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Remembrance of Contact Past:

When Intergroup Contact Meta-Cognitions Decrease Outgroup Tolerance

Lisbeth Drury^{1,2}, Michèle D. Birtel³, Georgina Randsley de Moura², & Richard J. Crisp⁴

¹Department of Organizational Psychology, Birkbeck, University of London, UK

²Centre for the Study of Group Processes, School of Psychology, University of Kent, UK

³School of Human Sciences, University of Greenwich, UK

⁴Department of Psychology, University of Durham, UK

Author Note

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Abstract

Positive intergroup contact reliably reduces prejudice, yet little is known about the meta-cognitive processes involved in recalling prior contact experiences and their impact on outgroup tolerance. The present research examined whether contact interventions that rely on the recollection of past contact experiences can be susceptible to ease of retrieval effects, and the potential impact on intergroup attitudes. Specifically, we tested whether manipulating the number of contact memories participants were asked to recall (5 vs 1) impacts on outgroup tolerance, and whether this effect is contingent upon participants' prior contact experiences. Results of two experiments ($N = 220$) revealed a moderated mediation effect of contact recollection on outgroup tolerance via perceived ease of retrieval, dependent upon levels of prior contact. Recalling more (5) versus fewer (1) contact memories was perceived as more difficult and this in turn decreased tolerance, specifically for individuals low in prior contact. Countering this negative indirect effect, however, recalling more contact experiences had a positive direct effect. Therefore, greater cognitive effort appears to act as a suppressor of the positive effect of contact recall. Our findings provide insight into meta-cognitive processes involved in recalling autobiographical contact memories, and the resulting impact on intergroup relations.

Keywords [4-5]: intergroup contact, meta-cognition, contact memories, tolerance, prejudice

Remembrance of Contact Past:

When Intergroup Contact Meta-Cognitions Decrease Outgroup Tolerance

Intergroup contact is a well-established strategy to promote positive intergroup relations (Dovidio et al., 2017). When individuals are asked to assess how much contact they have experienced with outgroup members in the past, those who report a higher degree of contact also report more positive intergroup attitudes (for a meta-analysis see Pettigrew & Tropp, 2006). However, in some cases, recalling previous contact experiences may inhibit positive outcomes due to meta-cognitive processes associated with processing fluency and the ease of retrieval of recalling autobiographical memories (Alter & Oppenheimer, 2009; Schwarz et al., 1991). While studies of the recollection of nostalgic or positive intergroup encounters shows that remembering contact can improve intergroup attitudes (Prati et al., 2020; Turner et al., 2011), it may be that individuals who have fewer previous contact experiences may experience difficulty when asked to engage in a contact memory task, with a consonant negative impact on intergroup attitudes. The present research examines the meta-cognitive processes involved when recalling experiences of intergroup contact and the consequences for outgroup tolerance.

Intergroup Contact Theory

Gordon Allport's (1954) contact hypothesis maintains that given the right circumstances, uniting members of opposing groups reduces prejudice. The optimal conditions specified by Allport (1954) include equal status between group members, working towards common goals, intergroup cooperation and institutional support. The intergroup contact framework has inspired a large body of empirical research, summarized in a meta-analysis of over 500 cross-sectional surveys and experiments which suggests that even contact lacking Allport's (1954) optimal conditions reduces prejudice (Pettigrew & Tropp, 2006).

Contact reduces prejudice both in the field and the laboratory (Lemmer & Wagner, 2015; Pettigrew & Tropp, 2006). A meta-analysis of over 60 real-world contact interventions revealed medium to large prejudice reduction effects regardless of whether the interventions featured face-to-face contact or indirect contact methods (Lemmer & Wagner, 2015). The indirect contact methods included extended contact, which improves intergroup attitudes via the knowledge that an ingroup member has a friendship with an outgroup member (for a meta-analysis see Zhou et al., 2018; see also Birtel et al., 2018) and vicarious contact; the observation of such friendships (see Vezzali et al., 2014). Whilst Lemmer and Wagner's meta-analysis (2015) analyzed the efficacy of direct and indirect contact interventions, Pettigrew and Tropp's (2006) meta-analysis excluded indirect forms of contact but considers both experimental contact and self-report surveys of prior direct contact. Therefore, intergroup contact in various forms results in prejudice reduction.

Since Allport's (1954) hypothesis, multiple individual differences that moderate of the efficacy of intergroup contact have been identified (see Hodson & Dhont, 2015). The effects of contact can be more beneficial when individuals have previously avoided outgroup contact (Dhont & Van Hiel, 2009; Hodson, 2011; Hodson et al., 2017) or have had reduced opportunity for prior contact (Wagner et al., 1989). For example, persons high in intolerant ideologies (e.g., authoritarianism, social dominance orientation) who typically avoid interacting with outgroup members often benefit the most from contact (Hodson, 2011). Collectively, these studies suggest that experiences of new contact can successfully reduce prejudice and improve intergroup relations, when individuals lack prior outgroup experience. However, we contend that low prior contact may not always ameliorate the effects of intergroup contact. Little research has considered meta-cognitive processes of recalling prior contact, and a lack of outgroup experience is likely to play a key role in this type of contact. While there are interventions based on imagining contact (for a review see Miles & Crisp, 2014), that require the simulation of new contact, when recalling *past* contact, meta-cognitive

processes such as processing fluency, ease of retrieval, and recalling autobiographical memories may come in to play and inhibit positive outcomes. Thus, asking individuals to recall a high amount of prior contact in order to make their positive contact salient may have limitations, with potential implications for interventions relying on recalling autobiographical contact memories.

Meta-Cognition in Intergroup Relations

Processing Fluency

Meta-cognition occurs when we reflect upon or process our thoughts and experiences (Alter & Oppenheimer, 2009). For example, the meta-cognitive experience of processing fluency, that is the subjective ease or difficulty with which information is processed, can influence judgements over and above cognitive content of the information (Schwarz, 2004; Schwarz et al., 1991; Schwarz & Clore, 2007). Processing fluency has salient implications for intergroup judgments because it reduces perceptions of similarity, erodes trust, and influences the misattribution of difficulty (or disfluency) to unfamiliarity (Alter & Oppenheimer, 2009; Blok & Markman, 2005; Kelley & Rhodes, 2002). Moreover, the positive experience of fluent (or easy) processing is linked to a sense of truth, familiarity and liking, whilst the negative experience of disfluent (or difficult) processing is associated with feelings of deception, psychological distance and risk (Alter & Oppenheimer, 2009). Although the literature indicates a potential for meta-cognition to impact social evaluations and prejudice (see Lick & Johnson, 2015), only a handful of intergroup relations studies have examined the influence of these processes (Crisp & Husnu, 2011; Pearson & Dovidio, 2013; West & Bruckmüller, 2013).

Chiefly, these studies have examined the effects of fluency in visual processing, for example, variations in the presentation of contact manipulations and materials, such as font types, text contrasts and image resolutions (Pearson & Dovidio, 2013; West & Bruckmüller, 2013). One such experiment manipulated the visual processing fluency of the study materials

by varying the contrast of the text (Pearson & Dovidio, 2013, Study 1); participants read a transcript of an intergroup conversation in either the ‘visual fluency’ condition (easy) or ‘visual disfluency’ condition (difficult). Results showed that those in the difficult condition perceived the two intergroup members to be more different from each other and belong to separate groups more often than participants in the easy condition. Moreover, greater perceived differences and group separateness created an indirect path from visual fluency to increased anticipation of future conflict between the two outgroups. This study highlights how fluency processing influenced by the simple manipulation of the presentation of research materials can impact intergroup relations.

Ease of Retrieval

In addition to processing fluency, meta-cognition also affects *memory processes* which influence individuals’ evaluations and attitudes (c.f., Petty et al., 2007). Memory processes are subject to biases that can substantively change the nature of what is recalled. In line with the research documenting the effects of visual processing ease (Petty et al., 2007), memory researchers have found that people make judgments based on not only what they can recall, but the subjective ease with which they recall it (Tversky & Kahneman, 1973). For example, compared to participants high in processing capacity, participants with low capacity based subsequent judgements on the ease (versus difficulty) they experienced during a recall task rather than the actual content of the memories (Greifeneder & Bless, 2007). Therefore, meta-cognitive processes can lead us to overlook the objective content of our long-term memory and instead, the subjective ease with which recollected experiences come to mind create a cue that influences subsequent judgments and behaviors (Schwarz et al., 1991).

Outcomes affected by ease of retrieval include memory judgments, stereotyping and even the evaluation of oneself (Dijksterhuis et al., 1999; Schwarz et al., 1991; Winkielman et al., 1998). When applied to the recollection of events from autobiographical memory, positive feelings evoked by nostalgic experiences do not necessarily reflect a true memory of

one's happy past but can be the result of successfully recalling a past event (Leboe & Ansons, 2006). Correspondingly, instructing people to recall outgroup contact experiences nostalgically (through a positive lens), or choosing to recall positive contact is associated with more positive outgroup attitudes and communication (Prati et al., 2020; Turner et al., 2011). Therefore, meta-cognitive processes of autobiographical memories have the potential to influence the recall of prior intergroup contact experiences. Whilst the existing literature provides some understanding of the effects of meta-cognition experienced during contact (Crisp & Husnu, 2011; Lick & Johnson, 2015; Pearson & Dovidio, 2013; West & Bruckmüller, 2013), the influence of intergroup memory processes and subsequent attitudes are yet to be examined.

The Current Research

The degree of difficulty experienced during the recall of intergroup contact encounters is likely to be dependent upon levels of actual prior contact. Although research suggests that new intergroup contact has a positive effect on intergroup relations for those lacking prior outgroup experience (Hodson, 2011; Hodson et al., 2017), it is important to investigate the influence of prior contact when recalling contact memories (for example as a form of contact intervention). Specifically, participants with little prior contact may experience more difficulty recalling multiple contact memories which in turn adversely affect their intergroup attitudes. Consonant with this notion, a lack of experience or expertise in a domain can increase the influence of subjective experiences on subsequent relative judgments (Kirk et al., 2011; Ottati & Isbell, 1996).

As literature has yet to address ease of retrieval effects in respect of contact memories, we turn to intergroup contact research examining the related concept of fluency processing (Pearson & Dovidio, 2013, Study 2) to support our hypotheses. Their study refers to the effects of subjective ease experienced whilst completing an intergroup reading task, on the other hand, our research aims to shed further light on meta-cognitive processes by

focusing on the subjective ease of a recall task. Pearson and Dovidio's (2013) findings suggest that low prior outgroup contact affects vulnerability to fluency processing effects when making intergroup judgments. Replicating their prior study methodology (Pearson & Dovidio, 2013; Study 1), participants read a passage about an intergroup encounter which was either easy or difficult to read. In their analysis Pearson and Dovidio (2013; Study 2) also considered the prior outgroup experience of the participants. Based on the assumption that White participants have lower prior contact with Black outgroup members than White ingroup members, the study found that White (low prior contact) participants made more negative judgments of a Black target when the manipulation task was difficult to read compared to when it was easily read, but the same fluency bias effect did not occur when evaluating a White target. Although this study did not directly measure and compare effects for participants with low versus high prior contact, the authors theorize that the White participants were vulnerable to fluency effects because of their assumed low prior contact. This line of argument is supported by a study which finds that imagining positive intergroup contact is judged as easier for those with higher prior outgroup contact (Husnu & Paolini, 2019; Study 2). This is likely to be because prior contact provides individuals with more cognitive schemas to refer to when imagining intergroup encounters, which may also be affective when recalling intergroup encounters.

Hence, a lack of prior contact may enhance vulnerability to meta-cognitive processes during contact recall. Applied to the current research, participants with low prior contact may experience greater difficulty recalling contact memories compared to participants with high prior contact, and these subjective meta-cognitive experiences may negatively affect subsequent outgroup perceptions.

We tested the following hypotheses (see Figure 1 for our conceptual model¹):

1. Recalling multiple intergroup contact memories will be perceived as more difficult than recalling one contact memory (Hypothesis 1).
2. Recalling multiple intergroup contact memories (vs one memory) will be associated with greater perceived ease of retrieval, which in turn will be related to reduced outgroup tolerance, and this indirect effect will be moderated by prior contact (Hypothesis 2). Specifically, this moderated mediation effect predicts that the negative indirect effect of contact recall on tolerance via perceived ease of retrieval will be smaller or absent for participants with high prior contact.

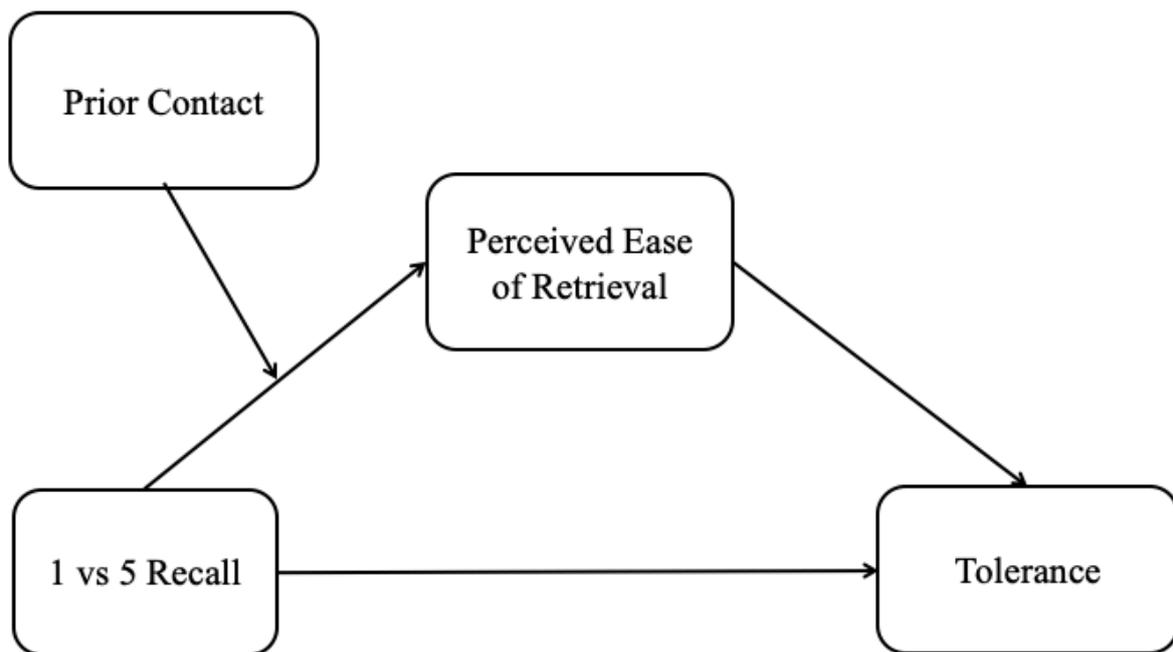


Figure 1. Conceptual model of the moderated mediation effect of contact memory recall on outgroup tolerance via perceived ease of retrieval dependent upon prior outgroup contact.

Pilot Study

¹ Our conceptual model includes a direct effect from recall to tolerance. We do not have specific hypotheses related to this pathway but would expect other mediators not measured in this study to contribute to relationship between recall and tolerance.

An online pilot study was run to demonstrate that recalling a greater number contact memories would be more difficult than recalling one memory. Ethical approval was granted by the local institutional ethics committee. One hundred and seven (29 male, 78 female) heterosexual psychology students from a university in the north of England ($M_{age} = 22.93$, $SD_{age} = 6.93$) were randomly assigned to recall either one or five memories of prior contact with a gay male. Perceived ease of retrieval was measured by asking participants to indicate the degree to which the recalling memory task was difficult; complex; effortless; simple; troublesome; easy and complicated (1 = *not at all*, 7 = *very much*). Responses were reverse coded where necessary and averaged to create a reliable ($\alpha = .92$) index of perceived ease of retrieval with high scores represent greater difficulty. (For details of all measures and task instructions see Appendix A.) As predicted, results of an independent samples *t* test showed that recalling five memories ($M = 3.80$, $SD = 1.41$) was perceived as more difficult than recalling one memory ($M = 2.36$, $SD = 1.27$), $t(105) = -5.52$, $p < .001$, $d = 1.07$ (Hypothesis 1).

Having demonstrated that recalling five memories of prior intergroup contact was more difficult than recalling one memory, Study 1 was designed to test meta-cognitive effects within intergroup processes, specifically how perceived ease of retrieval influences judgments about outgroup tolerance, and whether this effect is dependent upon prior contact experiences. Tolerance can be described as an appreciation of difference and a lack of prejudice (Robinson et al., 2001), although within social psychology, it is often conceptualised as positive intergroup attitudes (Van der Noll et al., 2010). Additionally, the design of Study 1 included an alternative target outgroup in order to demonstrate generalizability.

Study 1

Method

Participants. One hundred and fourteen undergraduates from a university in the south east of England participated in exchange for course credit. Ethical approval was granted by the local institutional ethics committee. Eleven participants' data was removed as they did not meet the manipulation check criteria (see Procedure for details). The remaining 103 participants consisted of 24 males and 79 females ($M_{age} = 20.01$, $SD_{age} = 3.56$).

Procedure. Participants completed the study materials in the laboratory via Qualtrics software. Older adults formed the outgroup for this study. Participants were informed they would be asked about their experiences with, and feelings and thoughts about older adults. Older adults were defined as individuals over 55 years of age, excluding family members. Participants were randomly allocated to one of two recall conditions, 1 memory ($n = 57$) versus 5 memories ($n = 46$) in a between-participants design. Participants first reported their prior contact quantity and quality, then they were then presented with the recall task instructions. In the 1 [5] recall condition participants were asked to "take a minute to think of a [five] positive encounter [s] you have had with an elderly person in your past (this should not include family members)". To reinforce the manipulation, they were asked to write down what they had just recalled. Participants were then asked to complete the dependent measures. A coded manipulation check of the participants' written recalls was conducted to ensure that participants recalled the requested quantity of memories and that the recalled encounters were positive in valence. Participants that failed this check were removed from the dataset before analyses.

Measures.²

Contact. Participants responded to four items measuring prior contact frequency, e.g., "How many elderly people do you know?" (1 = *none*, 7 = *a lot*). Prior contact quality was

² This data was collected as part of a student study (first author) and included further variables, but due to the focus of this research only the current variables were included in the analysis. Other variables included; contact self-efficacy, recall fluency, agreement with age discrimination laws and donations to charity.

rated with the following adjectives: superficial-deep; natural-forced; unpleasant-pleasant; competitive-cooperative; intimate-distant using bipolar scales ranging from 1 to 7. The averaged frequency ($\alpha = .84$) and quality ($\alpha = .68$) scores were multiplied to create a composite measure of prior contact with older adults. This method of multiplying frequency and quality of contact scores provides a varied, nuanced range (1 – 49) and is a widely used method to represent contact experience (Brown et al., 2001; Dhont & Van Hiel, 2011; Hayward et al., 2017; Meleady et al., 2020; Voci & Hewstone, 2003).

Perceived ease of retrieval. The measure was the same as used in the pilot study ($\alpha = .92$).

Tolerance. Tolerance towards older adults was measured using eight items adapted from Liebkind and McAlister (1999). In response to the stem question “How much do you agree with the following statements concerning older people? (These questions do not refer to members of your family)”, participants indicated how much they agreed with statements such as “I do not approve of using names that might hurt older people” on a 7-item Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). Negatively phrased items were recoded and the average score created an index of tolerance ($\alpha = .70$), higher scores indicated higher tolerance.

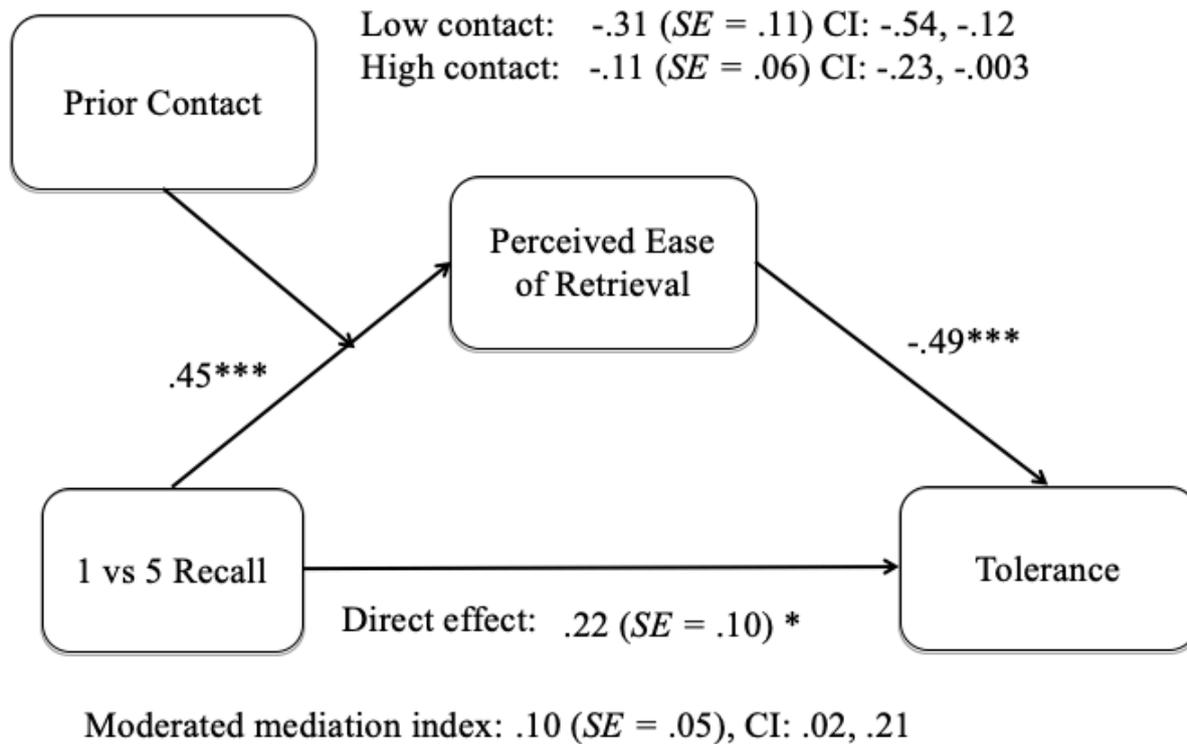
Results

As in the pilot study, an independent samples *t* test on perceived ease of retrieval demonstrated that recalling five memories ($M = 3.19$, $SD = 1.39$) was perceived as more difficult than recalling one memory ($M = 2.18$, $SD = 1.10$), $t(101) = -4.14$, $p < .001$, $d = 0.82$.

Moderated mediation. To test our theoretical model (Hypothesis 2), PROCESS model 7 was used with 5000 bootstraps (Hayes, 2013). In order to ease the interpretation of coefficients resulting from variables using a range of measurement scales, all variables were standardized. Recall was coded as 1 recall = 0 and 5 recalls = 1, and was entered as the predictor variable, perceived ease of retrieval as the mediator, tolerance as the criterion

variable and prior contact as the moderator, with participant age and gender as covariates (see Wout et al., 2010 for support of this analytical approach). Prior research shows that both gender and age are associated with attitudes towards older adults (Abrams et al., 2011)³. In line with Hypothesis 2, the index of moderated mediation (Hayes, 2015) was significant, $.10$, $SE = .05$, $95\% CI [.02, .21]$, indicating that there was an overall indirect effect from recall to tolerance via perceived ease of retrieval which varied depending on levels of prior contact experienced. There was a significant negative indirect effect of recall on tolerance via perceived ease of retrieval, for both low prior contact ($-1SD$) participants, $-.31$, $SE = .11$, $95\% CI [-.54, -.12]$ and for high prior contact ($+1SD$) participants, $-.11$, $SE = .06$, $95\% CI [-.23, -.003]$, see Figure 2. The moderated mediation effect suggests that although the indirect effect of contact on tolerance via perceived ease of retrieval was significantly negative for both groups, there was a significant difference in the size of the two indirect effects (pairwise contrast, $.20$, $SE = .10$, $95\% CI [.04, .41]$) such that it was larger for low versus high prior contact participants.

³ All models run include gender and age as covariates and significant results remained constant without inclusion of the covariates.



Note: * = $p < .05$, *** = $p < .001$.

Figure 2. Moderated mediation effect of recall on tolerance via perceived ease of retrieval at levels of prior contact, Study 1.

In order to fully understand the context in which our hypothesized moderated mediation occurs we ran and report un-hypothesized analyses to get a clearer picture of the complexity of the various pathways from recall to tolerance. According to the moderated mediation analysis, there was a positive direct effect from recall to tolerance $.22$, $SE = .10$, $p = .026$, 95% $CI [.03, .41]$. As PROCESS Model 7 does not report the total effect, we ran a PROCESS model 4 (Hayes, 2013) that tests the mediation via perceived ease of retrieval, excluding the moderator prior contact. There was a negative indirect effect $-.18$ ($.07$), 95% $CI [-.34, -.06]$, but a non-significant total effect $.03$ ($.10$), $p = .731$, 95% $CI [-.16, .23]$ from recall to tolerance. The positive direct effect of recall on tolerance is neutralized by the negative indirect effect via perceived ease of retrieval, such that the total effect is non-significant. In other words, our data revealed an inconsistent mediation (MacKinnon et al., 2007). In such mediations, the indirect and direct effects have opposite signs, and the

mediator acts a suppressor variable (MacKinnon et al., 2000). However, as this mediation model excludes the moderator, results should be treated with caution due to the omitted variable problem.

We also ran a PROCESS model 1 (Hayes, 2013) that tests the interactive effects of recall and prior contact on tolerance, excluding the mediator perceived ease of retrieval. Recall did not predict tolerance $-.01$ ($SE = .09$) $p = .904$ $[-.20, .17]$, but prior contact had a positive effect $.34$ ($SE = .10$) $p = .001$ $[.16, .53]$ and there was a significant interaction between recall and prior contact $.19$ ($SE = .09$) $p = .044$ $[.01, .37]$. The interaction was driven by a significant positive relationship between prior contact and tolerance in the 5-recall condition $.55$ ($SE = .13$), $p < .001$ $[.30, .81]$. After recalling 5 memories participants with high prior contact reported more tolerance ($M = 0.52$) than participants with low prior contact ($M = -0.58$). All other conditional effects were non-significant $ps > .133$.

Discussion

Finding that recalling 5 contact memories of interactions with older adults was more difficult than recalling one contact memory is in line with the pilot study and provides evidence for the generalizability of effects to other target groups.

The hypothesized moderated mediation effect (Hypothesis 2) was significant; the negative indirect effect of recall on tolerance via perceived ease of retrieval was higher when participants had low versus high prior contact. When participants had low prior contact, recalling many contact memories was associated with decreased tolerance via increased difficulty of the memory task. In comparison, for participants with high prior contact, the indirect effect of recalling many memories on tolerance via perceived ease of retrieval was significantly lower. These findings suggest that being asked to recall multiple (versus few) contact memories can have a negative effect on tolerance because it decreases perceived ease of retrieval, but this detrimental effect can be significantly reduced if participants have high prior contact with the outgroup.

The additional reporting and analyses suggest that the negative indirect effect of recall on tolerance remains, with or without considering prior contact as a moderator. Thus, when we do not take into account prior contact it appears that for all participants recalling more memories can create a metacognitive difficulty, which in turn reduces tolerance. However, the positive direct effect demonstrates that for all participants, if any effects of metacognitive difficulty experienced during the task are removed, then recalling more memories improves tolerance.

Additional analyses revealed that when excluding prior contact from the model, there is a negative indirect effect via meta-cognitive processes and a positive direct effect when meta-cognitive processes are discounted. Such countervailing effects point to the mediator ease of retrieval being a suppressor variable and therefore reducing the total effect. In sum, contact recall increases tolerance, unless a lack of contact makes this difficult, which leads to less tolerance and thus cancels out the positive effect.

The tolerance of older adults measure used in Study 1 was adapted from Liebkind and McAlister's (1999) tolerance of foreigners scale. Compared to the reliability score of the original scale ($\alpha = .93$), when used with older adults as the target group in the present study, a much lower alpha was attained (.70). It may be that such items are not as reliable when used for target groups that are less threatening (e.g., older adults rather than foreigners). In Study 2 we sought to replicate the effects of Study 1 with a more reliable measure of tolerance towards older adults.

Study 2

Method

Participants. Study 2 used the same design as Study 1. One hundred and twenty-six undergraduate students from a university in south east of England participated in exchange for course credits. Ethical approval was granted by the local institutional ethics committee. Eight participants were excluded from the original data set as they did not complete the

manipulation task (see Study 1: Procedure). The remaining sample of 118 participants consisted of 29 males and 89 females ($M_{age} = 21.95$, $SD_{age} = 6.29$).

Procedure. Participants were invited to take part in a study aimed at gaining understanding of students' opinions and experiences of older adults, excluding family members. The experiment was conducted via paper in the laboratory. Participants were randomly allocated the 1 recall ($n = 64$) or 5 recall condition ($n = 54$). They first reported their prior contact quantity and quality, then completed the recall task and dependent measures.

Measures.⁴

Contact. Prior outgroup contact quantity ($\alpha = .86$) and quality ($\alpha = .66$) were measured and calculated as in Study 1.

Perceived ease of retrieval. Perceived ease of retrieval was measured as in the pilot Study ($\alpha = .90$).

Tolerance. We asked participants how much they agreed with 7 statements (1 = *strongly agree* to 5 = *strongly disagree*), such as "I am a tolerant person towards elderly people". The average of all items formed an index of tolerance with good reliability ($\alpha = .87$).

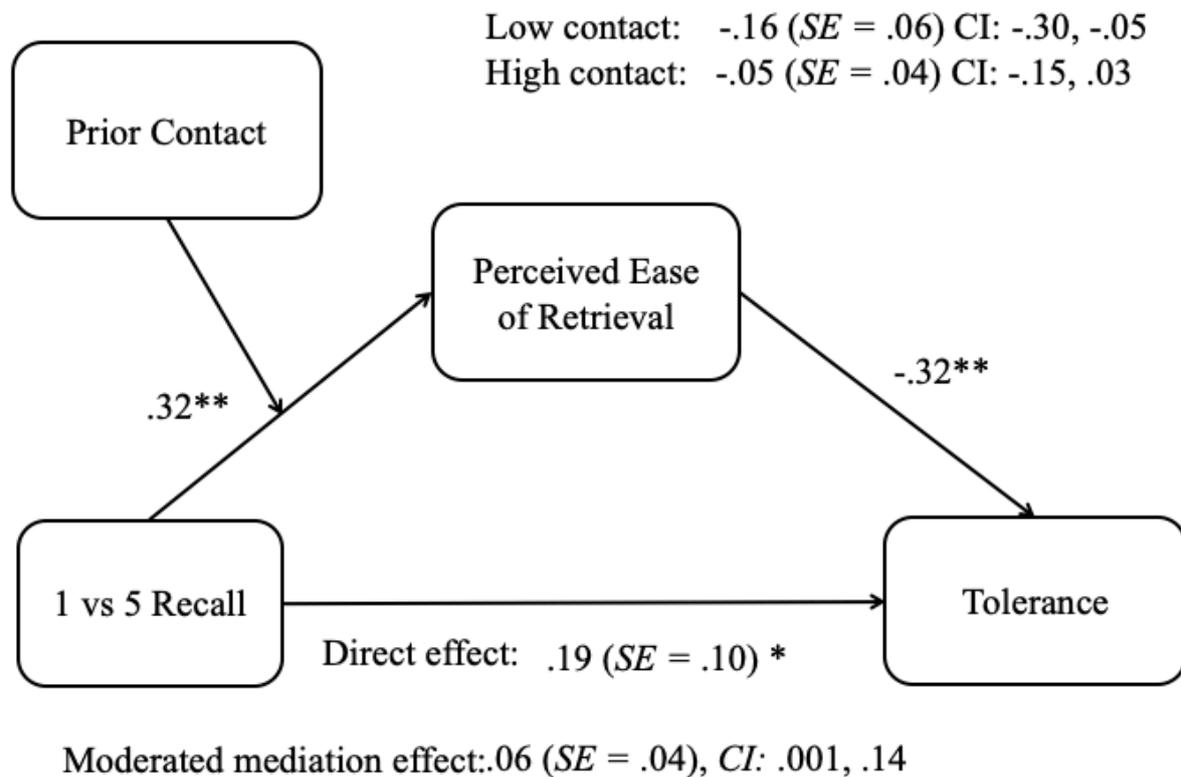
Results

Again, recalling five memories was perceived as more difficult ($M = 3.40$, $SD = 1.30$) than recalling one memory ($M = 2.48$, $SD = 1.11$), $t(116) = -4.15$, $p < .001$, $d = 0.76$.

Moderated mediation. Supporting Hypothesis 2, the moderated mediation index was significant, $.06$, $SE = .04$, 95% $CI [.001, .14]$. For low prior contact ($-1SD$) participants there was a negative indirect effect of recall on tolerance via perceived ease of retrieval, $-.16$, $SE = .06$, 95% $CI [-.30, -.05]$, but this effect was non-significant for high prior contact ($+1SD$)

⁴ This data was collected as part of a student study (first author) and included further variables, but due to the focus of this research only the current variables were included in the analysis. Other variables included; intergroup anxiety, outgroup attitudes, contact self-efficacy and future contact intentions.

participants, -0.05 , $SE = .05$, 95% $CI [-0.15, .03]$, (pairwise contrast $.11$, $SE = .07$, 95% $CI [.002, .28]$) see Figure 3.⁵



Note: * = $p < .05$, ** = $p < .01$.

Figure 3. Moderated mediation effect of recall on tolerance via perceived ease of retrieval at levels of prior contact, Study 2.

As with Study 1, we report exploratory analyses. In the moderated mediation above the direct effect of recall on tolerance was significant and positive $.19$, $SE = .10$, $p = .047$, 95% $CI [.03, .38]$. Again, we ran a PROCESS model 4 (Hayes, 2013) to obtain the total effect and a clearer picture. In line with Study 1, there was a negative indirect effect $-.11$ ($.05$), 95% $CI [-.21, -.04]$, and a non-significant total effect $.08$ ($.09$), $p = .383$, 95% $CI [-.10, .27]$ of recall on tolerance. As in Study 1, our data revealed an inconsistent mediation, with a

⁵ In line with Study 1, all significant results remained constant without inclusion of the covariates in the analysis

positive direct, a negative indirect effect (via ease of retrieval) and a non-significant total effect of recall on tolerance. We also ran PROCESS model 1 analysis (Hayes, 2013) to examine the interactive effects of recall and prior contact on tolerance. Echoing Study 1, recall did not predict tolerance $.12, SE = .09, p = .194 [-.06, .29]$, but prior contact did $.33 (SE.10) p = .001 [.14, .52]$. However, for Study 2 the interaction was non-significant $.16, SE = .10, p = .094 [-.03, .35]$.

Discussion

Study 2 replicated that recalling five contact memories was more difficult than recalling one memory. Using a more reliable measure of tolerance, the moderated mediation effect in Study 2 corroborated findings from Study 1; the negative indirect effect of recall on tolerance via perceived ease of retrieval was contingent upon participants' prior contact. However, in Study 2, rather than recall having a significantly lower negative indirect effect on tolerance for high versus low prior contact participants, the negative indirect effect for high prior contact participants disappeared altogether.

The additional reporting and analysis also echoed Study 1. Again, when metacognitive difficulty was considered, recalling more memories was detrimental for tolerance due to lower ease of retrieval, yet when meta-cognitive processes were not considered, recalling more memories was beneficial for tolerance. In sum, greater cognitive effort acted as a suppressor of the positive effect of contact recall on tolerance. Both studies suggest that contact recall reduces prejudice, unless a lack of prior contact makes this difficult, which leads to more prejudice and thus cancels out the positive effect. The interaction analysis suggests that recalling more memories does not affect tolerance, but having experienced more prior contact improves tolerance. However, unlike Study 1, there were no combined effects of recall and prior contact on tolerance.

General Discussion

Intergroup contact decreases prejudice and enhances tolerance towards outgroups. Meta-cognitive processes involved in recalling autobiographical memories may influence intergroup outcomes associated with contact. We examined whether the quantity of intergroup contact memories recalled influences perceptions of outgroup tolerance via perceived ease of retrieval, and whether this effect is dependent upon prior contact experiences.

In all studies, we found that recalling multiple intergroup contact memories was perceived as more difficult than recalling one memory (Hypothesis 1). In Studies 1 and 2, moderated mediation effects supported our prediction that a negative effect of recall on outgroup tolerance via perceived ease of retrieval is dependent upon participants' prior outgroup experiences. For participants with low prior contact, recalling multiple contact memories had a negative indirect effect on tolerance judgments via increased perceived ease of retrieval, such that when participants recalled a higher number of memories, the memory task was perceived as more difficult, which in turn reduced outgroup tolerance (Hypothesis 2). Additionally, cognitive effort acted as a suppressor variable. Recalling multiple contact memories reduces prejudice (positive direct effect), unless individuals have low prior experiences with contact, in this case lower ease of retrieval of these contact memories leads to more prejudice (negative indirect effect), which thus cancels out the positive effect of contact recall on tolerance (non-significant total effect).

Collectively, these findings suggest that a negative effect of recalling multiple intergroup experiences on outgroup tolerance via perceived ease of retrieval is contingent upon participants' prior outgroup experiences. In Study 1 the indirect effect of recall on tolerance was significantly lower for high prior contact participants compared to low prior contact participants. In Study 2 (which used more reliable measure of tolerance) there was no negative indirect effect for high prior contact participants, whilst the negative indirect effect remained significant for low prior contact participants. Therefore, the subjective recall

experiences encountered by the high and low prior contact participants can differentially influence participants' subsequently reported attitudes.

We also found evidence for an inconsistent mediation. There was a negative indirect effect via meta-cognitive processes and a positive direct effect over and above meta-cognitive processes. In both studies the number of contact memories recalled had a direct *positive* effect on tolerance; when the influence of perceived ease of retrieval was removed, recalling more contact experiences increased tolerance (although we did not hypothesize this effect). Further exploratory analysis demonstrated that when prior contact was not considered, recalling many memories still had a negative indirect and positive direct effect on tolerance. Furthermore, when meta-cognitive processes (perceived ease of retrieval) were not considered, the combined effect of recalling memories and prior contact on tolerance was unreliable. These two findings underscore the importance of considering meta-cognitive processes in order to uncover obscured effects of intergroup contact memory recall on intergroup attitudes. In sum, contact recall reduces prejudice, unless a lack of contact makes this difficult, which leads to more prejudice and thus cancels out the positive effect. Meta-cognitive processes may hinder a positive effect of contact recall on tolerance due to overveiling effects.

Intergroup Contact and Mega-cognition

Overall our results provide valuable insights of the complexity of meta-cognitive processes when recalling intergroup contact memories. On the one hand, we found that recalling more contact memories had a positive effect on tolerance. On the other hand, relative to intergroup relations, we found that that low prior contact makes individuals more vulnerable to meta-cognitive processes experienced during the recall of contact memories, cancelling out the positive effect, which in turn influence intergroup judgements. This finding supports the hypothesis that a lack of prior contact makes individuals vulnerable to meta-cognitive fluency processing effects when making intergroup judgments (Pearson & Dovidio,

2013). Pearson and Dovidio based their theory on the assumption that group membership provided an indication of prior intergroup contact, but did not measure prior contact directly. Our results provide more direct evidence to support this notion via the inclusion of a self-reported measure of prior contact. This finding also corroborates the wider meta-cognitive literature which similarly suggests that low experience or lack of expertise in a particular domain increases the influence of subjective experiences on judgments (Kirk et al., 2011; Ottati & Isbell, 1996).

In addition, we provide initial evidence that meta-cognitive processes play a role in a broader range of intergroup judgements. The extant literature examining meta-cognition and intergroup relations indicates that meta-cognitive processes increase negative outgroup evaluations such as the perceived difference between outgroup members, anticipated intergroup conflict and prejudice (Pearson & Dovidio, 2013; West & Bruckmüller, 2013). Our findings suggest that meta-cognition also has the potential to reduce positive intergroup judgements, namely intergroup tolerance.

Studies examining the role of individual differences in intergroup contact suggest that for participants who typically avoid contact with outgroup members (those high in intolerant ideologies), new contact reduces prejudice to a greater degree (Hodson, 2011). In contrast, our findings suggest that for individuals with low prior contact, asking them to recall autobiographical memories of contact can backfire for tolerance instead of making their positive contact more salient. Therefore, meta-cognitive processes that can occur when people are asked to remember contact should be considered when designing prejudice interventions based on contact recollections. While new intergroup contact (direct and indirect) particularly helps those who typically avoid contact (Hodson, 2011), this may be different when recalling past contact due to the meta-cognitive processes involved. Future research should examine the role of individual differences in intolerant ideologies when

examining meta-cognitive processes of recalling past contact as a form of indirect contact intervention.

By testing the relationship between memory recall and tolerance, we extend the wider meta-cognitive literature which identifies that subjective recollection experiences influence intergroup judgments (Dijksterhuis et al., 1999). Dijksterhuis and colleagues found that after low prejudice participants encountered difficulty during memory retrieval, they judged targets less stereotypically than when memory retrieval was easy (ease of retrieval effects; Schwarz et al., 1991). The more difficult it was to bring examples of outgroup stereotypes to mind; the less stereotypes were applied. While the present research also demonstrates meta-cognitive effects on intergroup judgments, there are important differences. In Dijksterhuis and colleagues' studies recall increased difficulty and positively influenced intergroup judgments, whilst in the present study, increased difficulty has a negative effect. This divergence may be due to the difference in psychological processes operating within the outcome judgments employed. The application of stereotypes (Dijksterhuis et al., 1999) involve cognitive categorization processes and their usage is related to their prevalence in society. Thus, it follows that difficulty experienced bringing stereotypes to mind could undermine their relevance and weaken their usage. Tolerance, on the other hand, is a more affective judgment involving feelings of friendliness towards, and acceptance of, outgroup members (Allport, 1954). The affective component of tolerance judgements may make them more vulnerable to negativity experienced during retrieval processes, resulting in individuals basing their (affective) judgments on their (affective) recall experiences.

Whilst our findings are akin to the ease of retrieval heuristic, they do not directly demonstrate these effects (Schwarz et al., 1991). Ease of retrieval effects occur when individuals' base judgements on experienced difficulty compared to ease of a task (e.g., a within-participants effect). Yet, the consistent finding across our studies involves an interaction with a further variable; judgements are based on difficulty (or ease) when

experienced by an individual with low versus high prior contact (e.g., a between-participants interactive effect). Therefore, the outcome is not based exclusively on difficulty versus ease experienced but is dependent upon the interaction with a further factor affecting difficulty. Whereas the ease of retrieval effect (Schwarz et al., 1991) illuminates how the ease or difficulty of tasks have divergent effects on outcomes, our study furthers understanding of this effect by demonstrating how the same task (e.g., a difficult one) can have divergent effects depending on a further factor that influences the difficulty of the task.

Our findings also support the notion that meta-cognitive difficulties experienced during information processing influences judgements over and above the cognitive content of the information (Schwarz, 2004; Schwarz et al., 1991; Schwarz & Clore, 2007). Participants who had low outgroup experience appeared to disregard the *content* of their memories when making subsequent judgments. For example, despite both low prior contact and high prior contact participants recalling an equal number of occasions on which intergroup contact was positive (i.e., the 5 recall condition), low prior contact participants based their judgments on the difficulty of the recall task rather than the content of their memories by reporting less tolerance. Additionally, the finding that high prior contact participants reported more tolerance supports the theory that the more readily contact events are brought to mind the more influence they have on subsequent group evaluations (in line with the availability heuristic, Tversky & Kahneman, 1973).

Limitations, Implications and Future Research

This study is not without its limitations. It could be argued that the independent variable, the amount of positive intergroup contact memories recalled (e.g., 1 or 5 memories), is conceptually close to the mediator of perceived ease of retrieval as most individuals would find it more difficult to recall five versus one memory. However, we argue that being asked to recall one or five memories represents an objective task which participants were asked to complete, whilst perceived ease of retrieval taps the metacognitive

process of memory recall. Whilst other studies use a 1-item measure of task difficulty as a manipulation check for perceived ease of retrieval, and infer the effect from that point (Dijksterhuis et al., 1999; Schwarz et al., 1991), we sought to create a more reliable multi-item measure that captured the metacognitive process. Our endeavor is supported by correlations between the IV and mediator revealing only medium size effects (Study 1; $r = .38$, Study 2; $r = .36$) rather than higher associations that might be expected of variables with a high level of conceptual overlap.

The current studies present important implications for intergroup contact interventions and diversity programs; ‘more contact’ may not always be the best approach when using contact recollection methods. It is important to note that our findings do not imply that having more prior contact experiences inhibits tolerance. Rather, that being asked to recall more instances can be difficult and therefore negatively impact tolerance. Outcomes might depend upon prior contact and the subjective difficulty experienced during the contact methods used. Due to costs and a lack of opportunity for contact, interventions often employ indirect forms of contact (e.g., recall of prior contact) and are focused on those who have little prior or future opportunity for intergroup contact (e.g., in segregated societies). In such cases, findings from the current research demonstrate how meta-cognitive processes may undermine the outcomes of interventions and diversity programs.

Future research should examine whether meta-cognitive difficulties experienced during other forms of indirect contact (e.g., extended contact, vicarious contact) influence the outcomes of contact interventions. For example, difficulties clearly understanding intergroup relations portrayed within radio plays or children’s books (e.g., Cameron et al., 2006; Paluck, 2007) may threaten the success of such interventions for individuals lacking in prior contact. This is important to consider as some indirect methods are promoted as particularly beneficial for those lacking prior outgroup experience (Cameron et al., 2011).

A further implication of the current findings is that contact self-report measures often ask respondents to recall, reflect upon, and evaluate their prior outgroup experiences. Measures typically include items assessing the frequency and quality of respondents' prior contact (Hewstone et al., 2002; Pettigrew & Tropp, 2006). Asking individuals low in prior contact to recall contact may have implications for how they report subsequent outgroup attitudes. In addition to the effects of low prior contact and perceived ease of retrieval, further psychological processes may contribute to negative outcomes, such as attributional processes.

Future research should examine the role of attributions within contact memory and self-report methods of intergroup contact for populations with low prior contact. Difficulty experienced during contact recall may lead to the misattribution of negative intergroup attitudes to the self. Individuals that find the recall task difficult may conclude that they have a relative lack of prior outgroup experience which reflects their intolerance of outgroup members (Bem, 1967). Thus, recalling multiple memories leads individuals to self-attribute intergroup tolerance depending on the subjective difficulty of the task, which is dependent upon prior contact experienced. This explanation is supported by research highlighting attributional processes underlying the effects of imagined intergroup contact (Crisp & Husnu, 2011). Adopting a third-person, versus first-person, perspective during imagined contact resulted in the self-attribution of a more positive attitudinal orientation towards outgroup contact, which in turn increased intentions to engage in future contact. We suggest that similar self-attribution processes to those which formed an indirect path from cognitive perspective taking to intergroup judgments (Crisp & Husnu, 2011), operate between meta-cognitive memory recall and intergroup judgments.

Conclusion

Our findings suggest that not only prior contact experiences influence intergroup attitudes, but also meta-cognitive processes related to the difficulty with which recalling memories is experienced. The results of the current studies add to a growing body of research

that identifies how meta-cognitive effects occurring during intergroup contact impact intergroup attitudes (Crisp & Husnu, 2011; Pearson & Dovidio, 2013; West & Bruckmüller, 2013). In addition to meta-cognitions experienced when reading about and imagining intergroup contact, these novel findings highlight that meta-cognitions experienced during the recall of contact can also have the potential to affect outcomes of intergroup contact research and interventions. Together, this literature emphasizes the need to consider meta-cognitive processes when designing and interpreting intergroup interventions and research, especially where there are mixed findings.

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