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Beware of 'reducing prejudice': Imagined contact may backfire if applied with a prevention focus.

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**Abstract**

Imagined intergroup contact – the mental simulation of a (positive) interaction with a member of another group – is a recently developed, low-risk, prejudice-reducing intervention. However, regulatory focus can moderate the effects of prejudice-reducing interventions: a prevention focus (as opposed to a promotion focus) can lead to more negative outcomes. In two experiments we found that a prevention focus altered imagined contact's effects, causing the intervention to backfire. In Experiment 1, participants who reported a strong prevention-focus during imagined contact subsequently reported higher intergroup anxiety and (indirectly) less positive attitudes toward Asians. We found similar moderating effects in Experiment 2, using a different outgroup (gay men) and a subtle regulatory focus manipulation. Theoretical and practical implications for imagined contact are discussed.

**Keywords:** contact hypothesis; imagined contact; regulatory focus; moderator

Imagined intergroup contact refers to the act of imagining oneself in a (positive) social interaction with a member of another group (Crisp & Turner, 2012; Miles & Crisp, 2014; Stathi, Crisp, Turner, West, & Birtel, 2013). It is derived from a combination of Contact Theory, which shows that interacting with members of other groups improves intergroup evaluations and interactions (Allport, 1954; Pettigrew & Tropp, 2006), and research demonstrating that mental imagery elicits emotional, motivational, and neurological responses similar to those elicited by real experiences (Dadds, Bovbjerg, Redd, & Cutmore, 1997; Kosslyn, Ganis, & Thompson, 2006). Taken together, these bodies of research suggest that imagining interactions with members of other groups should have many of the same (positive) consequences as actually having these interactions, including reduced intergroup anxiety, improved attitudes, and more positive intergroup relations.

A substantial and growing body of research now supports the “imagined contact hypothesis” (Crisp & Turner, 2012). Imagined contact has been shown to reduce intergroup anxiety (Turner, Crisp, & Lambert, 2007; West, Holmes, & Hewstone, 2011), improve intergroup attitudes (Cameron, Rutland, Turner, Holman-nicolas, & Powell, 2011), increase intergroup trust (Turner, West, & Christie, 2013), improve intergroup behavioural intentions (Husnu & Crisp, 2010b; Turner et al., 2013), alter some subsequent behaviours (Turner & West, 2012), reduce implicit as well as explicit bias (Turner & Crisp, 2010), and alter subsequent physiological responses to outgroup members (West, Turner, & Levita, 2015).

Its effectiveness has been demonstrated in a variety of social contexts including the U.K. (Turner, Crisp, et al., 2007; West et al., 2011), the US (Harwood, Paolini, Joyce, Rubin, & Arroyo, 2011), Germany (West & Bruckmüller, 2013), Mexico (Stathi & Crisp, 2008), Italy (Vezzali, Capozza, Giovannini, & Stathi, 2012), Jamaica (West, Husnu, & Lipps, 2014) and Cyprus (Husnu & Crisp, 2010b). It has been shown to reduce prejudice based on age, sexuality (Turner, Crisp, et al., 2007), ethnicity (Stathi & Crisp, 2008), religion (Turner & West, 2012), immigrant status (Vezzali et al., 2012), mental health (West et al., 2011), and

weight (Turner & West, 2012). Furthermore, a number of alternative explanations for imagined contact's effects have been ruled out including cognitive load, stereotype priming (Turner, Crisp, et al., 2007), generalized positive affect (Stathi & Crisp, 2008), and demand characteristics (Turner & Crisp, 2010; West et al., 2015).

Imagined contact is often presented as a low-risk prejudice reducing intervention, particularly when compared to direct contact (Harwood et al., 2011; Turner, Crisp, et al., 2007). While imagined contact certainly removes the risk of physical or social harm resulting from a negative intergroup encounter, several studies have begun to investigate moderators of imagined contact's effects, highlighting the potential risk of an *increase* in intergroup bias under certain conditions. For example, imagined contact appears to be less effective when individual-focused rather than group-focused (Stathi, Crisp, & Hogg, 2011), simple rather than elaborated (Husnu & Crisp, 2010a), and non-cooperative rather than cooperative, even when conditions of positivity are already met (Kuchenbrandt, Eyssel, & Seidel, 2013).

More relevant for this research, imagined contact has sometimes been found to be *counter-effective* (i.e., tending to *increase* prejudice) when task instructions are neutral, rather than positive (West et al., 2011), or when the task is difficult rather than easy (West & Bruckmüller, 2013). These moderators highlight the importance of understanding the conditions under which imagined contact may carry the risk of increasing prejudice. This current research is the first to investigate the potential moderating effect of regulatory focus - a known predictor of prejudice and moderator of the effects of prejudice-reducing interventions (Does, Derks, & Ellemers, 2011; Shah, Brazy, & Higgins, 2004) - during the imagined contact task.

### **Regulatory Focus as a Moderator**

Regulatory focus (Higgins, 1998) proposes that there are two distinct self-regulation systems: prevention and promotion. Prevention focus involves the motivation to avoid an undesired end state, such as a failure of responsibility. It is associated with vigilance,

precaution, and a tendency to quit. If a prevention focus has been adopted, failure to avoid an undesirable consequence is associated with anxiety-related emotions (e.g., agitation, fear, or threat). Promotion focus, in contrast, involves the motivation to achieve a desired end state, such as an accomplishment or an ambition. It is associated with persistence, eagerness, and creativity. If a promotion focus has been adopted, failure to achieve a desired end is associated with dejection-related emotions (e.g., disappointment, sadness).

Regulatory focus has been applied to a diverse range of research, including aggression (Keller, Hurst, & Uskul, 2008), political ideology (Jost, Glaser, Kruglanski, & Sulloway, 2003), and success at an elite university (Johnson, Richeson, & Finkel, 2011). Relevant for this current research, while a promotion focus is associated with positive intergroup outcomes, a prevention focus is associated with a number of deleterious consequences during direct intergroup contact, including depleted cognitive resources (Trawalter & Richeson, 2006), increased hostility and aggressiveness (Keller et al., 2008) and decreased interaction quality (Plant, Devine, & Peruche, 2010). Ironically, participants who take up a prevention focus (i.e., participants who attempt to avoid prejudice) tend to experience increased anxiety and to inadvertently appear *more prejudiced* to their interaction partners (Butz & Plant, 2009).

These effects have been found within the broader intergroup contact literature. However, no research to date has investigated whether they apply to a relatively new intervention – imagined contact. This question is important when considering the *application* of imagined contact. As has been shown in prior research (Butz & Plant, 2009; Plant et al., 2010), the ways in which strategies aimed at improving intergroup relations are applied (or adopted by participants) can have meaningful consequences; subtle alterations in regulatory focus can reduce or reverse the intended effect. Thus, understanding the effects of a prevention-focus (vs. a promotion focus) in imagined contact may be important for identifying conditions under which it works best, as well as conditions under which it may backfire.

This is also an interesting theoretical question. It is possible to argue that regulatory focus should not moderate imagined contact's effects. Prior research has found that a prevention focus leads to increased anxiety (Butz & Plant, 2009) and decreased interaction quality (Plant et al., 2010) during *direct* contact. However, unlike a real intergroup interaction, an imagined interaction is completely under the control of the participant, and as such cannot be unpleasant or anxiety-invoking if the participant does not wish it to be. If regulatory focus does not moderate the effectiveness of imagined contact, this would point to an important difference between direct and imagined contact.

However, if regulatory focus does moderate the effect of imagined contact, this would suggest a cognitive-depletion model similar to the one proposed for direct intergroup interactions (Trawalter & Richeson, 2006); imagined contact may be more difficult and thus less pleasant with a prevention focus, which could lead an increase in prejudice (West & Bruckmüller, 2013) including anxiety and a desire to avoid future interactions (Plant & Butz, 2006; Richeson & Trawalter, 2005). In this current research we consider this question directly, investigating whether regulatory focus moderates the effects of imagined contact, in particular, whether a high prevention-focus can render it ineffective or counter-effective.

### **Present Research and Hypotheses**

This current research investigated whether imagined contact's effects are moderated by the participants' regulatory focus, with particular interest paid to the potential detrimental effects of a prevention focus. In Experiment 1 we did not manipulate regulatory focus, but simply asked participants to indicate the extent to which they adopted a prevention-focus or promotion-focus during the imagined contact (or control) task. We then investigated whether self-reported levels of prevention-focus and promotion-focus moderated the effects of imagined contact, such that higher levels rendered it less effective or counter-effective. In Experiment 2 we manipulated both imagined contact and regulatory focus independently. Furthermore, regulatory focus was manipulated in a subtle way in order to minimise potential

concerns about demand characteristics. We hypothesized that imagined contact would retain its normal, prejudice-reducing effects under a promotion focus, but that its effect would be reduced or reversed under a prevention focus.

In order to demonstrate the generalizability of our findings, we use 2 different target groups: Asians (Leach, Peng, & Volckens, 2000; Turner, Hewstone, Voci, & Vonofakou, 2008; Turner, Hewstone, & Voci, 2007), and gay men (Herek, Gillis, Cogan, & Glunt, 1997; Meyer, 2003; West & Cowell, 2015; West & Hewstone, 2012). These groups evoke different stereotypes and are based on different demographic variables – ethnicity and sexuality. It is also worth noting that, in both experiments, the instructions met all the previously-recommended conditions for successful imagined contact: that is, we instructed participants to imagine an interaction that was positive, relaxed and comfortable (Stathi et al., 2013). Thus, these experiments investigate the moderating effects of regulatory focus, even when all other recommended conditions are met.

### Experiment 1

We investigated whether participants' self-reported levels of prevention- and promotion-focus during an imagined contact task moderated the effects of imagined contact, such that a stronger prevention-focus rendered it less effective or counter-effective. As is the case for direct contact, we hypothesised that a prevention focus would increase intergroup anxiety, which should in turn negatively affect attitudes (Butz & Plant, 2009).

#### Method

**Participants and design.** Fifty-one White A-level students at a British high school (36 female, 15 male, *mean age* = 16.78, *SD* = .461) were randomly assigned to either an imagined contact condition, in which they imagined interacting with an Asian stranger, or a control condition, in which they simply imagined interacting with a stranger (no intergroup context). They also completed measures of their promotion focus and prevention focus during the tasks, as well as their intergroup anxiety and attitudes toward Asians. Participants were

recruited as a class (rather than as individuals), as part of a programme in which high-school students were invited to visit a university psychology department and take part in research.

**Procedure.** Participants were tested collectively, during a single class. Individuals were randomly assigned to the different conditions by randomly distributing the instruction sets. We used the recommended imagined contact instruction set (see Stathi et al., 2013). Participants in the imagined contact condition were instructed as follows: “We would like you to spend the next two minutes imagining yourself meeting and interacting with an Asian stranger for the first time. Imagine that the interaction is positive, relaxed, and comfortable.” Participants in the control condition were given almost identical instructions that did not evoke an intergroup context: “We would like you to spend the next two minutes imaging yourself meeting and interacting with a stranger for the first time. Imagine that the interaction is positive, relaxed, and comfortable.” Immediately after completing the imagery-based task, participants completed the measures of prevention- and promotion- regulatory focus, intergroup anxiety, and attitudes toward Asians outlined below. Participants were then reimbursed for their time, thanked and debriefed.

**Measures.** Unless otherwise indicated, participants responded to all items on 7-point Likert scales (1 = *Not at all*, 7 = *Very Much*). To assess participants’ prevention goals during the imagined interactions we used three items from Plant, Devine, & Peruche (2010). Participants indicated their agreement with the following three statements: “My goal would be to avoid coming across as prejudiced”, “My goal would be to avoid the appearance of bias” and “I would be focused on not being viewed as prejudiced” ( $\alpha = .85$ ). To assess participants’ promotion goals we used three items also from Plant et al. (2010). Participants indicated their agreement with the following three statements: “My goal in the interaction would be to be friendly”, “I would be focused on having a good interaction”, and “I would want to treat him as I would anybody else” ( $\alpha = .90$ ).

Intergroup anxiety was measured using a shortened, 5-item version of Stephan and

Stephan's (1985) original scale (also used by Turner et al., 2007; West, Hewstone, & Lolliot, 2014; West & Hewstone, 2012a). Participants indicated how they would feel if they met an Asian person in the future: “awkward”, “happy” (reversed), “self-conscious”, “confident” (reversed), and “relaxed” ( $\alpha = .74$ ). We measured attitudes toward Asians using a feeling thermometer (from Haddock, Zanna, & Esses, 1993) along which participants could indicate their feelings toward the outgroup: (0 = *extremely unfavorable*, 100 = *extremely favorable*).

## Results

Means and standard deviations of both outcome variables according to condition can be found in Table 1. Neither age nor gender predicted either of our outcome variables ( $.29 < p < .80$ ). Thus, neither is considered any further in these analyses.

**Differences between conditions.** We found no significant differences in promotion-focus,  $M = 6.26$  vs.  $M = 6.07$ ,  $t(49) = .76$ ,  $p = .45$ , prevention-focus,  $M = 5.03$  vs.  $M = 5.38$ ,  $t(49) = .84$ ,  $p = .40$ , intergroup anxiety,  $M = 3.21$  vs.  $M = 2.83$ ,  $t(49) = 1.45$ ,  $p = .15$ , or attitudes,  $M = 65.83$  vs.  $M = 61.32$ ,  $t(49) = .95$ ,  $p = .35$ , between the imagined contact and control condition.

**Moderated mediation analyses.** We investigated whether prevention-focus and promotion-focus moderated the effects of imagined contact on intergroup anxiety and subsequent attitudes using PROCESS macros (Hayes, 2009). Compared to other widely used tests of mediation and moderation (e.g., the methodology of Baron & Kenny, 1986), bias-corrected bootstrapping techniques have a superior ability to detect significant effects with smaller sample sizes while retaining the most power (Fritz & Mackinnon, 2007; Zhao, Lynch Jr., & Chen, 2010). They are also superior to median-split techniques, which can lead to spurious results with moderating variables that are continuous, rather than categorical (Bissonnette, Ickes, Bernstein, & Knowles, 1990).

We first used PROCESS macros, Model 9, with a 95% confidence interval based on 1000 bootstrap samples, which allowed the inclusion of intergroup anxiety as a mediator and

both prevention-focus and promotion-focus as moderators of imagined contact's effects on intergroup anxiety. Promotion-focus did not moderate the effect of imagined contact on intergroup anxiety ( $b_{\text{interaction}} = -.07, p = .68, S.E. = .18, \Delta R^2 = .003$ ), so we did not consider this variable further in our analyses. We therefore used PROCESS macros, Model 7, with a 95% confidence interval based on 1000 bootstrap samples, with intergroup anxiety as a mediator and prevention-focus only as a moderator of imagined contact's effects on intergroup anxiety; analyses using Model 1 further decomposed the effect of imagined contact on intergroup anxiety moderated by prevention-focus.

As hypothesised, prevention-focus moderated the direct effect of imagined contact on intergroup anxiety ( $b_{\text{interaction}} = .19, p = .03, S.E. = .09, \Delta R^2 = .09$ ). This moderated effect was in the predicted direction; when prevention-focus was high (i.e., at 1 *SD* above the mean, 6.71), imagined contact increased intergroup anxiety ( $b = .49, p = .01$ ). However, when prevention-focus was low (i.e., at 1 *SD* below the mean, 3.74), imagined contact had no significant effect on intergroup anxiety ( $b = -.08, p = .65$ ). Also as hypothesised, intergroup anxiety directly predicted attitudes ( $b = -5.87, p = .02$ ), though imagined contact did not have a direct effect on attitudes ( $b = 3.37, p = .15$ ).

We also investigated whether intergroup anxiety mediated the indirect effect of imagined contact on attitudes, and whether participants' prevention goals moderated this indirect effect. As expected, the indirect effect of imagined contact on attitudes through intergroup anxiety did not include zero when prevention goals were high (-6.43 to -.65 with a point estimate of  $b = -2.85$ ), which indicated mediation. However, the indirect effect of imagined contact on attitudes through intergroup anxiety did include zero when prevention goals were low (-.80 to 3.52 with a point estimate of  $b = .48$ ), which indicated a failure of the mediation model (see Figure 1).

In sum, we found the hypothesized moderating effect of prevention-focus on the effectiveness of imagined contact. Specifically, when prevention goals were high, imagined

contact became *counter-effective*, directly increasing intergroup anxiety and indirectly worsening attitudes. When prevention goals were low, these effects were absent. Promotion goals did not appear to moderate imagined contact's effects in the same way. However, we noted that we did not replicate the usual positive effects of imagined contact; that is, though the direction of imagined contact's effects reversed (i.e., became positive) when prevention-focus was low, this effect was not significant. In Experiment 2, we address this potential limitation (and others) and also build on the findings of Experiment 1.

## Experiment 2

Though the results of Experiment 1 supported our hypotheses, we acknowledge some potential limitations of that experiment. Most notably, we did not find the usual prejudice-reducing effects of imagined contact when prevention focus was lower. A possible explanation for this finding is that that participants' prevention focus in this study was overall quite high ( $M = 5.22$ ), and indeed, significantly higher than the midpoint of the scale (4),  $t(50) = 5.89, p < .001$ . Even participants whose prevention focus score was 1 *SD* below the mean had a prevention focus score (3.74) that was very near the midpoint of the scale (4.00). These high prevention focus scores may explain the lack of positive effects of imagined contact (which is in line with our hypotheses). In Experiment 2 we addressed this concern by encouraging some participants to adopt a prevention focus and other participants to adopt a promotion focus.

Second, the explicit measurement of prevention- and promotion- focus used in Experiment 1 may have affected participants' responses. Indeed, the language used in those items (e.g., "My goal would be to avoid coming across as prejudiced"), may have inadvertently encouraged a stronger prevention focus in our participants and thus affected our results. In Experiment 2 we addressed these concerns by removing the explicit measurement of regulatory focus and by using a very subtle regulatory focus manipulation that was entirely unrelated to the imagined contact instructions. We also increased the generalizability of our

findings by using another target group – gay men.

## **Method**

**Participants and design.** Ninety-one non-student participants in London (52 female, 33 male, 6 who did not disclose their gender, *mean age* = 28.58, *SD* = 11.75) were randomly assigned to the four cells of a 2 (Regulatory focus: Prevention vs. Promotion) x 2 (Condition: Imagined contact vs. Control) factorial design, after which they completed the measures of intergroup anxiety and attitudes toward gay men outlined below. Participants were recruited and tested individually. Testing took place in available university laboratory spaces.

Immediately after completing the imagery-based tasks, participants completed measures of intergroup anxiety and attitudes toward gay men.

**Procedure.** Prior to completing the imagined contact or control task, participants completed a mouse-in-a-maze task which has been used successfully in previous research to induce a prevention or promotion focus (see Friedman & Förster, 2001; Seibt & Förster, 2004). In both conditions, participants were shown a cartoon mouse that was trying to get through a maze and asked participants to find the way for the mouse through the maze in two minutes or less. In the prevention condition, an owl was pictured hovering above the maze, presumably ready to swoop down and eat the mouse if the participant failed. This was meant to trigger a prevention focus by encouraging participants to avoid something negative (i.e., being eaten by the owl). Participants in the promotion condition completed exactly the same maze. However, instead of an owl hovering above the maze, a piece of cheese was placed at the end of the maze. This was meant to trigger a promotion focus by encouraging participants to approach something positive (i.e., eating the cheese). The imagined contact and control instructions were identical to those in Experiment 1, except that participants were asked to imagine interacting with a gay man they had met for the first time, instead of an Asian stranger.

**Measures.** Intergroup anxiety was measured using the same 5-item scale used in

Experiment 1. This scale did not attain the conventional level of reliability in this study ( $\alpha = .45$ ). Deleting the item “self-conscious” improved scale reliability ( $\alpha = .74$ ) and did not change the pattern of results. Thus all subsequent results are reported using this 4-item scale. Attitudes toward gay men were measured using with six items ( $\alpha = .81$ ) on 7-point semantic differential scales from Wright, Aron, McLaughlin-Volpe, and Ropp (1997): “cold–warm”, “positive–negative” (reversed), “hostile–friendly”, “respect–contempt” (reversed) “trusting–suspicious”, “admiration–disgust” (reversed). As we used a more subtle manipulation of regulatory focus in order to avoid explicit references to regulatory focus, we did not assess participants’ explicit, self-reported regulatory focus in Experiment 2.

## Results

Means and standard deviations of both outcome variables according to imagined contact condition and regulatory focus are shown in Table 2. Age did not predict either of our outcome variables ( $.03 < r < .008$ ;  $.82 < p < .94$ ). Unsurprisingly, males reported more intergroup anxiety toward gay men than did females ( $M = 3.30$  vs.  $M = 2.44$ ,  $t(83) = 4.02$ ,  $p < .001$ ), and less positive attitudes toward gay men compared to females  $M = 4.79$  vs.  $M = 5.41$ ,  $t(83) = 3.41$ ,  $p = .001$ ), a pattern that has been found in prior research (West & Cowell, 2015). However, males and females were not unevenly distributed across either regulatory focus conditions (Fisher’s exact test,  $p = .11$ ), or imagined contact conditions (Fisher’s exact test,  $p = .83$ ). Thus, neither age nor gender is considered any further in these analyses.

**Differences between conditions.** We conducted a 2 (Condition: Imagined contact vs. Control) x 2 (Regulatory focus: Prevention vs. Promotion) between-participants multivariate analysis of variance. We did not find main effects of either condition,  $F(2, 84) = .65$ ,  $p = .52$ ,  $\eta_p^2 = .003$ , or regulatory focus,  $F(2, 84) = .87$ ,  $p = .42$ ,  $\eta_p^2 = .02$ . However, we did find the expected multivariate interaction between condition and regulatory focus,  $F(2, 84) = 3.14$ ,  $p = .049$ ,  $\eta_p^2 = .069$ . This was driven by the significant interaction of condition and regulatory focus on intergroup anxiety  $F(1, 85) = 6.34$ ,  $p = .014$ ,  $\eta_p^2 = .069$ . When participants were

encouraged to adopt a prevention-focus, imagined contact led to more intergroup anxiety ( $M = 3.00$  vs.  $M = 2.33$ ;  $p = .05$ ), though this difference was not quite significant at the 5% level. However, there was no difference in intergroup anxiety between the imagined contact and control conditions when participants were encouraged to adopt a promotion-focus ( $M = 2.51$  vs.  $M = 2.97$ ),  $p = .12$ . The direct interaction of condition and regulatory focus on attitudes was not significant  $F(1, 85) = 1.06$ ,  $p = .31$ ,  $\eta_p^2 = .012$ .

**Moderated mediation analyses.** As in Experiment 1, we investigated whether intergroup anxiety mediated the effect of imagined contact on attitudes using PROCESS macros (Model 7, with a 95% confidence interval based on 1000 bootstrap samples), which allowed the inclusion of regulatory focus as a moderator of imagined contact's effects on intergroup anxiety (see Figure 2). As hypothesised, regulatory focus moderated the direct effects of imagined contact on intergroup anxiety ( $b_{\text{interaction}} = -.28$ ,  $p = .01$ ,  $S.E. = .11$ ,  $\Delta R^2 = .07$ ). After the prevention-focus manipulation, participants in the imagined contact condition reported more intergroup anxiety ( $b = .36$ ,  $p = .035$ ). However, following the promotion-focus manipulation imagined contact's effects were in the opposite direction ( $b = -.23$ ,  $p = .12$ ) and non-significant. Intergroup anxiety also directly predicted attitudes ( $b = -.35$ ,  $p < .001$ ), though imagined contact did not have a direct effect on attitudes ( $b = -.07$ ,  $p = .42$ ).

Also as hypothesised, the indirect effect of imagined contact on attitudes through intergroup anxiety was similarly moderated by regulatory focus. The 95% confidence interval estimate of this indirect relationship did not include zero when participants were in the prevention-focused condition ( $-.29$  to  $-.0006$  with a point estimate of  $b = -.12$ ), which indicated mediation and an indirect negative effect on attitudes. However, the indirect effect of imagined contact on attitudes through intergroup anxiety did include zero when participants were in the promotion focused condition ( $-.015$  to  $.21$  with a point estimate of  $b = .08$ ), which indicated a failure of the mediation model (see Figure 2). Thus, as in Experiment 1, we found that imagined contact increased prejudice when participants adopted

a prevention focus.

## **Discussion**

Imagined contact has been found to effectively reduce prejudice against a number of groups in a variety of ways and social contexts (Stathi et al., 2013). In 2 experiments we investigated whether regulatory focus moderated the effects of imagined contact, paying particular attention to the potentially negative effects of a high prevention focus. We used different methodologies in each experiment—measuring regulatory focus (Experiment 1), and subtly manipulating regulatory focus (Experiment 2). We used different target groups – Asians (Experiment 1) and gay men (Experiment 2), and two non-university participant samples: high school students (Experiment 1), and members of the general public (Experiment 2). In both experiments our data supported our hypotheses, showing that a high prevention focus can reverse the normally positive effects of imagined contact. We discuss these findings with respect to study design and results, suggestions for future research, and implications for imagined contact as an intervention.

## **Study Design and Results**

In Experiment 1, prevention focus was only measured, not manipulated. This design showed the effects of regulatory focus without introducing any potential confounds through the manipulation of regulatory focus. Furthermore, we ruled out the possibility that the imagined contact manipulation affected participants' regulatory focus. However, it is nonetheless possible that the measurement of prevention focus itself pushed participants in both the imagined contact and control conditions toward that particular approach. We addressed this concern in Experiment 2 by using subtle manipulations of both prevention and promotion focus and by removing any explicit references to the kind of focus adopted during the tasks. In Experiment 2 the regulatory focus manipulation was fully independent of the imagined contact manipulation, and it seems unlikely that participants would draw any connections between the mouse-in-a-maze task and our hypotheses.

Imagined contact research frequently faces the criticism of potential demand characteristics (Stathi et al., 2013; Turner & Crisp, 2010; Turner & West, 2012). However, this criticism does not appear to be applicable in this case. It is worth noting that, in both studies we followed previously established recommendations for effective imagined contact including stating that the interaction should be positive, relaxed, and comfortable. It seems very unlikely that our participants, who received instructions to imagine *positive* interactions, could have guessed that they were expected to become more *negative* toward the relevant target groups under particular conditions. It also seems very unlikely that participants could have independently guessed the purpose of the mouse-in-maze task or the moderated and mediated hypotheses. Nonetheless, future research could take advantage of measures that circumvent self-presentation biases (Nosek, Greenwald, & Banaji, 2007) to more fully address the question of demand characteristics.

Much imagined contact research, and social-psychological research in general, is criticised for the overuse of university students as participants (Henrich, Heine, & Norenzayan, 2010; Sears, 1986). However this current research used two non-university participant samples: high school students, who are generally younger than university students, and members of the general public whose mean age was higher than the typical university age. This increases our confidence in our results as well as the potential generalizability of our findings to a broader range of individuals.

We acknowledge the absence of a manipulation check for the regulatory focus manipulation in Experiment 2. This was a deliberate decision, as we wanted to make the manipulation subtle (rather than explicit) to further disguise the hypotheses of the study. Nonetheless, we acknowledge that the lack of manipulation check, combined with a lack of baseline measures, leaves the effect of the manipulation unclear. For example, it is not clear whether our effects were due merely to participants in the promotion conditions adopting a stronger promotion focus (i.e., the prevention focus manipulation had no effect), or to

participants in the prevention condition adopting a prevention focus (i.e., the promotion focus manipulation had no effect), or to both effects occurring simultaneously. While this is a limitation of the study, we also note that this particular manipulation has been used several times in prior research (e.g., Chernev, 2004; Friedman & Forster, 2001) and was extensively tested by Gino and Margolis (2011) who found that the manipulation did successfully prime participants with a promotion-focus or a prevention-focus according to condition. The manipulation thus appears sufficiently well-established, and based on prior research we could reasonably expect that it had the same effects in this current research as well.

We note that the type of regulatory focus considered in Experiment 2 does not relate specifically to the imagined contact scenario, but is rather a more global focus that the participants were subtly encouraged to adopt. We would suggest that this is not a problem for our methodology, as prior research using this global manipulation of regulatory focus have found similar moderating effects on specific relationships (Chernev, 2004; Friedman & Forster, 2001; Gino & Margolis, 2011). Furthermore, we measured regulatory focus in Experiment 1 in a way that did specifically pertain to the imagined contact scenario; the consistency of the results between Experiments 1 and 2 suggest that the globally induced regulatory focus in Experiment 2 was applied to the imagined contact scenario.

Perhaps the most notable limitation of both experiments is that we failed to find the normal, prejudice-reducing effects of imagined contact when participants' prevention focus was low (Experiment 1) or when participants were encouraged to adopt a promotion focus (Experiment 2). That said, in both cases, the apparent direction of imagined contact's effect was positive (i.e., prejudice-reducing) when prevention focus was lower, even if it was non-significant. A possible explanation is that our participants were unusually high in promotion focus: a suggestion that is somewhat supported by the findings of Experiment 1, in which we measured participants' prevention focus and found it to be overall higher than the midpoint of the scale. In any case, this unusual lack of a significant positive effect does not alter the

significant moderated effect, or the finding that imagined contact can backfire if participants adopt a high prevention focus.

### **Implications for Imagined Contact**

Concerning the theory behind imagined contact, our data showed that a prevention focus can make imagined contact ineffective or counter-effective. This aligns with previous research on direct contact that has found a prevention focus to be associated with anxiety, a depletion in cognitive resources, discomfort, a desire to avoid future interactions, and a more negative impression conveyed to the target group member (Plant & Butz, 2006; Richeson & Trawalter, 2005), all of which can make the contact experience negative. A crucial difference between direct contact and imagined contact is that, in the case of imagined contact, the participant is in complete control, regardless of regulatory focus. However, despite the increased (or even absolute) control of the participant, imagined contact can still have negative effects when prevention-focus is high.

These findings are in line with a cognitive-depletion model, similar to the one proposed for direct intergroup interactions (Trawalter & Richeson, 2006), and partially supported by prior research on moderators of imagined contact's effects (West & Bruckmüller, 2013). A prevention focus depletes cognitive resources and increases discomfort, potentially making even an imagined interaction more difficult and less pleasant. When imagining an interaction with an outgroup member, participants may draw upon their meta-cognitive experiences during the imagined contact task to assess their attitude towards the outgroup (Schwarz & Clore, 1988). As shown by West and Bruckmüller (2013), if participants experience imagined contact as more difficult, they may use these negative experiential feelings as information about future interactions with the outgroup, resulting in more anxiety and thus more negative attitudes. As should be expected from that model, in both experiments, it was the direct relationship between imagined contact and intergroup anxiety that was moderated by regulatory focus, but not the direct relationship between

imagined contact and attitudes. Though this explanation is plausible, we acknowledge that we did not investigate these specific mechanisms in this current research and suggest that future research could test these mechanisms directly.

However, the most profound implication might concern the application of imagined contact. It is generally perceived as a minimal-risk intervention, and rightly so; it is clear that imagined contact (unlike direct contact) carries little conceivable physical or social risk. However, this current research, and other similar research on the moderators of imagined contact's effects, reveal that these effects may be altered at the point of application, even to the point of making it *counter-effective*. If this is the case, care should be taken when using an imagined contact intervention, even if other conditions (such as explicit positivity) have been met.

### **Conclusions**

A steadily growing body of research demonstrates imagined contact's effectiveness. We acknowledge the potential usefulness of imagined contact as a prejudice-reducing intervention, and the increasingly large body of research demonstrating its effects and reliability. However, it remains important to understand the potential moderators of imagined contact's effects, particularly those that may render it counter-effective, as well as ineffective. Our data show that, even when imagined contact has a positive tone (as recommended), it may still be counter-effective if participants are prevention-focused rather than promotion-focused. These findings point to a way to improve the effectiveness of imagined contact, as well as a potentially new area of research that could enable us to better understand its effects.

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**Tables**

*Table 1. Means and standard deviations of all variables in Experiment 1 according to condition.*

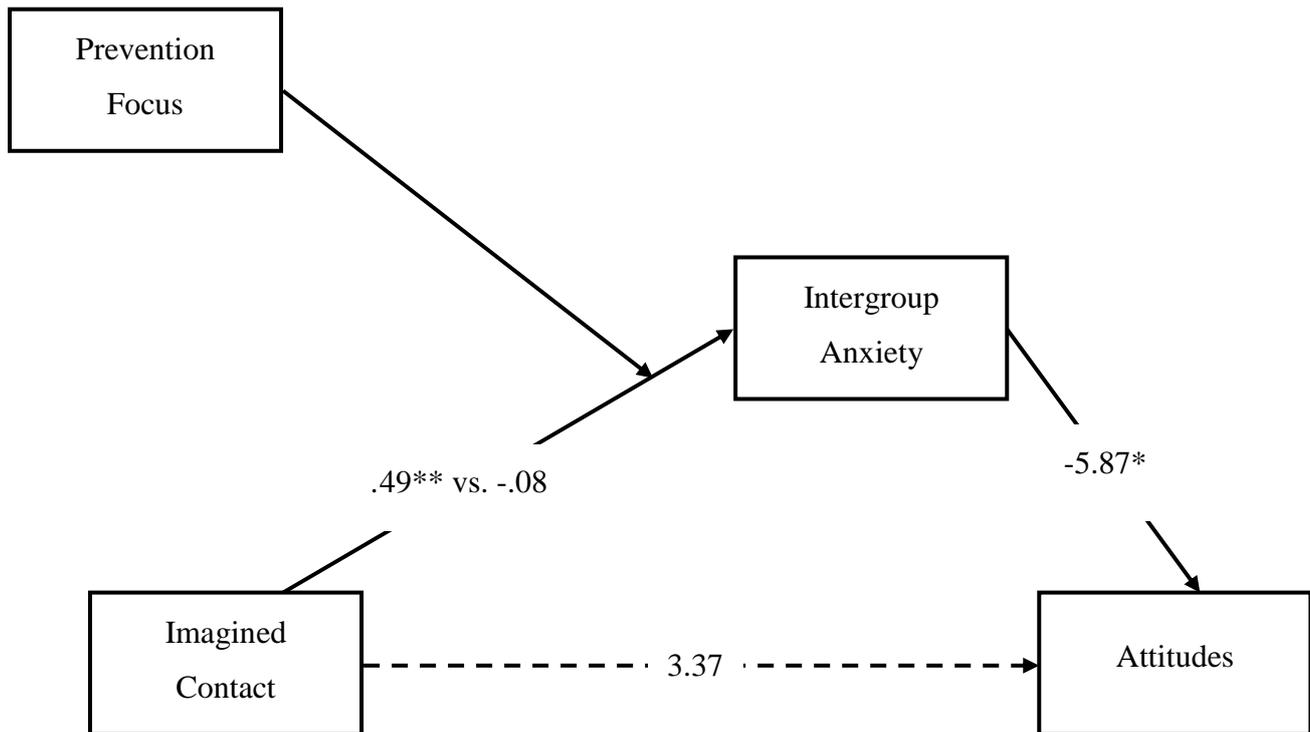
	Imagined contact	Control
Prevention- focus	5.03 (1.57)	5.38 (1.42)
Promotion- focus	6.26 (.70)	6.07 (1.01)
Intergroup Anxiety	3.21 (.86)	2.83 (.99)
Outgroup attitudes	61.73 (14.10)	62.18 (19.12)

*Table 2. Means and standard deviations of outcome variables in Experiment 2 according to condition.*

	Prevention Focus		Promotion Focus	
	Imagined contact	Control	Imagined contact	Control
Intergroup Anxiety	3.00 (1.05)	2.33 (1.04)	2.51 (1.11)	2.97 (.93)
Outgroup attitudes	5.14 (.97)	5.56 (.98)	5.09 (.75)	5.11 (.83)

### Figures

Figure 1: Mediated effect of imagined contact on attitudes via intergroup anxiety moderated by prevention focus in Experiment 1.

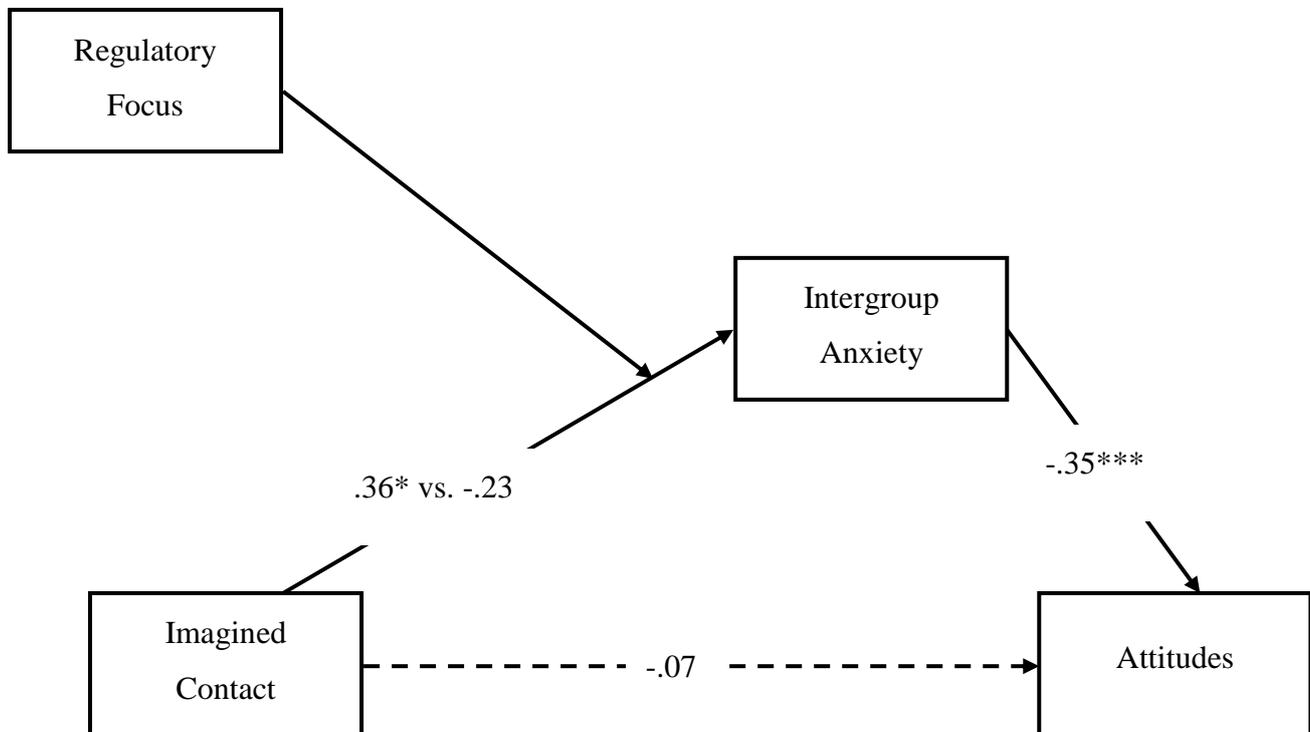


Note (1): \* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$ .

Note (2): Unstandardized coefficients are reported.

Note (3): There was a significant indirect effect of imagined contact on attitudes when prevention focus was high ( $-6.51$  to  $-.65$  with a point estimate of  $b = -2.85$ ), but not when prevention focus was low ( $-.80$  to  $3.52$  with a point estimate of  $b = .48$ ).

Figure 2: Moderated mediation model of the relationship between imagined contact and attitudes via intergroup anxiety, moderated by regulatory focus in Experiment 2.



Note (1): \* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$ .

Note (2): Unstandardized coefficients are reported.

Note (3): There was a significant indirect effect of imagined contact on attitudes via intergroup anxiety in the prevention focus conditions ( $-.27$  to  $-.004$  with a point estimate of  $b = -.12$ ), but not in the promotion-focused conditions ( $-.03$  to  $.21$  with a point estimate of  $b = .08$ ).