3).

Method

Participants and design   Forty-seven undergraduate students at a British university, 16 male and 31 female aged between 18 and 26 (mean age = 18.72, SD = 1.31) were all given the same information about one person who had schizophrenia and another person who did not have schizophrenia. Participants were then randomly allocated to either an imagined contact condition with the person with schizophrenia or a control condition involving imagined contact with the person without schizophrenia. Participants received course credit for taking part in the research.

Procedure   The procedure was similar to that of Experiment 3 with three exceptions: (1) all participants received exactly the same information, (2) the interaction partner in the imagined contact condition was changed from Dr Rufus May to Tom Harell, and (3) the positivity of the scenario was toned down by shifting it from a congratulatory dinner to a chance meeting in a train station. Dependent variables were the same 11-item intergroup anxiety (α = .71) and 9-item attitudes (α = .77) scales used in Experiments 2 and 3.

Results and discussion

Comparisons between conditions   Table 4 displays the means and standard deviations of all dependent variables in Experiment 4. To determine whether imagining intergroup contact led to less intergroup anxiety and more positive attitudes toward people with schizophrenia, we conducted planned independent-sample t-tests. Participants in the imagined contact condition reported less intergroup anxiety (M = 2.85) than did participants in the control condition (M = 3.53), t(45) = 2.69, p = .010, d = .80. Participants in the imagined contact condition also reported more positive attitudes toward people with schizophrenia (M = 5.36) than did participants in

Table 4. Means and standard deviations of all dependent variables as a function of imagined contact condition (Experiment 4)

	Imagined Contact	Control	t	df	p
Anxiety	2.85 (.73)	3.53 (1.01)	2.69	45	.010
Attitudes	5.36 (.62)	4.96 (.62)	2.12	45	.032

Notes: Standard deviations shown in parentheses.

the control condition ($M = 4.96$), $t(45) = 2.12$, $p = .032$, $d = .63$.

Mediational analyses   There was a significant path between imagined contact and attitudes, $\beta = .40$, $p = .032$. Imagined contact also predicted the mediator intergroup anxiety, $\beta = -.68$, $p = .010$. The path between intergroup anxiety and attitudes while controlling for imagined contact was significant $\beta = -.36$, $p < .001$, and when the mediator was controlled the path between imagined contact and intergroup anxiety became nonsignificant, indicating complete mediation, $\beta = .16$, $p = .37$. A Sobel test was significant; $Z = 2.20$, $p = .01$.

In summary, in Experiment 4 an explicitly positive imagined contact task resulted in more favourable attitudes toward the outgroup, and intergroup anxiety mediated this relationship. The positive effects of imagined contact could not be attributed to inadvertent positive information as participants in both conditions received exactly the same information.

General discussion

Imagining intergroup contact is potentially an easy, safe and effective intervention for the reduction of intergroup prejudice that circumvents the necessity of opportunity for contact. It has previously been shown to have positive effects on attitudes toward some outgroups including the elderly, homosexual men (Turner et al., 2007), and certain people of different ethnicities and nationalities (Stathi & Crisp, 2008). However, the groups for whom imagined contact has been shown to work so far are groups for which opportunities for contact are either generally available, or easy to orchestrate. Prior to the studies reported here, imagined contact had not yet been shown to reduce prejudice against groups for whom it was designed—challenging groups for whom actual contact may be difficult or impractical to orchestrate. Furthermore, the very real possibility that certain forms of the imagined contact task could *increase* prejudice against members of these challenging groups has never been explored.

In two studies (Experiments 1 & 2), we demonstrated that the imagined contact task, as operationalized by Turner et al. (2007), was not effective at reducing prejudice against a challenging outgroup—people who suffer from schizophrenia—and, in fact, *increased* intergroup anxiety toward members of this outgroup. We further found that this increase in intergroup anxiety was not affected by positive information external to the imagined contact task (Experiment 2). However, two major advantages of imagined intergroup contact over actual intergroup contact are the malleability and the controllability of the imagined contact scenario, and we therefore sought to manipulate the imagined contact scenario explicitly.

In Experiments 3 and 4, we modified and thereby constrained the imagined contact task itself to make it explicitly pleasant, and to involve more typical outgroup members. These changes yielded positive effects of imagined contact on prejudice against persons with schizophrenia. In Experiment 4, by giving all participants positive information, we demonstrated that this effect could not merely be attributed to inadvertent positive information. We now discuss these findings with reference to the plausibility of study characteristics, and moderators of the effectiveness of imagined contact.

Study characteristics

Critics of Experiments 3 and 4 could argue that the explicitly positive imagined scenarios might have raised the suspicion of participants. However, participants indicated no awareness of the hypotheses of any of the four experiments. Furthermore, Turner and Crisp (2010), by demonstrating that imagined contact improved implicit, as well as explicit, attitudes, ruled out demand characteristics as an explanation of the effects of imagined contact. The scenarios we used appear to have given no more indication of the purpose of the study than did the original imagined contact task (as used by Turner et al., 2007) or more positive versions of the task used in subsequent research (e.g., Stathi & Crisp, 2008; Turner & Crisp, 2010).

Another possible criticism of Experiment 3 is that the effects are attributable to a possible confound between positive information and imagined contact. We ruled out this explanation in three ways. First, our analysis of the free-response data clearly contradicts this hypothesis. There was a significant difference in the quality of the imagined interaction across all three experiments. Specifically, participants imagined contact of a higher quality in Experiment 3 than in Experiments 1 and 2, even though we conducted analyses using only participants from the positive information condition of Experiment 2. Furthermore, higher quality of imagined interaction predicted better attitudes across all three experiments.

Second, the information given to participants about Dr. Rufus May was accurate, but not overly or explicitly positive (as in Experiment 2). Nonetheless, it was in Experiment 3, and not in Experiment 2, that the quality of the imagined contact was the highest. Third, and perhaps most importantly, the results of Experiment 4 point to an independent effect of imagined contact beyond that of the positive information. Particularly by giving all participants the same information in Experiment 4, we were able to rule out the effect of positive information. Thus, Experiments 3 and 4 successfully demonstrated how the imagined contact paradigm might be adapted to benefit members of this highly stigmatised outgroup.

Moderators of the effectiveness of imagined contact

The moderators of the effectiveness of imagined contact as a prejudice-reducing mechanism are currently not well understood, in part because imagined contact research so far has generally used less challenging groups and reported experiments in which imagined contact has been successful, regardless of the nature of the imagined contact task. In four experiments, we demonstrated that some versions of the imagined contact task may have detrimental effects on prejudice against the challenging groups for whom it was designed—a finding that encourages more serious research into the moderators

of the effectives of this intervention. We discus two moderators of the effectiveness of imagined contact—the target group and the positivity of the imagined interaction.

The target group
Nature of the target group? Why did the previously successful imagined contact task increase, instead of decrease, intergroup anxiety toward people suffering from schizophrenia? One obvious potential explanation is the nature of the target group. Outgroups for whom the same task has had positive effects, such as the elderly and homosexual men (Turner et al., 2007) are not stereotyped as being dangerous or unpredictable (Brewer et al., 1981; Herek, 1986)—two central characteristics of the stigma of mental illness (Angermeyer & Matschinger, 2003). This difference may have altered the nature of the imagined contact exercise, changing it from a pleasant, or at least reasonable, interaction to a more threatening encounter. The resulting unpleasant nature of the imagined contact experience could help to explain the increase in intergroup anxiety found in Experiments 1 and 2, an assertion supported by the analyses of the contents of the imagined scenarios.

Our modified imagined contact scenarios (Experiments 3 and 4) were designed to be more pleasant than the original. The setting was explicitly positive, but specified as a situation that would be seen as an agreeable and safe event. Participants were explicitly instructed to imagine a pleasant conversation. Consequently the quality of the imagined interaction was better in Experiment 3 than in Experiments 1 and 2, which resulted in different effects on prejudice against people with schizophrenia.

Nature of the stigma? An equally plausible explanation may lie in the nature of the stigmatization itself, specifically in the fact that prejudice against persons with schizophrenia is more legitimized than prejudice against most other groups (Stier & Hinshaw, 2007). Thus, it would not be the content of the stereotypes, but the *acceptability* of the

stereotypes that moderates the effects of the imagined contact experience. If participants hold a negative stereotype that is quite normative and consensually held, they will probably be less motivated to imagine a positive intergroup interaction.

It is possible that, as well as making the interaction more pleasant, the imagined contact scenarios used in Experiments 3 and 4 rendered prejudice against persons with schizophrenia less acceptable by the presence of the imaginary Rector of the college who is a friend of Dr Rufus May, or Arturo Sandoval who entered the train station along with Tom Harell. Of course these two effects are not mutually exclusive. Thus, the positive effects of this imagined contact task could be a result of a more pleasant contact experience, less acceptable prejudice, or some combination of the two.

Positivity The recommendation that the imagined contact experience should be positive is not novel (see Crisp et al., 2008), and the increased effectiveness of positive imagined contact has been demonstrated experimentally (Stathi & Crisp, 2008, Experiment 1). However, some research continues to use neutral versions of the imagined contact task (e.g., Husnu & Crisp, 2010). These four studies are the first to demonstrate that the neutral task may be counter-effective (rather than simply ineffective) for some target groups. As such, they speak to the importance of the careful application of specific forms of the imagined contact task (if it is to be used as a prejudice-reducing mechanism), and encourage the exploration of the best ways in which to render imagined contact more positive. Below we discuss the relative success of external and integrated positivity as well as the importance of using the participants' free responses to investigate the quality of the imagined interaction.

External or Integrated Positivity? In Experiment 2 we attempted to render the imagined contact experience more positive by giving participants relevant positive information before the imagined contact task. This attempt largely failed, and imagined contact nonetheless had negative consequences. In Experiments 3 and 4, when positivity was integrated into the imagined contact scenario, the task was effective at reducing intergroup anxiety and improving attitudes. Integrated positivity is currently recommended for increasing the positivity of the task (Crisp et al., 2008). However, there are several ways to integrate positivity into the task (our scenarios, for example, were more detailed and concrete than the recommended task), and the recommended task is yet to be pitted against alternative positive imagined contact tasks. Future research should investigate optimally effective ways of rendering imagined contact more positive, particularly for challenging groups.

Using participants' free response data Using the free-response data from the first three experiments, we found evidence that a more positive imagined interaction led to reduced prejudice, while a less positive imagined interaction had detrimental effects. The participants' free responses are the most direct indications of the positivity of their imagined experiences, yet this valuable data set has thus far been ignored in research on imagined contact. Future research on imagined contact, particularly research investigating how best to render the imagined contact task positive, should make good use of the participants' free responses.

Conclusions

Like actual contact, imagined contact is potentially a very useful tool for the reduction of intergroup prejudice and the improvement of intergroup relations. However, like real contact, its effectiveness appears to be moderated by a number of factors and it appears to have optimal and non-optimal conditions. Overall, these results call for more extensive research on the moderators that determine if and when imagined contact reduces prejudice, and on how imagined contact may have to be altered before positive effects are possible with highly stigmatized groups, especially targets of prejudice for whom actual contact may be difficult or impractical to orchestrate.

Fortunately imagined contact is easier to implement, manipulate and investigate experimentally than actual contact, which gives it a distinct advantage for groups for whom actual contact may not be a feasible solution. With the appropriate instructions, the quality of the imagined interaction in an intervention can be readily modified and checked. Furthermore, our work indicates that failing to this could result in an unintended harmful rather than beneficial outcome.

This work should not be seen as decreasing the importance of imagined contact as an intervention. Rather, because it has successfully overcome obstacles to change views of a rather negatively-stereotyped group that is viewed with fear and anxiety, it can be seen as increasing the range of applicability of imagined contact, and thus increasing its importance as one of many weapons to be used in the fight against prejudice.

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Appendix 1—vignettes used in Experiment 2

Vignettes of people with schizophrenia (positive information condition)

Meera Popkin is a famous singer and actress who had schizophrenia. She performed in such famous musicals as *Starlight Express* and *Cats* on Broadway. After being diagnosed with schizophrenia in 1997 she continued working as an actress and being a good mother to her baby girl, Kayla. The exceptionally talented, charming actresses remained cool-tempered during her bout with schizophrenia. She was overjoyed to recover completely some years later.

Dr John Nash is a genius and mathematician who had schizophrenia. He won the Nobel Prize in economics in 1994 and continues to work as a senior mathematician at Princeton University. After being diagnosed with schizophrenia in 1959, he continued to publish papers and win prizes for his theories. Described as a strong-willed man with impressive self-control and disarming wit, he stopped taking anti-psychotic drugs in 1970 and instead chose to recover slowly with the passage of time.

Tom Harrell is a world famous Jazz trumpeter who has schizophrenia. He has received numerous jazz awards, such as top composer and trumpeter, "best jazz album of the year" by *Entertainment Weekly*, and a Grammy nomination. After being diagnosed with schizophrenia he continued to compose and play music, releasing several chart-topping albums. This relaxed, constantly well-dressed "cool cat" loves the music of Louis Armstrong. He stopped taking anti-psychotic drugs years ago which, some say, make him fit in more with the "jazz crowd".

Andy Goram is a former professional football player who has schizophrenia. He played for the Scotland National Team, winning 43 caps and, in 2001, he was voted Rangers' greatest ever goalkeeper by fans. After being diagnosed with schizophrenia in 1998, he continued to be an instrumental player for the Rangers' Football Club. Now a goalkeeping coach for Airdrie United, he remains a popular after-dinner speaker at Rangers' events and is known for his enjoyable, coherent, socially aware speeches.

Vignettes of people without schizophrenia (neutral information condition)

Betty Buckley is a famous singer and actress. She performed in such famous musicals as *The Mystery of Edwin Drood* and *Cats* on Broadway. Her version of the song "Memory" in the Musical *Cats*, performed in 1983 is still seen as the quintessential version. The exceptionally talented, charming actress has remained cool-tempered about her fame and the ups and downs that accompany it.

Reinhard Seltenis a genius and mathematician. He won the Nobel Prize in economics in 1994 and continues to work as a professor at the University of Bonn, Germany. He has published several papers and won several prizes, but is perhaps best known as a "founding father of experimental economics". Described as a strong-willed man with impressive self-control and disarming wit, he has handled his success with calm humility.

Arturo Sandoval is a world famous Jazz trumpeter. He has had a wildly successful career, recording with Johnny Mathis, Gloria Estefan, Kenny G, Frank Sinatra and Dave Grusin. As well as composing and playing music, he owns a self-named live Jazz venue on Miami Beach. Past performers include Roberta Flack, Joshua Redman, Roy Haynes, and Omar Sosa. This relaxed, constantly well-dressed "cool cat" loves the music of Louis Armstrong, and wants to be remembered as a man who loved music, not as a jazz trumpeter.

David Beckham is a famous professional football player. Beckham was captain of England's football team from November 2000 to July 2006. He now plays for and captains the Los Angeles Galaxy. In 2004 he was the world's highest paid footballer and since then has become an elite advertising brand and top fashion icon. A charming, handsome man, Beckham's new contract with the Galaxy gave him the highest salary of any MLS player in history. He remains one of the sports world's most "Googled" personalities.

Appendix 2—imagined contact instructions for Experiment 3

Imagined contact condition

Due to outstanding achievement during the term, the Rector of your college has invited you to dine with the faculty. Seated across from you are the Rector and his good friend, Dr Rufus May.

Rufus May is a clinical psychologist who was diagnosed with schizophrenia at age 18. Now considered a leading expert in psychiatric treatment, Dr May has written books on the issue and was the subject of the film *The Doctor who Hears Voices*. He currently lives and works in Bradford, but travels widely to give presentations on treatments for psychosis.

We want you to take 5 minutes to imagine having a pleasant conversation with Dr Rufus May at dinner. Feel free to talk about anything. Imagine his appearance, his mannerisms, and specific things that you find admirable. I want you to spend the time thinking but also please write down, from time to time, the things that you

imagine. Please write clearly and feel free to write down whatever springs to mind.

Control condition

Due to outstanding achievement during the term, the rector of your college has invited you to dine with the faculty. Seated across from you are the rector and the rector's good friend, Mr. Jay Wright.

Jay Wright is a poet, playwright and essayist. Over the years he has been a poet in residence at Yale University, and the recipient of the Bollingen Prize for poetry. He is the author of several collections, most recently *Polynomials and Pollen*, and his work has received considerable acclaim. He currently lives and works in Bradford.

We want you to take 5 minutes to imagine having a pleasant conversation with Jay Wright at dinner. Feel free to talk about anything. Imagine his appearance, his mannerisms, and specific things that you find admirable. I want you to spend the time thinking but also please write down, from time to time, the things that you imagine. Please write clearly and feel free to write down whatever springs to mind.

Appendix 3—instructions given to all participants in Experiment 4

We would like you to take a minute to imagine the following scenario.

Imagine that you are waiting at a crowed train station for a train to Oxford. Shortly after you find a seat, you see two other people enter the train station—*Tom Harrell* and *Arturo Sandoval*.

Tom Harrell is a Jazz trumpeter and composer who loves the music of Louis Armstrong. After being diagnosed with schizophrenia he continued to compose and play music, releasing several chart-topping albums. He stopped taking antipsychotic drugs, finding that his music helps him cope with his illness.

Arturo Sandoval is a Jazz trumpeter and composer who owns a Jazz venue in Miami. He has played with many well-known Jazz artists, and wants to be remembered as a man who loved music.

Imagined contact instructions in Experiment 5

We would like you to take 5 minutes to imagine the following scenario.

Shortly after arriving at the train station, *Arturo Sandoval* catches his train and leaves. *Tom Harrell* takes the seat beside you.

Imagine yourself having a conversation with *Tom Harrell* at the train station. Imagine that the interaction is positive, relaxed and comfortable.

We would like you to spend the time thinking, but please write down, from time to time, the things that you imagine. Feel free to write whatever springs to mind.

Control instructions in Experiment 5

We would like you to take five minutes to imagine the following scenario.

Shortly after arriving at the train station, *Tom Harrell* catches his train and leaves. *Arturo Sandoval* takes the seat beside you.

Imagine yourself having a conversation with *Arturo Sandoval* at the train station. Imagine that the interaction is positive, relaxed and comfortable.

We would like you to spend the time thinking, but please write down, from time to time, the things that you imagine. Feel free to write whatever springs to mind.