



# Nice and easy does it: How perceptual fluency moderates the effectiveness of imagined contact

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## HIGHLIGHTS

- We investigate whether fluency moderates the effects of an imagined contact task.
- We manipulate fluency by making the font easy to read or difficult to read.
- Imagined contact reduced prejudice when instructions were easy to read.
- Imagined contact increased prejudice when instructions were difficult to read.

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## ABSTRACT

Recent research has identified several moderators of the effectiveness of imagined contact – a relatively new prejudice-reducing intervention. However, research to date has not examined the meta-cognitive experience of doing an imagined contact task (independent of the content of the instruction set), or the ways in which this meta-cognitive experience could moderate the task's effectiveness. In two experiments, using a font manipulation, we demonstrated that altering the difficulty of the imagined contact task moderates its effects on prejudice. In both experiments, when the instructions were easy to read, participants who imagined intergroup interactions subsequently reported less prejudice than participants in the control condition. However, when the font was difficult to read participants who imagined intergroup interactions subsequently reported as much prejudice or even more prejudice than participants in a control condition. Implications for imagined contact theory, research and application are discussed.

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## Introduction

Since Turner, Crisp, and Lambert (2007) first demonstrated that imagining an interaction with a member of another group can reduce intergroup bias, much subsequent research has shown that imagined contact can reduce prejudice against a number of groups in a variety of social contexts (for reviews see Crisp, Stathi, Turner, & Husnu, 2009; Stathi, Crisp, Turner, West, & Birtel, 2012). However, though most research has found that imagined contact successfully reduces prejudice, a growing body of research reveals conditions under which imagined contact is less effective (Stathi & Crisp, 2008), ineffective (Jaworska, Górka, & Bilewicz, 2011), or even counter-effective (West, Holmes, & Hewstone, 2011). Drawing on theory concerning the effects of perceptual fluency on social information processing (Schwarz & Clore, 2007) we propose that altering the meta-cognitive experience

of doing an imagined contact task should moderate its effectiveness, even *without altering the content* of the task. In two experiments we demonstrate that changing the difficulty of the task without altering its content moderates the effectiveness of imagined contact, and can mean the difference between an intervention that decreases prejudice and an intervention that increases prejudice.

## Imagined contact

Imagined contact refers to the act of imagining oneself in a social interaction with a member of another group (see Stathi et al., 2012). It is an intervention that combines contact theory, which shows that interacting with members of other groups reduces intergroup bias and improves intergroup relations (Allport, 1954; Pettigrew & Tropp, 2006), with research demonstrating that mental imagery elicits neurological, emotional and motivational responses similar to real experiences (e.g., Dadds, Bovbjerg, Redd, & Cutmore, 1997; Kosslyn, Ganis, & Thompson, 2006). In brief, it is based on the hypothesis that imagining interactions with members of other groups should have many of the same consequences as actual interactions with members of these

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groups, including improved attitudes, reduced anxiety, and reduced intergroup bias (Turner et al., 2007).

#### *Evidence for the effectiveness of imagined contact*

A substantial body of research attests to the effectiveness of imagined contact as an intervention to reduce prejudice against a variety of groups. Turner et al. (2007) found that imagined contact reduced prejudice against older adults and gay men. Subsequent research found similar effects of imagined contact on attitudes toward people of different ethnicities and nationalities (Husnu & Crisp, 2010a; Stathi & Crisp, 2008), people of different religions (Husnu & Crisp, 2010b; Turner & Crisp, 2010; Turner & West, 2012), immigrants (Harwood, Paolini, Joyce, Rubin, & Arroyo, 2011; Vezzali, Capozza, Giovannini, & Stathi, 2011), asylum seekers (Turner, West, & Christie, in press), overweight people (Turner & West, 2012), and people with mental health disorders (West et al., 2011).

Imagined contact has been shown to reduce implicit prejudice as well as explicit prejudice (Turner & Crisp, 2010). It has been effective using participants from a variety of countries including the U.K. (Turner et al., 2007; West et al., 2011), the US (Harwood et al., 2011), Mexico (Stathi & Crisp, 2008), Cyprus (Husnu & Crisp, 2010a), Italy (Vezzali et al., 2011) and Japan (Rivers, 2011). Furthermore, imagined contact has been shown to improve intergroup relations in a variety of ways including reducing intergroup anxiety (Turner et al., 2007; West et al., 2011), improving intergroup attitudes (Turner & Crisp, 2010), increasing intergroup trust, improving intergroup behavioral intentions, (Husnu & Crisp, 2010a; Turner et al., in press) and altering subsequent intergroup behavior (Turner & West, 2012). Research has also ruled out a number of alternative explanations for the effects of imagined contact, including cognitive load, stereotype priming (Turner et al., 2007), demand characteristics (Turner & Crisp, 2010) and generalized positive affect (Stathi & Crisp, 2008).

#### *Moderators of the effects of imagined contact*

Despite the overall success of imagined contact at reducing prejudice, research has already identified moderators of its effectiveness. Stathi and Crisp (2008) found that imagined contact was more effective for high identifiers than low identifiers, and when the self was made salient rather than the outgroup. Husnu and Crisp (2010b) found that elaboration increased the effectiveness of imagined contact. Stathi, Crisp, and Hogg (2011) found that imagined contact was more effective when instructions were person-focused rather than group focused, and when the imagined interaction partner was typical of his/her group, rather than atypical. Jaworska et al. (2011) found that high intergroup anxiety before the imagined contact task rendered the task ineffective. West et al. (2011) found that neutral instructions led to more prejudice against people with schizophrenia, even when positive information preceded the imagined contact task, but that positive information integrated into the imagined contact task itself led to less prejudice.

These moderators can be placed into two categories; those that identify pre-existing conditions independent of the imagined contact task (e.g., Jaworska et al., 2011; Stathi & Crisp, 2008), and those that identify ways of altering the imagined contact instruction set to make it more effective (Husnu & Crisp, 2010b; Stathi et al., 2011; West et al., 2011). Of particular importance is the finding that the imagined interaction should be 'nice', in that it should have a positive tone (Crisp et al., 2009; Stathi et al., 2012). However, what has not been taken into account in any previous research is whether it should also be 'easy', or the importance of the meta-cognitive experience of doing an imagined contact task, independent of what the instruction set may contain. Below we explain why one should expect this meta-cognitive experience to alter the effectiveness of imagined contact.

#### *Meta-cognitive experiences as information*

People use their feelings and phenomenal experiences as information (for an overview, see Schwarz & Clore, 2007). For example, when forming an evaluative judgment about something, people may simply ask themselves "How do I feel about it?" (Schwarz & Clore, 1988). When the apparent feeling has indeed been caused by the respective target, this "how do I feel about it" heuristic provides meaningful information for the judgment at hand. However, affective responses can be the result of a variety of different causes and people sometimes mistakenly interpret *incidental* feelings as part of their reaction to the target (Schwarz & Clore, 2007).

Most relevant for the present context is the phenomenal experience of *perceptual fluency* and its use in social judgments (Schwarz, 2004). Perceptual fluency refers to the ease with which new information can be processed. This meta-cognitive experience has been shown to affect social judgments in a multitude of ways – and it does so independent of the retrieved content accompanying the experience of fluency (Alter & Oppenheimer, 2009; Schwarz & Clore, 2007). For example, if a statement is easier to process because of previous exposure (e.g., Begg, Anas, & Farinacci, 1992), because it is presented in a rhyming form (McGlone & Tofghbakhsh, 2000), or because it is printed with high rather than low figure-ground contrast (Reber & Schwarz, 1999), participants are more likely to judge this statement as true.

Researchers have manipulated perceptual fluency in a multitude of ways (for a catalogue, see Alter & Oppenheimer, 2009). One very common method is the font manipulation (e.g., Alter & Oppenheimer, 2008; Novemsky, Dhar, Schwarz, & Simonson, 2007; Reber & Zupanek, 2002; Simmons & Nelson, 2006; Song & Schwarz, 2008). In these studies, materials are either printed in easy to read fonts (e.g., Times New Roman or Arial) or in more difficult to read fonts (e.g., a small, gray, italicized font, or more difficult to read font styles such as Haettenschweiler or Mistral). For example, Song and Schwarz's (2008) participants judged a work-out routine printed in an easy to read font style as easier to do and as requiring less time than the same routine printed in a difficult to read font style (Study 1), and they judged the same recipe as more time-consuming and more difficult to cook when it was printed in a difficult rather than an easy to read font (Study 2). Participants also indicated that they would be more likely to regularly follow a work-out routine that had been presented in an easy rather than a difficult font, and were willing to spend more money on a (presumably harder to prepare) dish in a restaurant when its recipe was printed in a difficult font. Thus, meta-cognitive experiences not only influence social judgments, but also the behavioral intentions following from these judgments. Yet, despite the substantial body of research demonstrating the importance of meta-cognition for social judgment, its impact on intergroup judgments has remained largely unexplored (Pearson & Dovidio, in press).

The important question for our purposes is whether such meta-cognitive experiences can also play a role in imagined contact tasks. Can the ease with which people process the instruction set of an imagined contact task influence attitudes and behavioral intentions towards a relevant outgroup?

#### *Perceptual fluency and imagined contact*

Many different variables can affect the fluency with which new information can be processed. Accordingly, the meaning of such meta-cognitive experiences is open to interpretation, and people rely on naive theories to explain them (Schwarz, 2004; Schwarz & Clore, 2007). People normally consider their experiences to be about whatever is in the focus of their attention (Clore et al., 2001) and accordingly, are most likely to attribute feelings and phenomenal experiences to the most salient aspect of the situation (Schwarz & Clore, 2007).

When people imagine an interaction with an outgroup member and are subsequently asked for their attitudes towards the respective group, they will likely draw upon their meta-cognitive experiences during the imagined contact task to assess their attitude towards the outgroup, applying a “how do I feel about it”-heuristic (Schwarz & Clore, 1988). If imagining contact has been *easy* (i.e., if perceptual fluency has been high) participants should attribute at least part of the respective positive experiential feeling to the outgroup, resulting in more positive attitudes and reduced prejudice. Likewise, if an imagined contact task has been *difficult* (i.e., if perceptual fluency has been low), participants should also use this negative experiential feeling as information about the outgroup, resulting in more negative attitudes and increased prejudice.

### Present research and hypotheses

This current research investigated whether the effects of an imagined contact task could be moderated by changes in the meta-cognitive experience of high or low perceptual fluency that the task invokes, without making any changes to the content of the instruction set. In both experiments participants either did an imagined contact task or a control task under either high or low fluency conditions. We used different font styles to manipulate participants' meta-cognitive experiences because numerous previous studies have demonstrated the effectiveness and efficiency of font styles for manipulating processing fluency (see Alter & Oppenheimer, 2009). As such, participants were randomly assigned to one of four cells of a 2 (Task: Imagined contact  $\times$  Control) by 2 (Font: Easy  $\times$  Difficult) factorial design. In both experiments we expected an interaction of task and font: in the easy font conditions participants who complete the imagined contact task should report less prejudice than participants who complete the control task; in the difficult font conditions this difference should be reversed, because participants should attribute at least part of the negative meta-cognitive experience of low fluency during the task to the outgroup, resulting in increased prejudice.

### Experiment 1

In this experiment we used people with schizophrenia as our target group because previous research has found that imagined contact can both increase and decrease prejudice against this group (see West et al., 2011). Even compared to other people with mental health difficulties, people with schizophrenia are stereotyped as particularly dangerous and unpredictable, and suffer from particularly widespread, severe (Crisp, Gelder, Goddard, & Meltzer, 2005; Crisp, Gelder, Rix, Meltzer, & Rowlands, 2000) and socially accepted (West & Hewstone, 2012) stigmatization. There is a growing need for effective strategies that reduce this devastating prejudice (London & Evans-Lacko, 2010), and imagined contact is a promising option.

We used exactly the same instruction set for the imagined contact and control tasks as West et al. (2011, Experiment 4), but we made the instruction set easier or harder by altering the font in which it was printed. We hypothesized that when the font is easy to read, imagined contact should lead to less prejudice against people with schizophrenia, but when the font is hard to read, imagined contact should result in more prejudice against people with schizophrenia.

### Method

#### Participants and design

One hundred twenty-one undergraduates at a British university (97 women, 24 men, mean age = 18.26) were randomly assigned to the four cells of a 2 (Font: Easy vs. Difficult)  $\times$  2 (Condition: Imagined Contact vs. Control) factorial design. Participants in all conditions completed the experiment in the same room, in groups of about twenty. Each participant read instructions and completed all measures on a

computer in an individual cubicle. Participants received course credit for participating in the research. None of the participants indicated that they had ever been diagnosed with schizophrenia or any other psychosis-related mental health disorder.

#### Materials and procedure

We mimicked the procedure of West et al. (2011; Experiment 4), which has been shown to successfully reduce prejudice against people with schizophrenia. Participants in both the imagined contact and control conditions received the following information before their respective tasks:

*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.*

Participants in the imagined contact condition were then given the following instructions: “Imagine that you are waiting at a crowded train station for a train to Leeds. Shortly after you find a seat, you see Tom Harrell enter the train station and take a seat beside you. Please take two minutes to imagine yourself having a conversation with Tom Harrell at the train station. Imagine that the interaction is positive, relaxed and comfortable.” Participants in the control condition were given identical instructions, except that they were told to imagine interacting with Arturo Sandoval instead of Tom Harrell.

Participants in both conditions were allowed to re-read the paragraphs describing their imagined interaction partners and were also given the following instructions: “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.” Participants were then given 2 min to complete the task.

We modified the difficulty of the task by changing the font in which the instructions were printed. In the *easy font condition*, instructions were printed in Arial, font size 11 pt, in the *difficult font condition*, instructions were printed in Mistral, font size 11 pt (cf. Song & Schwarz, 2008). After completing the imagined tasks, participants then completed measures of prejudice against people with schizophrenia. All dependent measures were printed in Times New Roman, an easy to read font.

To verify that participants in all conditions completed the task, we asked an independent rater who was unaware of the nature and conditions of the experiment (and thus necessarily blind to the hypotheses) to read the descriptions the participants wrote. Out of necessity, we had to inform the rater that participants were supposed to be imagining an interaction between themselves and a famous jazz musician. The rater indicated (yes or no) whether the participants understood the instructions, whether they imagined such an interaction, and the number of words each participant wrote.

To assess the participants' meta-cognitive experience of doing the task, we asked another independent rater (also unaware of hypotheses and blind to condition) to indicate their impression of how “difficult” and “unpleasant” each participant found the task to be, based on what the participant wrote. We further expected that participants who experienced the task as more negative or more difficult would write less detailed descriptions of what they imagined. Thus the rater also indicated how “detailed” (reversed) the participants' descriptions were. All three items were on 7-point scales (1 = *Not at all*, 7 = *Very*). These three items correlated well with each other ( $.49 < r < .70$ , all  $p < .001$ ), and together these three items formed a reliable scale measuring apparent negative meta-cognitive experience (Cronbach's  $\alpha = .78$ ). Another independent rater completed all the same measures using a subset ( $N = 30$ ) of the participants.



Inter-rater reliability was very high for all ratings ( $.52 < r < 1.00$ , all  $p < .001$ ).

Central to prejudice against people with schizophrenia are perceptions of dangerousness, fear and avoidance (Link, Phelan, Bresnahan, Stueve, & Pescosolido, 1999; Penn, Kommana, Mansfield, & Link, 1999). We measured prejudice against people with schizophrenia using nine items that included measures of dangerousness, fear and avoidance (from Corrigan et al., 2002; also used in West et al., 2011). Participants reported their agreement with the following: “I would feel unsafe around people with schizophrenia”, “People with schizophrenia terrify me”, “How dangerous do you feel a person with schizophrenia is?”, “I would feel threatened by a person with schizophrenia”, “How scared of a person with schizophrenia would you feel?”, “How frightened of a person with schizophrenia would you feel?”, “I think people with schizophrenia pose a risk to other people unless they are hospitalized”, “I would try to avoid a person with schizophrenia”, “If I were a landlord, I probably would rent an apartment to a person with schizophrenia” (reversed). We also included three other items measuring avoidance (taken from Tam, Hewstone, Kenworthy, & Cairns, 2009). Participants indicated how much they would react in the following ways to people with schizophrenia: “keep them at a distance,” “have nothing to do with them,” and “avoid them” ( $\alpha = .92$ ). One item – “If I were a landlord, I probably would rent an apartment to a person with schizophrenia” – did not load onto the same factor as the others and was thus removed. All eleven other items loaded well onto a single factor ( $.63 < \lambda < .84$ ) and formed a reliable 11-item scale ( $\alpha = .93$ ). Measures were all on 7-point scales (1 = *Not at all*, 7 = *Very much*). After completing the measures, participants provided demographic information including age, sex, ethnicity and mental health history before they were thanked and debriefed.

## Results

Participant gender had no effect on any of the dependent measures ( $.26 < p < .48$ ) so all data was collapsed across genders.

## Manipulation checks

We verified that most participants completed the tasks as instructed. Of 121 participants, only two participants wrote nothing at all and could not be rated. Across all conditions, most of the other participants understood the task (95.8%) and most completed the task correctly (93.3%). Participants in the difficult font conditions were also no more or less likely than participants in the easy font conditions to write something (97.7% vs. 98.7%),  $\chi^2(1, N = 121) = .16, p = .69$ , to appear to have understood the instructions (95.3% vs. 96.0%),  $\chi^2(1, N = 119) = .034, p = .85$ , or to correctly follow the instructions (93.0% vs. 93.4%),  $\chi^2(1, N = 119) = .007, p = .93$ . These differences were also absent between participants in the imagined contact and control task conditions ( $.14 < p < .75$ ). Neither font,  $F(1, 115) = 1.28, p = .26, \eta_p^2 = .01$ , nor condition,  $F(1, 115) = .15, p = .70, \eta_p^2 = .001$ , predicted the number of words written, nor was there any interaction between the two,  $F(1, 115) = .01, p = .97, \eta_p^2 < .001$ .

However, as hypothesized, the independent rater evaluated participants' meta-cognitive experience to be more negative in the difficult font conditions ( $M = 3.48, SD = 1.44$ ) than in the easy font conditions ( $M = 3.01, SD = 1.31$ ), though this difference was not significant at the 5% level  $t(117) = 1.82, p = .07, d = .34$ . As expected, however, negative meta-cognitive experience was positively correlated with prejudice ( $r = .22, p = .02$ ).

## Prejudice

We investigated the effects of imagined contact and font style on prejudice against people with schizophrenia by conducting a 2 (Task: Imagined contact vs. Control) by 2 (Font: Easy vs. Difficult) analysis of variance followed by Bonferroni-adjusted post-hoc contrasts. As expected, the main effect of imagined contact on prejudice was not significant,  $F(1, 117) = .02, p = .90, \eta_p^2 < .001$ . However, we did find a main effect of font style on prejudice; participants in the easy

font conditions reported less prejudice overall ( $M = 2.52, SD = .94$ ) than participants in the difficult font conditions ( $M = 3.11, SD = 1.08$ ),  $F(1, 117) = 11.05, p = .001, \eta_p^2 = .09$ . Most importantly, we also found the predicted interaction of condition and font style,  $F(1, 117) = 7.02, p = .01, \eta_p^2 = .06$ ; see Fig. 1.

Post-hoc comparisons revealed that differences were in the predicted directions. Within the easy font conditions participants in the imagined contact condition reported less prejudice against people with schizophrenia ( $M = 2.28, SD = .82$ ) than did participants in the control condition ( $M = 2.75, SD = 1.01$ ),  $p = .04, d = .51$ . However, in the difficult font conditions participants in the imagined contact condition reported more prejudice against people with schizophrenia ( $M = 3.38, SD = 1.24$ ) than did participants in the control condition ( $M = 2.87, SD = .87$ ), though this difference was not significant at the 5% level (in a two-sided test),  $p = .09, d = .47$ .

## Mediation analyses

We tested whether negative meta-cognitive experience mediated the relationship between font and prejudice against people with schizophrenia using Preacher–Hayes bootstrap tests (Hayes, 2009). Imagined contact was included as a moderator of the relationship between font and prejudice. Bias-corrected bootstrapping techniques are favored over conventional mediation tests (e.g., Sobel's Z) because of (a) their ability to handle skewed data and (b) their superior ability to detect significant mediation effects with smaller sample sizes while (c) retaining the most power (Fritz & Mackinnon, 2007). Using a 95% bias-corrected bootstrap confidence interval based on 5000 bootstrap samples, the indirect effect of font on prejudice through meta-cognitive negativity narrowly included zero ( $-.094$  to  $.001$  with a point estimate of  $-.030$ ), which indicated a failure of the mediation model (see Zhao, Lynch, & Chen, 2010). This was expected as the relationship between font and negative meta-cognitive experience was not significant at the 5% level. Also as expected, the path from font to prejudice was moderated by imagined contact ( $p_{\text{interaction}} = .016$ ).

## Discussion

In Experiment 1 we demonstrated that, compared to control conditions, an easy imagined contact task reduced prejudice against people

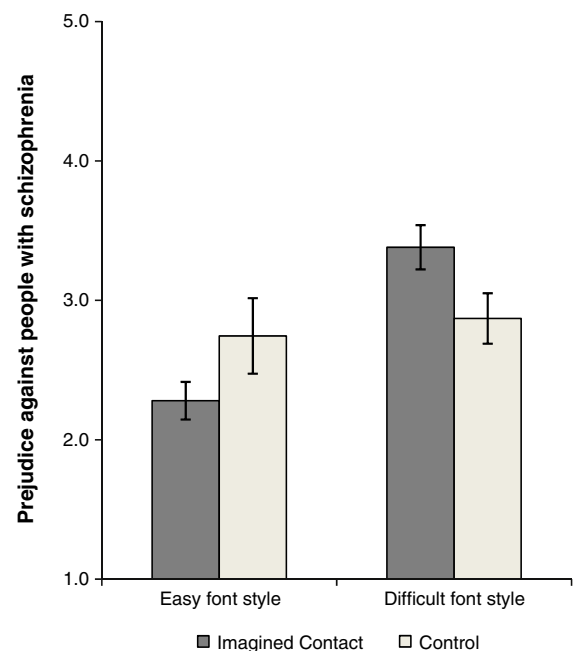


Fig. 1. Experiment 1. Prejudice against people with schizophrenia according to font style and imagined contact task.

with schizophrenia, while a difficult imagined contact task failed to reduce prejudice against people with schizophrenia, even though both tasks contained exactly the same information. This pattern of results supports our hypotheses and suggests that the ease or difficulty of an imagined contact task moderates its effects, determining whether or not it successfully decreases prejudice.

Nonetheless, we acknowledged certain shortcomings of Experiment 1 and addressed them in Experiment 2. First, we wanted to replicate the results of Experiment 1 using a different participant group and target group. People with schizophrenia may be a difficult group for imagined contact interventions (see West et al., 2011), and thus we wanted to replicate our results using a target group for whom imagined contact has been more reliably successful. Second, we acknowledge that the instruction set used by West et al. (2011) differs substantially from the instruction set recommended by Crisp et al. (2009) and Stathi et al. (2012). We wanted to replicate our effects using this recommended instruction set.

Third, the coding of participants' open responses by independent raters in Experiment 1 was a rather indirect method of testing whether the font manipulation had indeed affected the participants' experience of doing the imagined contact task. Therefore, Experiment 2 included a more standard manipulation check — directly asking participants how they had experienced the imagined interaction task. Finally, though we found the hypothesized interaction between font difficulty and imagined contact, the prejudice-increasing effects of imagined contact in the difficult font condition did not quite reach statistical significance. In Experiment 2 we hoped to find this hypothesized difference in the difficult font condition.

## Experiment 2

In Experiment 2 we made the same predictions as in Experiment 1 — that, compared to control conditions, an easy (i.e., perceptually fluent) imagined contact task would decrease prejudice, while a difficult imagined contact task would increase prejudice. We again manipulated task difficulty independent of content via the font style that the materials were printed in. In this experiment, participants were German university students who self-identified as Christians and the outgroup were Muslims in Germany. Prejudice against Muslims is widespread in Germany (Fischer, Greitemeyer, & Kastenmüller, 2007; Gonsalkorale, Hippel, Sherman, & Klauer, 2009) as well as in Europe in general (Doosje, Zimmermann, Kupper, Zick, & Meertens, 2010); attitudes towards Muslim immigrants are more negative than attitudes towards other immigrant groups (Strabac & Listhaug, 2008); and this has been linked to the importance of Christianity for national identity in Europe and a perceived incompatibility between Christian and Islamic traditions (Kunovich, 2006; Smeekes, Verkuyten, & Poppe, 2011; Zolberg & Woon, 1999). However, both direct and indirect intergroup contact has been shown to reduce anti-Muslim prejudice among Germans (Pettigrew, Christ, Wagner, & Stellmacher, 2007).

## Method

### Participants and design

Eighty-one female and twenty male German first year psychology students (mean age = 20.02) who had indicated their religious affiliation as Christian (protestant, catholic or “Christian”) in a pre-test participated as part of a class exercise.<sup>1</sup> Participants were randomly assigned to either the imagined contact or the control condition. For four different seminar sessions, font style (Easy vs. Difficult) varied randomly between sessions

such that participants in one session all received materials printed in the same font. In a fifth session, materials printed in the two different font styles were distributed from two different sides of the classroom so that participants always sat next to somebody with materials printed in the same font.

### Materials and procedure

Participants received a German translation of the instruction set recommended by Crisp et al. (2009). We asked participants in the imagined contact condition to take 3 min to imagine meeting a Muslim stranger for the first time. They were instructed to imagine that the interaction was positive, relaxed and comfortable. Participants in the control conditions were given the same instructions, except that they were simply told to imagine meeting a stranger (no intergroup context) instead of a Muslim stranger. Although we asked participants to mostly spend this time imagining the conversation with the (Muslim) stranger, we also asked them to write down some of the things they were imagining on empty lines provided below the instructions.

As in Experiment 1, in the *easy font condition*, instructions were printed in Arial, font size 11 pt, and in the *difficult font condition*, instructions were printed in Mistral, font size 11 pt (cf. Song & Schwarz, 2008). In addition, in the easy font condition the empty lines for notes were spaced wide enough for participants to comfortably write on, while we used a more narrow spacing in the difficult font condition.

Also as in Experiment 1, an independent rater unaware of the hypotheses indicated whether the participants imagined an interaction (yes/no) and the number of words the participants wrote. Thirty open responses were independently coded by the second author and inter-rater agreement was 100%.

The dependent measures were again printed in Times New Roman in all conditions. To measure participants' attitudes towards Muslims, we asked them to indicate on 7-point semantic differential scales how they felt about Muslims in general (cf. Wright, Aron, McLaughlin-Volpe, & Ropp, 1997; West et al., 2011). This measure comprised the four items *friendly–hostile*, *trusting–suspicious*, *warm–cold*, and *respect–contempt* (Cronbach's  $\alpha = .79$ ).

To assess participants' behavioral intentions towards Muslims, participants answered 8 items ( $\alpha = .78$ ) based on those used by Tam et al. (2009). Participants indicated on 7-point Likert scales how much they wanted to react in each of the following ways to Muslims: “*talk to them*” (reversed), “*avoid them*”, “*confront them*”, “*learn more about them*” (reversed), “*keep them at a distance*”, “*spend time with them*” (reversed), “*have nothing to do with them*”, and “*oppose them*”<sup>2</sup> (1 = *Not at all*, 7 = *Very Much*).

After completing the dependent measures, participants answered two manipulation check questions to capture their meta-cognitive experience while doing the imagined contact task (“*How easy was it to imagine the interaction with the stranger*” and “*How pleasurable was the task for you*”,  $r = .42$ ,  $p < .001$ ). In addition, we asked them “*How motivated were you to complete the task properly*” (all on scales from 1 = *Not at all* to 7 = *Very Much*). Participants were then thanked and asked to confirm that they would not talk to fellow students in other seminar sessions about the study. They were debriefed in full and informed about the main results two weeks later in the same seminar in which they had completed the questionnaire.

## Results

Preliminary analyses revealed no significant effects of participant gender, all  $F$ s < 2.55, all  $p$ s > .11. We therefore did not include participant gender as a factor in the analyses that follow. One participant had an outlying score on the attitude measure (more than 2 SDs above the

<sup>1</sup> Thirty-one additional participants indicated other religious affiliations ( $n = 3$ ), indicated that they were not religious or atheist ( $n = 13$ ), or did not reveal their religious affiliation ( $n = 15$ ). We excluded these participants to obtain a more homogeneous sample. The predicted contact by font interactions are still significant when these participants are included in the sample: attitudes,  $F(1, 126) = 5.41$ ,  $p = .022$ ,  $\eta_p^2 = .04$ , behavioral intentions,  $F(1, 126) = 4.00$ ,  $p = .048$ ,  $\eta_p^2 = .03$ .

<sup>2</sup> A ninth item (“*argue with them*”) was excluded because of a low and negative scale-item correlation ( $r = -.154$ ) and because excluding this item increased Cronbach's  $\alpha$  from .67 to .79.

mean in the respective condition). We excluded this participant from all further analyses.<sup>3</sup> We investigated the effects of imagined contact and font style on attitudes and behavioral intentions towards Muslims by conducting a 2 (Task: Imagined contact vs. Control) by 2 (Font: Easy vs. Difficult) analysis of variance followed by Bonferroni-adjusted post-hoc contrasts.

#### Manipulation check

All participants provided an open response and all of them described an interaction, although for one participant it was unclear whether she described an imagined interaction with a Muslim stranger or an actual encounter that she had had in the past. The number of words was not affected by font style, contact condition, or the interaction between the two,  $F_s < 2.13$ ,  $p_s > .14$ .

We then tested whether font style and imagined contact condition had affected how easy and pleasurable participants had found the imagined contact task. This revealed a significant main effect of font style,  $F(1, 96) = 4.20$ ,  $p = .04$ ,  $\eta_p^2 = .04$ , indicating that participants in the easy font condition indeed had a more positive meta-cognitive experience ( $M = 4.36$ ,  $SD = 1.46$ ) than participants in the difficult font condition ( $M = 3.74$ ,  $SD = 1.52$ ). There were no other significant effects on the manipulation check,  $F_s < .65$ ,  $p_s > .42$ .

Although participants indicated slightly higher motivation to complete the task properly in the imagined contact condition ( $M = 5.74$ ,  $SD = 1.14$ ) than in the control condition ( $M = 5.31$ ,  $SD = 1.53$ ), this difference was not significant at the 5% level,  $F(1, 97) = 2.64$ ,  $p = .11$ ,  $d = .32$ . Most importantly, participants in both font style conditions reported equal motivation to complete the task properly ( $M_s = 5.54$  and  $5.51$ ,  $SD_s = 1.49$  and  $1.20$ , respectively),  $F(1, 96) = 0.04$ ,  $p = .94$ ,  $d = .02$ , and the contact condition by font interaction was not significant,  $F(1, 97) = 0.62$ ,  $p = .57$ ,  $\eta_p^2 = .03$ .

#### Attitudes

As expected, the main effect of contact on attitudes was not significant,  $F(1, 97) = .31$ ,  $p = .58$ . There was, however, a significant main effect of font style,  $F(1, 97) = 5.81$ ,  $p = .01$ ,  $\eta_p^2 = .06$ . Participants indicated less negative attitudes in the difficult font condition ( $M = 3.12$ ,  $SD = 1.01$ ) than in the easy font condition, ( $M = 3.55$ ,  $SD = 0.84$ ). Most relevant for our present hypotheses, the predicted contact task by font style interaction was significant,  $F(1, 97) = 11.55$ ,  $p = .001$ ,  $\eta_p^2 = .11$ .

As expected, participants in the easy font condition reported less negative attitudes towards Muslims after doing the imagined contact task ( $M = 3.30$ ,  $SD = 0.83$ ) than after doing the control task ( $M = 3.80$ ,  $SD = 0.78$ ),  $p = .04$ ,  $d = .62$ . However, consistent with our hypotheses and with the results of Experiment 1, participants in the difficult font condition reported significantly more negative attitudes towards Muslims after doing the imagined contact task ( $M = 3.48$ ,  $SD = 1.14$ ) than after doing the control task ( $M = 2.78$ ,  $SD = 0.76$ ),  $p = .009$ ,  $d = .74$  (Fig. 2).

#### Behavioral intentions

For behavioral intentions, neither of the two main effects approached statistical significance,  $F_s < .03$ ,  $p_s > .85$ . However, as predicted, we found a significant interaction of task and font style,  $F(1, 97) = 6.24$ ,  $p = .014$ ,  $\eta_p^2 = .06$  (see Fig. 3). Post-hoc tests revealed that differences were in the predicted directions, albeit not significant at the 5% level. In the easy font conditions participants who completed the imagined contact task reported less negative behavioral intentions towards Muslims ( $M = 2.52$ ,  $SD = 0.85$ ) than did participants who completed the control task ( $M = 2.95$ ,  $SD = 0.86$ ),  $p = .056$ ,  $d = .50$ . However, in the difficult font conditions, participants who completed the imagined contact task reported somewhat more negative behavioral intentions toward Muslims ( $M = 2.91$ ,  $SD = 0.85$ ) than did participants who completed

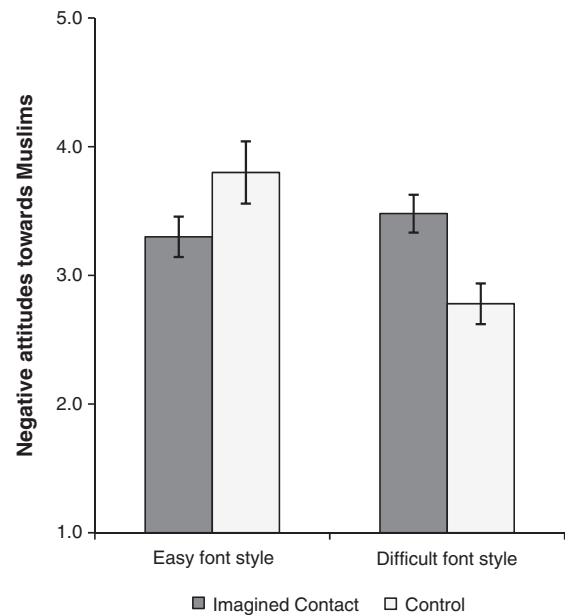


Fig. 2. Experiment 2. Negative attitudes towards Muslims according to font style and imagined contact task.

the control task ( $M_s = 2.51$ ,  $SD_s = 0.77$ ),  $p = .107$ ,  $d = .49$ . The meta-cognitive experience that participants reported in the manipulation check measure at the end of the survey was not correlated with attitudes ( $r = .01$ ,  $p = .95$ ), and the correlation between metacognitive experience and behavioral intentions did not reach significance ( $r = -.17$ ,  $p = .09$ ). Self-reported meta-cognitive experience also did not mediate the effects of font style and contact condition on attitudes ( $-.241$  to  $.073$  with a point estimate of  $-.039$ ), or behavioral intentions ( $-.221$  to  $.053$  with a point estimate of  $-.027$ ).

#### Discussion

The results of Experiment 2 also supported our hypotheses. As in Experiment 1, we found the predicted interaction of task and font style on both attitudes and behavioral intentions. Imagined contact

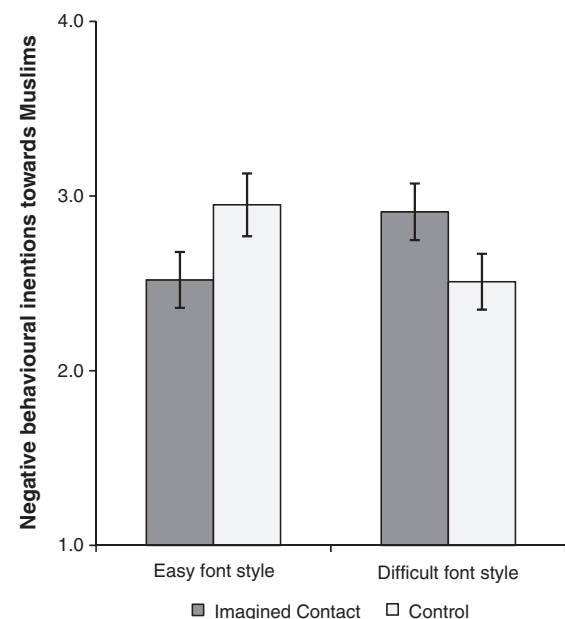


Fig. 3. Experiment 2. Negative behavioural intentions towards Muslims according to font style and imagined contact task.

<sup>3</sup> Including this participant does not change the statistical significance of the predicted contact by font interactions; attitudes:  $F(1, 98) = 9.71$ ,  $p = .002$ ,  $\eta_p^2 = .09$ , behavioral intentions:  $F(1, 98) = 6.61$ ,  $p = .012$ ,  $\eta_p^2 = .06$ .



resulted in less negative attitudes when instructions were printed in an easy font, but in more negative attitudes, when instructions were printed in a difficult font. The results for behavioral intentions followed the same pattern, but were not significant at the 5% level.

Consistent with this pattern of results, participants in the easy font condition reported more positive meta-cognitive experiences than did participants in the difficult font condition. However, these self-reported experiences of the task as nice and easy or unpleasant and difficult did not mediate the effects of font style on participants' reported attitudes. One explanation for this may be that these measures were intended as a manipulation check rather than a mediator and were therefore obtained at the end of the study with quite a bit of temporal distance between the actual task and participants' account of their experience during this task. Although this retrospective report did show the expected mean level differences *between* font style conditions, it may have been too indirect and coarse a measure to reliably assess subtle differences *within* experimental groups and hence may not have been sensitive enough for regression-based mediation analyses. An assessment of meta-cognitive experiences immediately after the imagination task might have been better able to detect these differences. However, such an approach may have been detrimental to the experiment, as it would have likely caused participants to more critically examine their meta-cognitive experience and therefore make them more likely to (correctly) attribute their difficulties during the task to the font style.

We found an unexpected main effect of font style on attitudes such that participants in the difficult font conditions reported more positive attitudes towards Muslims than participants in the easy font conditions. This is a somewhat curious finding. A possible explanation could be the change in difficulty between the instruction set (printed in a difficult font) and the dependent measures (printed in an easy font). This means that participants in the difficult font condition should have experienced an *increase* in perceptual fluency when they turned from the hard to read imagined contact instructions to the easy to read dependent measures. They may have misattributed some of this positive meta-cognitive experience on their attitudes towards Muslims, especially in the control condition, where the imagined contact task provided them with no information on how to feel about Muslims. However, this finding should not be given too much weight considering that we found no such effect on behavioral intentions in this experiment or on prejudice in Experiment 1. Most important, we found the predicted task by difficulty interaction despite this somewhat curious main effect.

In summary, Experiment 2 confirmed our hypotheses by showing that imagined contact can improve attitudes towards outgroup members when perceptual fluency during the imagined contact task is high, but does not work, and can even worsen intergroup attitudes, when perceptual fluency during the contact task is low.

## General discussion

Imagined contact is a prejudice reducing intervention with the potential to improve intergroup attitudes, affect subsequent intergroup behavior and possibly prepare group members for future real intergroup contact. However, to be reliably effective, it must be properly understood. Part of this understanding involves being mindful of the *experience* of being an imagined contact participant.

Based on social cognition research that has demonstrated how meta-cognitive experiences such as ease of processing can influence social judgments (e.g., Schwarz, 2004; Schwarz & Clore, 2007), we hypothesized that participants' meta-cognitive experience of an imagined contact task as easy or difficult should influence its effects on prejudice. We manipulated processing fluency via font style (cf. Alter & Oppenheimer, 2009) and found that when the task was easy, imagining an interaction with an outgroup member led to less prejudice (Expt. 1) and more positive attitudes (Expt. 2) towards the outgroup, replicating the findings of much previous research on imagined contact (Crisp et al., 2009; Stathi et al., 2012). However, when the same task was difficult, imagined

contact was rendered ineffective or counter-effective, and actually worsened attitudes (Expt. 2) towards the outgroup.

## Study design and results

These two experiments represent the only research in which the effects of imagined contact have been deliberately modified without altering the content of the imagined contact task *at all*. Furthermore, this research is the first to demonstrate that these alterations could so extensively moderate the effectiveness of imagined contact, rendering it not only less effective or ineffective, but potentially *counter-effective*. Some previous research has altered the experience of the imagined contact task, and thus deliberately rendered the task more or less effective (e.g., by making participants close their eyes, see Husnu & Crisp, 2011). However, in every previous case the researchers have also modified the instruction set as well. This novel application of perceptual fluency theory to imagined contact points to new ways in which the effects of imagined contact could be changed.

Our data indicate that the font manipulation rendered the imagined contact task more negative for the participants, and that, when the font was more difficult to read, the effects of imagined contact were nullified or even reversed. The font styles manipulation we used in these experiments has been used extensively in previous research and has had reliable effects on various social judgments (see Alter & Oppenheimer, 2009). Furthermore, both independent codings of participants' open responses in Experiment 1, and participant's own ratings of their experience in Experiment 2 indicated that participants in the difficult font condition had a less positive experience completing the task than did participants in the easy font condition (though this difference was not significant at the 5% level in Experiment 1).

However neither in Experiment 1, nor in Experiment 2 did these measures of meta-cognitive experience mediate the relationship between font difficulty and prejudice (though it is worth noting that this mediation model approached significance in Experiment 1). This may be because our measures of meta-cognitive experience were not ideal and might have lacked the necessary sensitivity. In Experiment 1, we used an indirect measure of a third-party's assessment of the perceived unpleasantness of the task for the participants. In Experiment 2, participants reported their meta-cognitive experience of the task retrospectively, *after* completing the dependent measures.

Nonetheless, these null findings leave the door open for alternative explanations of the observed effects of font style. For example, one might argue that participants in the difficult font condition did not experience more difficulty in imagining contact but instead felt a general frustration about the task. However, font style did not affect the length of participants' open responses (Experiments 1 and 2) or their motivation to complete the task properly (Experiment 2). Considering the shortcomings of our measures of meta-cognitive experience, that we employed one of the most commonly used methods to manipulate fluency (Alter & Oppenheimer, 2009) and that the manipulation produced exactly the effects we had predicted based on a perceptual fluency approach (i.e., moderating the effectiveness of the imagined contact task), we believe that our findings can be interpreted in line with the argument that meta-cognitive experience moderates the effects of imagined contact on prejudice.

## Implications

The integration of perceptual fluency and imagined contact points to an interesting, but thus far overlooked, aspect of imagined contact theory. If the negative (i.e., prejudice-increasing) effects of imagined contact found in this research can be attributed to a meta-cognitive effect, the positive (i.e., prejudice-reducing) effects of imagined contact found in this and other research can also be attributed, at least in part, to a meta-cognitive effect.

This is not to say that the effect is purely meta-cognitive: too much research also shows that, for a variety of other reasons, mental imagery elicits neurological, affective and motivational responses similar to real experiences (e.g., Dadds et al., 1997; Kosslyn et al., 2006) and that imagery can alter future affect and behavior in a number of areas (Feltz & Landers, 1983; Knudstrup, Segrest, & Hurley, 2003). However, an important finding of this research is that considering the meta-cognitive experience of doing an imagined contact task can help us understand imagined contact and predict conditions under which its effects may be easily, or even unintentionally, moderated.

One might be tempted to interpret the importance of meta-cognitive experiences as an indication that imagined contact does not genuinely reduce prejudice or improve intergroup relations. However, we believe that this interpretation is unwarranted. As Schwarz and Clore (2007) point out, such interpretations of perceptual fluency effects confuse the operational and the theoretical level. Meta-cognitive experiences like processing fluency are an integral aspect of everyday (social) cognition and people rely on them for a variety of social judgments. This can lead to accurate inferences as well as misattributions. Experimental research often elicits misattributions (e.g., on an outgroup rather than on font style) to demonstrate the importance of meta-cognitive experiences. However, this does not mean that the underlying processes are inherently dysfunctional or always lead to inaccurate inferences. Similarly, demonstrating that meta-cognitive experiences are an important aspect of imagined contact tasks does not mean that these tasks are invalid or ineffective. In fact, far too much research now exists (see Stathi et al., 2012 for a review) to deny that imagined contact affects intergroup affect, cognition and behavior. However, the present research demonstrates that meta-cognitive experiences are an important, but so far overlooked, aspect of such imagined contact tasks.

These findings also have important practical implications for the design of future imagined contact interventions. Much has been said about the fact that imagined contact instruction sets should be 'nice', or have a positive tone in order to be effective, or maximally effective (Crisp et al., 2009; Stathi et al., 2012; West et al., 2011). This current research demonstrates that, even when imagined contact is 'nice' (i.e., positively toned), it may still be ineffective or counter-effective unless it is also 'easy' for the participants to do. Of course, it is unlikely that anyone would deliberately design a difficult imagined contact task. However, advancing our understanding of the processes behind imagined contact and the moderators of its effects, helps to identify circumstances under which well-intentioned imagined contact interventions may unintentionally increase prejudice. This is particularly important considering the groups for which imagined contact was designed – groups with whom real contact is difficult, or risky, and with whom positive experiences are rare. This lack of positive experiences may indeed render imagining positive experiences quite difficult, and thus produce undesirable effects.

This also has serious implications for how imagined contact research is reported. Changes to the content of the imagined contact task (and control conditions) have been explicitly acknowledged, and the effects of these changes have been investigated. However, numerous alterations to the way the task is done have occurred, often without being investigated, explained, or even explicitly mentioned. One example is the duration of the imagined contact task: Turner et al. (2007) asked participants to spend 5 min imagining the interaction, but in later research participants were asked to spend only 2 min (Turner & Crisp, 2010; Turner & West, 2012) or 1 min (Crisp & Husnu, 2011; Husnu & Crisp, 2011), while other researchers have extended the task to 15 min (Rivers, 2011), or even failed to mention the duration of the task (Harwood et al., 2011).

Other things also routinely go unmentioned. Do participants complete the experiments on paper or using computers? Do they participate in groups, or individually? If they do participate in groups, what size are these groups? What font do the instructions sets come in? How widely spaced are the lines participants write in? There are

many examples, some of which may seem trivial (e.g., font), but, as this current research shows, may nonetheless affect the success of an imagined contact task. To make imagined contact interventions maximally effective, we need to consider ways of making them as nice and easy as possible.

## Conclusions

None of this research aims to indicate that imagined contact is generally ineffective or counter-effective. A steadily growing body of research demonstrates its effectiveness, including both experiments reported in this paper (provided the font was easy to read). Rather, while we acknowledge the usefulness of imagined contact as contact-based prejudice reducing intervention, we hope this current research encourages certain changes in future research. First, we hope it encourages other researchers to consider imagined contact from a variety of perspectives, such as the social cognitive approach we chose for the present studies. Completing an imagined contact task is a cognitive and emotional exercise, different from real contact in multiple, meaningful ways. Hence combining research on imagined contact with theoretical approaches of social cognition or emotion research can help us better understand when and why imagined contact works, and when it works best. Second, we hope it encourages future imagined contact researchers to consider, and carefully document, the environment and specifications of their imagined contact research, taking into account the possible effects of these content-irrelevant specifications on the effectiveness of the task. Finally, if these first two are done, this should encourage more research, from a variety of perspectives, on the possible moderators of the effectiveness of imagined contact, and ways to render it even more effective than it already is.

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