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Spontaneous imagined intergroup contact and intergroup relations: Quality matters

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Conflict of Interest

All authors declare that there are no conflicts of interest.

Abstract

While research on experimental interventions that aim to improve outgroup attitudes via contact imagery grows, it is important to examine if contact imagery that occurs in spontaneous, non-experimentally controlled conditions drives attitudes, and in what direction. To answer this, we constructed and validated a spontaneous imagined intergroup contact scale (SIICS) that differentiates between frequency, quality and elaboration of the spontaneous imagery of outgroups. In three correlational studies ($N_{Portugal} = 305$, $N_{United Kingdom} = 185$, $N_{Italy} = 276$), we tested the role of spontaneous imagined contact frequency, quality and elaboration in predicting attitudes and social distance (Studies 1-3) and intended behaviour (Study 3) toward immigrant groups. Results demonstrated that spontaneous imagined contact quality consistently predicted key outcome variables above and beyond the other two dimensions. Importantly, the effects were significant while controlling for other potent forms of direct and indirect contact. Implications of the findings for theory and practice are discussed.

Keywords: imagined contact, attitudes, intended behaviour, empathy, anxiety

Research on improving intergroup relations emphasises the role of intergroup contact as a key factor predicting reduced prejudice and positive attitudes toward outgroups (Pettigrew & Tropp, 2006). Intergroup contact scholars have explored the effectiveness of the technique in numerous contexts with a large array of targets, and although contact is not a panacea for prejudice (Dixon, Durrheim, & Tredoux, 2005), its fundamental role in ameliorating intergroup conflict has been clearly demonstrated (e.g., Al Ramiah & Hewstone, 2013; Hodson & Hewstone, 2013; Pettigrew, Tropp, Wagner, & Christ, 2011). Recent developments in the field of intergroup contact theory have pointed to novel theoretical and practical implications for intergroup relations scholars (Vezzali & Stathi, 2017), while much of the reignited interest in the field is driven by advances in indirect contact strategies (Dovidio, Eller, & Hewstone, 2011). Research over the last two decades demonstrated that indirect contact, that is forms of contact without the face-to-face element, can also improve intergroup relations.

One implementation of indirect contact that has recently attracted scholarly interest is imagined contact (Crisp, Stathi, Turner, & Husnu, 2008; Crisp & Turner, 2009), and empirical evidence for its efficacy as a versatile prejudice-reduction strategy started emerging rapidly (for meta-analysis see Miles & Crisp, 2014). Imagined contact is operationalized by instructing individuals to imagine a –typically– positive and relaxed intergroup encounter with an unknown person from the outgroup (Crisp & Turner, 2009). Mental imagery under these instructions improves attitudes compared to control conditions, in which participants simply think about the outgroup without any contact element or think about neutral scenes (Stathi & Crisp, 2008; Turner, Crisp, & Lambert, 2007).

This points to an interesting and yet unexplored question: do people spontaneously and without any experimental instructions think about interactions with the outgroup, and if so, what happens when people engage in such spontaneous contact imagery in daily life,

outside the laboratory? Without ad hoc, experimental instructions to think about positive intergroup encounters, does spontaneous contact imagery lead to positive intergroup emotions and attitudes? In three studies, we explored the role of spontaneous (i.e., non-experimentally manipulated) imagined contact as predictor of outgroup attitudes, above and beyond powerful contact forms such as extended contact and intergroup friendships (Study 2), and quantity and quality of existing contact (Study 3). Our research was correlational and was conducted with three different samples in three different national contexts: Portuguese nationals and their attitudes toward immigrant groups in Portugal (Study 1), British nationals and their attitudes toward Eastern Europeans in the UK (Study 2), and Italian nationals and their attitudes toward Eastern European immigrants in Italy (Study 3). In order to examine the role of spontaneous imagined contact, we designed and validated a scale of spontaneous imagined intergroup contact that, in line with premises deriving from experimental research (Husnu & Crisp, 2010; West, Holmes, & Hewstone, 2011), differentiates between frequency, quality and elaboration of the contact imagery. The spontaneous imagined intergroup contact scale (SIICS) was tested and used in all three studies.

Positive intergroup contact

Ample empirical evidence, meta-analyses and influential reviews on intergroup contact point to the effectiveness of the technique in the fight against prejudice (Hodson & Hewstone, 2013; Pettigrew & Tropp, 2006; Pettigrew et al., 2011). Contact is a useful method when seeking to improve people's attitudes toward outgroups, even in contexts of conflict (Al-Ramiah & Hewstone, 2013). Research over the last two decades identified several mediators of the contact-prejudice relationship and predominantly highlighted the affective processes that explain how contact reduces intergroup bias (Brown & Hewstone, 2005; Pettigrew & Tropp, 2008). Pettigrew and Tropp (2008) demonstrated that empathy and anxiety are two particularly important factors that explain the path from contact to reduced

prejudice. That is, contact with outgroup members enhances empathy toward the outgroup and reduces the anxiety usually raised in intergroup situations, which, in line, leads to improvements in intergroup attitudes.

Pettigrew and Tropp's (2006) extensive meta-analysis of the effects of contact on prejudice demonstrated that even in the absence of the optimal conditions highlighted by Allport (1954), contact reduces prejudice. However, recently, intergroup contact scholars also started delving into the prevalence and outcomes of negative contact (Aberson, 2015; Barlow et al., 2012; Graf & Paolini, 2017; Paolini, Harwood, Rubin, Husnu, Joyce, & Hewstone, 2014). Research suggests that although positive intergroup contact is, generally speaking, more commonly experienced than negative contact, negative contact can yield more powerful, harmful effects on intergroup relations (Graf, Paolini, & Rubin, 2014). For example, Barlow et al. (2012) showed that negative contact experiences with specific outgroup members are more easily generalised to the outgroup as a whole than positive experiences. Recent research, however, found no support for the positive-negative asymmetry effect (Arnadottir, Lolliot, Brown, & Hewstone, 2018). Regardless for the mixed results, acknowledging the impact of negative contact is important because it highlights that if contact with outgroups lacks the element of positivity it can have detrimental consequences. Positive, high-quality contact, on the other hand, ameliorates outgroup attitudes (Islam & Hewstone, 1993; Tredoux & Finchilescu, 2010). Therefore, it is important to highlight that positivity is a key factor for direct and indirect forms of contact to yield positive effects on intergroup relations.

Experimentally induced imagined contact

Aiming to investigate the implementation and effectiveness of contact-based interventions, scholars have also explored indirect (i.e., not face-to-face) contact, primarily focusing on two methods; extended contact, that is knowing that fellow ingroup members interact positively with outgroup members (Wright, Aron, McLaughlin-Volpe, & Ropp, 1997, for review see Vezzali, Hewstone, Capozza, Giovannini, & Wolfer, 2014; for a meta-analysis, see Zhou, Page-Gould, Aron, Moyer, & Hewstone, 2018), and imagined contact, that is mentally simulating interactions with the outgroup (Crisp & Turner, 2009). Wright et al. (1997) theorized and provided empirical support for the extended contact hypothesis, suggesting that direct contact is not always necessary when seeking to improve people's attitudes. Evidence from research with adults and children has now demonstrated that knowing that ingroup members have close relations with outgroup members reduces intergroup biases (Vezzali et al., 2014; Zhou et al., 2018).

Imagined contact research emerged as a complementary implementation of indirect contact, and its operationalisation was predominantly based on mental imagery research that indicated that mentally simulating experiences shares common characteristics with real experiences (Dadds, Bovbjerg, Redd, & Cutmore, 1997; Kosslyn, Ganis, & Thompson, 2001). A meta-analysis of a sample of 70 studies that rapidly followed the introduction of the imagined contact hypothesis showed that the mental simulation of positive intergroup interactions improves people's attitudes toward outgroups and promotes behavioural intentions to engage with the outgroup (Miles & Crisp, 2014). In line with findings regarding direct contact, there is now evidence that participants allocated to conditions that instruct them to imagine positive interactions with outgroups report reduced bias and negative emotions (Ioannou, Hewstone, & Al Ramiah, 2017, Study 2; Stathi, Tsantila, & Crisp, 2012) and enhanced positive emotions and contact behavioural intentions (Pagotto, Visinti, De

Iorio, & Voci, 2012; Vezzali, Capozza, Stathi, & Giovannini, 2012; for a review, see Vezzali, Crisp, Stathi, & Giovannini, 2013). This is evidenced by studies conducted with various target groups, in various sociocultural contexts and with samples of both children and adults (Miles & Crisp, 2014). Research has shown that the imagined contact effects are explained by many of the same processes that occur as a consequence of actual contact. For example, imagined contact leads to increased empathy (Kuchenbrandt, Eyssel, & Seidel, 2013) and reduced intergroup anxiety, which mediates the positive effects of the strategy (Stathi, Crisp, Turner, West, & Birtel, 2012; Stathi et al., 2012; Turner et al., 2007; Turner, West, & Christie, 2013).

In line with research that argues for the role of qualitative, positive contact in real intergroup encounters (Islam & Hewstone, 1993; Tredoux & Finchilescu, 2010), the role of positivity has also been noted in imagined contact research. Studies that examined how to best use imagined contact to improve attitudes demonstrated that compared to neutral imagined contact, participants who are instructed to think about positive interactions with unknown outgroup members are subsequently more positive toward the outgroup as a whole (Meleady & Seger, 2016; Stathi & Crisp, 2008; West et al., 2011). Similarly, when imagined contact is instructed to be cooperative the positive intergroup outcomes are enhanced (Kuchenbrandt et al., 2013). Importantly, Kuchenbrandt et al. (2013) further found that perceived quality of the imagined interaction mediated the effects of imagined contact.

Given that imagined contact research is experimental, the issue of creating positive mental imagery conditions is addressed by giving explicit instructions to participants regarding the valence of the imagery. For example, they are asked to imagine "relaxed", "positive" and "interesting" encounters with outgroups, or to imagine "co-operative" contact (see Crisp et al., 2009; Kuchenbrandt et al., 2013). The fact that simple and easily implemented instructions to engage in positive mental simulation of intergroup interactions

can improve outgroup attitudes and contact behavioural intentions has allowed the development of imagined contact as a cost-effective and versatile prejudice reduction tool. Interestingly, Husnu and Paolini (2018) showed that when people have the choice to imagine either a positive or a negative contact scenario, they tend to actively chose to imagine positive rather than negative contact. Yet, it is important to acknowledge that people also engage in mental imagery in non-controlled, non-experimental conditions since in everyday life mental imagery often occurs spontaneously (e.g., Somerville, Cooper, & Hackmann, 2007). Social cognition research has shown that people make social inferences spontaneously and the situational context can affect spontaneous attitudes (Macrae, Bodenhausen, Milne, Thorn, & Castelli, 1997; Uleman, Saribay, & Gonzalez, 2008; Wittenbrink, Judd, & Park, 2001). We argue that, from an intergroup perspective, it is likely that this spontaneous everyday imagery involves to some extent interactions with other people, some of whom may belong to outgroups. Given that experimentally manipulated mental imagery of contact predicts attitudes toward the outgroup (Miles & Crisp, 2014), we argue that it is important to understand whether the spontaneous forms of imagined contact that occur outside the laboratory also drive outgroup attitudes, and in which direction. If people do indeed imagine contact experiences with outgroup members, then we need to understand the outcomes of this spontaneous process.

Spontaneous imagined contact as it occurs in everyday life (rather than in carefully-designed experiments) is likely to be unstructured and not adhering to the guidelines usually accompanying the relevant experimental studies. These guidelines usually instruct people to engage in a positively valanced mentally simulated interaction, in line with the contact hypothesis that suggests that contact is more effective under optimal conditions (Allport, 1954; Pettigrew, 1998). However, when imagined intergroup contact occurs in everyday conditions people may rely on heuristics and outgroup stereotypes to guide their imagined

interactions (Uleman et al., 2008). This can be exacerbated in contexts of conflict or threat, where reliance on negative stereotypes is stronger (Bar-Tal & Teichman, 2005; Zárate, Garcia, Garza, & Hitlan, 2004). Therefore, when people engage in spontaneous imagined contact outside the laboratory they may make use of biased information concerning the outgroup, which could then perpetuate negative attitudes and entrench contact avoidance. Spontaneous contact mental imagery may thus serve to fit the schemas that people have about the outgroups (Park & Rothbart, 1982). When considering the spontaneous, non-experimentally induced mental imagery of interactions in everyday life it is therefore important to assess the positivity attributed to these imagined interactions.

In line with the contact and imagined contact literature, it is important to distinguish between the quantity and the positivity, i.e. quality, of the spontaneous imagined contact thoughts. Based on the research reviewed above, we expect that it is primarily the quality rather than the frequency of spontaneous contact imagery that will predict positive attitudes. Another key factor that is relevant when considering the strength of the outcomes of spontaneous imagined contact is that of elaboration (Husnu & Crisp, 2010). Elaboration, that is increasing the vividness of the imagined scenario by asking participants to include details, has been used in the instructions of the imagined contact conditions as a condition further enhancing its effects. Husnu and Crisp (2010) found that participants who elaborated on the imagined contact task subsequently reported more favourable outgroup attitudes. This result is in line with research showing that elaboration has stronger impact on associated attitudes and behaviour because it provides an available script upon which one can act (Gollwitzer, 1993; Ross, Lepper, & Hubbard, 1975).

We argue that in order to assess the association between spontaneous imagined intergroup contact and attitudes, we need to consider whether this association exists above and beyond existing contact with the outgroup. It has generally been argued that imagined

contact as a prejudice reduction tool is more beneficial when levels of existing contact are low (Crisp et al., 2008; Hoffarth & Hodson, 2016). Hoffarth and Hodson (2016) found that previous contact moderated the efficacy of imagined contact. That is important because it suggests that when people have experiences of direct intergroup interactions the effect of imagined contact is not as strong as when people do not have real contact experiences. In our research, after examining the initial association between spontaneous imagined contact and attitudes (Study 1) we measured different forms of direct and indirect contact, and used them as covariates (Studies 2 and 3). Specifically, we included extended contact and cross-group friendships as covariates in Study 2, and quantity and quality of existing intergroup contact as covariates in Study 3. Given that these forms of contact are fundamental determinants of intergroup attitudes, it is important to include them in the design of the current studies in order to explore whether spontaneously imagining contact with the outgroup is still associated with an improved stance toward the outgroup when they are also involved. Finding evidence that imagining contact outside the strictly controlled conditions created in experimental studies predicts attitudes, and that it does so while controlling for several different forms of direct and indirect contact, would provide important support for the role of spontaneous intergroup imagery.

In order to further understand the processes that underlie the potential link between spontaneous contact imagery and attitudes toward the outgroup we measured two key mediators highlighted in the contact and imagined contact literature, intergroup empathy and anxiety (Pettigrew & Tropp, 2008). As reviewed above, the role of both affective mechanisms has been largely supported when seeking to understand how contact reduces prejudice. It is thus interesting to examine if spontaneous contact imagery relates to intergroup anxiety and empathy toward the outgroup in a similar way as real contact experiences do.

The present research

In three correlational studies we tested whether people's spontaneous imagined intergroup interactions predict positive attitudes toward the outgroup (Studies 1-3) and contact behavioural intentions (Study 3) above and beyond reported levels of extended contact and cross group friendships (Study 2) and quantity and quality of existing intergroup contact (Study 3). Although research demonstrating the effects of experimentally induced imagined contact has found that the strategy reduces intergroup biases, it is unclear whether everyday spontaneous imagery regarding intergroup interactions is associated with attitudes in a similar, positive way. Exploring this can shed light on the outcomes of casual thinking processes associated with contact. In addition, imagined contact has been tested by research in the laboratory, whereas only few studies examined naturalistic contexts (e.g., De Carvalho-Freitas & Stathi, 2017; Stathi, Cameron, Hartley, & Bradford, 2014; Vezzali et al., 2012). The study of spontaneous contact imagery allows to go beyond the restrictions of laboratory research, and can provide first evidence of how (spontaneous) imagined contact may affect the course of intergroup relations in everyday life.

To address the questions of the current research, we also created and validated a spontaneous imagined intergroup contact scale (SIICS), with three dimensions previously shown to impact on imagined and direct contact outcomes; frequency, quality and elaboration of the imagined imagery. Decomposing spontaneous imagined contact allows us to test which of these dimensions is more strongly related to positive outgroup views. Therefore, our research not only enhances our understanding of whether people spontaneously imagine intergroup contact and the outcomes of this, but also allows a more careful consideration of attitude change interventions. That is, knowing that certain dimensions of the spontaneous contact imagery are more likely to drive outgroup attitudes can inform the tailoring of interventions to take into account the thinking processes that occur in daily life.

We hypothesise that the frequency, quality and elaboration of spontaneously (i.e., non-experimentally induced) imagined intergroup contact will be associated with more positive attitudes, above and beyond existing contact. Based on direct contact research, we expect that the predictive role of the quality of the imagined interactions will be stronger than that of frequency and elaboration. We further expect that affective responses, specifically empathy and anxiety, will mediate the path from the spontaneous contact imagery to attitudes.

Study 1

Study 1 aimed to explore if people spontaneously imagine interactions with an outgroup, and if so, whether this spontaneous imagery associated with attitudes toward the targeted outgroup. To do so, we developed the spontaneous imagined intergroup contact scale (SIICS), an instrument to assess spontaneous imagined intergroup contact, based on the previously identified key aspects of direct contact (i.e., quality and frequency) and experimentally induced contact imagery (i.e., elaboration).

Method

Participants and Procedure

Participants were 305 Portuguese nationals (68.2% female) with age ranging from 18 to 73 years ($M = 30.33$, $SD = 10.72$). Regarding education, 47.6% had Bachelor degrees, 32.8% reported having a high school degree, 17% had a Master or Doctoral degree, and less than 3% reported having a primary school degree. Approximately half of the participants were employed (58.7%), 30.5% were students and less than 3% were unemployed.

Participants were recruited via email and Facebook and completed an online survey (Qualtrics)[1]. After questions on demographics, participants answered the measures of interest: imagined contact, social distance and warmth. The items referred to one of the three most represented immigrant groups in Portugal: Africans, Brazilians and Ukrainians (SEF, 2015). Participants saw the attitudes measures and then the SIICS questions, and each participant only rated one of the three possible target groups. Data collection was implemented with the aim of reaching a) a minimum sample size for detecting a small effect size with the power of .80 for running a multiple regression with three predictors (minimum $N = 274$), and b) an adequate sample for running an exploratory factor analysis ($200 \leq N \leq 500$, see e.g., Cattell, 1978).

After completing the survey, participants were debriefed and thanked for their participation.[2]

Measures

SIICS. We developed 8 items to assess participants' spontaneous imagined intergroup contact. Two items assessed the frequency of imagined contact (*In everyday life, how frequently do you imagine interacting with "target-group",* 1 = Never/almost never, 5 = Always/almost always; *Specifically, how often do you imagine having contact with "target-group"*, ranging from at least once a day [1] to less than once per year [8]); 2 items assessed the quality of imagined contact (*When you imagine interacting with "target-group"*, *these encounters are* (1) Unpleasant -Pleasant (5), (1) Hostile – Friendly (5); and 4 items assessed the degree of elaboration (*When you imagine interacting with "target-group: do you imagine the reason behind this contact; do you think about the details of where and when this contact takes place, do you share this interaction with your friends*, 1 = Never/almost never, 5 = Always/almost always; *On average, when you imagine having contact with "target-group",*

how much time do you spend imagining the contact scene?, Less than 1 minute,

Approximately one minute, More than 1 minute). All items were standardized using Z-Points

($r_{frequency} = .77$, $r_{quality} = .57$; $\alpha_{elaboration} = .85$) apart from the case of the ANOVA, where a

different index was used (see Footnote 3).

Social Distance. Participants rated how favourable they were to have the target group

in six different situations (e.g., classmates, neighbours, in-laws) (1=Not at all to 5=Very

much) (based on Binder et al., 2009). We reversed-scored the scale so that higher values

mean more social distance toward the target-group ($\alpha_{Africans} = .97$; $\alpha_{Brazilians} = .95$; $\alpha_{Ukrainians} =$

.94).

Outgroup attitudes. Participants rated how positive/negative they felt towards the

target group on a thermometer ranging from 0 to 100 degrees (based on Haddock, Zanna, &

Esses, 1993). Values higher than 50 degrees indicated a positive/warm feeling towards the

outgroup.

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Results

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We conducted an Exploratory Factor Analysis (EFA) with IBM SPSS Statistics,

version 23, involving the 8 items developed to assess imagined contact. Next we tested the

scale sensitivity by examining its potential to detect differences between the different target

groups, and explored its criterion validity by examining the correlations with two attitudinal

measures.

Exploratory factor analysis and reliability

We conducted an EFA with principal axis factoring extraction and *Oblimin* rotation

on the 8 items (Table 1). The number of retained factors was determined by scree plot

analysis and item loadings were taken from pattern matrices. Items with factor loadings $\geq .35$

in more than one factor were removed from the analysis (Costello & Osborne, 2005). The

analyses revealed a 3-factor structure explaining 61.21% of variance: (I) Frequency, (II)

Quality, and (III) Elaboration. Items had moderate-to-high loadings on the respective factor and all factors presented good reliability (see Table 1). Since one loading was quite low, one item from the elaboration dimension (i.e., *On average, when you imagine having contact with "target-group", how much time do you spend imagining the contact scene?*) was discharged from the analyses and from the other two studies.

Scale sensitivity

To examine the scale sensitivity to different target groups, we conducted a 3 imagined contact (frequency vs. quality vs. elaboration) $\times$ 3 target-group (African vs. Brazilian vs. Ukrainian immigrants) mixed-factors repeated measures ANOVA[3]. Results showed a significant main effect of contact, $F(2, 280) = 426.11$, $p < .001$, $\eta^2_p = .75$, showing that SIICS can detect differences even when the same latent construct is underlined. Specifically, regardless of target-group, participants reported more imagined contact quality ($M = 3.80$, $SD = 0.90$) than frequency ($M = 2.23$, $SD = 1.25$), $t(283) = 19.71$, $p < 001$, and elaboration ($M = 1.77$, $SD = 0.91$), $t(283) = 28.35$, $p < 001$, and more frequency compared to elaboration, $t(283) = 6.00$, $p < 001$. Similarly, the main effect of target-group was also significant $F(2, 281) = 18.32$, $p < .001$, $\eta^2_p = .11$, showing that ratings for the African immigrants ($M = 2.89$, $SD = 0.70$) were significantly higher than for Brazilians ($M = 2.62$, $SD = 0.71$), $t(182) = 2.68$, $p < 01$, and Ukrainians ($M = 2.31$, $SD = 0.61$), $t(192) = 6.20$, $p < 001$; in addition, participants reported higher scores for Brazilians compared to Ukrainians, $t(188) = 3.20$, $p < 01$. Importantly, there was an interaction between the factors, $F(4,562) = 3.78$, $p < .01$, $\eta^2_p = .03$. Post-hoc comparisons showed that participants imagined significantly more frequent contact with African immigrants ($M = 2.76$, $SD = 1.28$), relative to both Brazilians ($M = 2.18$, $SD = 1.20$), $t(182) = 3.17$, $p < 01$, and Ukrainians ($M = -.34$, $SD = .80$), $t(192) = 5.84$, $p < 001$, and imagined contact was more frequent for Brazilians than for Ukrainians, $t(188) = 2.49$, $p < 05$. Quality of imagined contact was also higher for African ($M = 3.92$, $SD = 0.76$), $t(192) = 2.74$,

p < 01, and Brazilian targets (*M* = 3.90, *SD* = 0.97) , *t*(188) = 2.23, *p* < 05, relative to

Ukrainian targets (*M* = 3.59, *SD* = 0.91); imagined contact quality did not differ across

Africans and Brazilians, *t*(182) = 0.20, *ns*. Finally, regarding elaboration, participants

reported significantly more elaboration of imagined contact of Africans (*M* = 1.99, *SD* =

1.04) , *t*(192) = 3.34, *p* < 001, and Brazilians (*M* = 1.76, *SD* = 0.88), *t*(188) = 1.73, *p* < 09,

relative to Ukrainians (*M* = 1.56, *SD* = 0.75). No differences emerged between the African

and Brazilian outgroup scores, *t*(182) = 1.61, *ns*.

Preliminary evidence for criterion validity

Correlations among the variables are reported in Table 2. We conducted two multiple

regression analyses, separately for target groups to explore whether frequency, quality and

elaboration of imagined contact were significantly related with social distance and outgroup

attitudes. Results are presented in Table 3. Across the three groups, imagined contact quality

was associated with decreased social distance; in addition, only for the Ukrainian target-

group, imagined contact elaboration was negatively, but marginally, related to social

distance. Similar results emerged when attitudes were the dependent variable. In particular,

imagined contact quality was correlated with a positive evaluation of the three target groups;

on the other hand, imagined contact frequency was positively associated with positive

attitudes when considering both the Brazilian and the African (marginally) target groups.

Finally, no effect of imagined contact elaboration was found[4].

Study 1 provided initial empirical support for the role of spontaneous contact imagery

on two dimensions of attitudes, social distance and outgroup attitudes. All three dimensions

of imagined contact, that is quality, frequency and elaboration, were positively associated

with outgroup attitudes and negatively associated with social distance. Studies 2 and 3

expand on these findings by adding new outcome and control variables.

Study 2

In Study 2 we seek to extend the initial findings of Study 1 while controlling for intergroup friendships and extended contact, and by also looking at two key mediators, empathy toward the outgroup and intergroup anxiety. We decided to control for extended contact and a particularly potent form of intergroup contact, that is cross-group friendships, in order to ensure that the spontaneous contact imagery exerts its predictive role above and beyond the effects of real and extended contact experiences. Additionally, we aimed to enhance the generalizability of our results by looking at a different intergroup context, British and Eastern Europeans in the UK shortly after the Brexit referendum.

Method

Participants

Participants were 185 British nationals (60.3% female) who fully completed the study online. Those who did not indicate that they are British or who did not fill in the entire questionnaire were omitted from the data analyses. Participants were recruited via social media and via the Prolific Academic platform, and were asked to participate on an online study on "social views in the UK". Age ranged from 18 to 72 years ($M = 34.04$, $SD = 13.25$). Of the 180 participants who completed information regarding their employment, 61.7% currently held a job, 20.5% were students, 8.9% were homemakers/mothers, 5.6% did not currently work, and 3.3% were retired. Participants were recruited in order to reach a sample allowing for running a structural equation model with nine latent and 17 observed variables (minimum sample size = 184).

All participants saw the SIICS items first, then the intergroup friendship and extended contact measures counterbalanced, and then all attitudes measures counterbalanced. Upon completion, participants were asked to fill in their demographic details, and were then thanked and debriefed.

Measures

All outcome measures used a 5-point scale apart from the outgroup attitude measure (details below); unless indicated otherwise, higher numbers represented greater endorsement of the items (for example, *Very Much*, *Strongly Agree,* or *Very Frequently*).

SIICS. The seven items emerged in Study 1 were used to measure the frequency, quality and elaboration of the imagined contact; the target outgroup this time was Eastern Europeans. As in Study 1, all items were standardized. Regarding frequency and quality dimensions, the correlations between items were .72, $p < .001$, and .82, $p < .001$, respectively. Regarding the elaboration dimension, $\alpha = .72$.

Intergroup friendships. Two items measured friendships with Eastern Europeans (based on Swart, Hewstone, Christ, & Voci, 2011), "How many close friends do you have who are Eastern Europeans?" (*None*, *One*, *2 to 5*, *6 to 10*, *More than 10*) and "How often do you spend time with your Eastern European friends?", $r = .72$, $p < .001$.

Extended contact. Five items measured extended contact (based on Turner, Hewstone, Voci, & Vonofakou, 2008), for example: "How many British people do you know who have friends who are Eastern Europeans?", "How many of your British friends have friends who are Eastern Europeans?" (*None*, *One*, *2 to 5*, *6 to 10*, *More than 10*), $\alpha = .88$.

Outgroup attitudes. Participants rated their overall favourable/unfavourable evaluation of Eastern Europeans in general on a slider thermometer (based on Haddock et al.,

1993) ranging from 0 (*extremely unfavourable*) to 100 degrees (*extremely favourable*) with 50 as the neutral evaluation (*neither positive nor negative*).

Social Distance. The same items as in Study 1 were used (based on Binder et al., 2009), with the exception that the target outgroup was Eastern Europeans, α = .94.

Intergroup anxiety. Participants were asked to think about a hypothetical situation where they would be the only British person among a groups of Eastern European strangers, and indicate how they would feel using seven anxiety-related adjectives (based on Voci & Hewstone, 2003), for example: awkward, comfortable (reverse coded), α = .91.

Intergroup Empathy. Three items were used to assess empathic responses toward Eastern Europeans (based on Swart et al., 2011), for example "If I heard that an Eastern European was upset, and suffering in some way, I would also feel upset", α = .87.

Introductory analyses

Means, standard deviations and correlations among variables are reported in Table 3. From the means, it appears that participants did not have many friends in the outgroup but, on the other hand, they had ingroup friends with Eastern Europeans friends (extended contact). It also emerged that, generally, levels of empathy are high while anxiety and social distance are relatively low. Finally, participants reported generally positive attitudes of Eastern Europeans, since the mean for outgroup attitudes is significantly higher than the mid-point of the scale, $t(184) = 2.72$, $p < .01$.

Confirmatory factor analysis

To further test the construct validity of SIICS, we conducted a Confirmatory Factor Analysis (CFA) involving the seven items developed in Study 1. The factor structure obtained in Study 1 with the EFA was treated as the hypothesized model and compared with two alternative models which are described below. The factor loadings of the error terms and one factor loading of each latent factor (i.e., the item with highest loading on each factor)

were fixed at one. Factor and error variances were freely estimated and correlations among factors were allowed. Moreover, model adaptation to data was assessed by using four indexes (in parentheses the cut-off values suggested by Hu & Bentler, 1999), namely, the χ^2/df (lower than 3), the CFI (greater than .95), the SRMR (equal or smaller than .08), and the RMSEA (smaller than .06). Next, we tested the scale criterion validity by examining the correlations with several outcome measures.

The 3-factor model structure obtained in Study 1 was compared to four alternative models: three 2-factor models that aggregated in a single factor respectively a) *Frequency* and *Quality* b) *Frequency* and *Elaboration* and c) *Quality* and *Elaboration*; and a 1-factor model that grouped all items in one single factor. The 3-factor model showed a better fit for all indexes – comparative fit index (CFI), root mean square error of approximation (RMSEA) and the standardized root mean square residual (SRMR) (CFI = .99, RMSEA = .05, SRMR = .05) (Table 5). The chi-square difference tests showed that the 3-factors model was significantly different from the 1-factor $\Delta\chi^2(3)= 338.87$, $p<.001$ and the three 2-factors models $\Delta\chi^2(2)> 158.40$, $p<.001$ (Table 5). All the individual items loaded acceptably on their predicted factors, with standardized loadings ranging from .75 to .96 for *Frequency*, .81 to 1.00 for *Quality*, and .82 to .90 for *Elaboration*.

Convergent validity

A second CFA was applied in order to test convergent and discriminant validity of SIICS. In particular, the aim was to test whether the three dimensions of the proposed measure were correlated, but different, with the two contact measures, namely cross-group friendships and extended contact. Thus, the model presented five latent factors, each of them saturating two indicators created following the suggestions by Little Cunningham, Shahar, and Widaman (2002); or, for the two-item measures, created by considering the single items as the indicators.

The model presented an excellent fit to data, $\chi^2(25) = 34.68$, $p = .09$, $\chi^2/df = 1.39$,

RMSEA = .04, CFI = 0.99, SRMR = .03. Findings revealed that direct cross-group

friendships were correlated significantly with frequency ($r = .56$, $p < .001$) and quality ($r = .17$, $p < .05$) and with elaboration ($r = .21$, $p < .05$); similarly, extended contact was

significantly associated all the three dimensions of the imagined contact scale ($r = .48$, $p < .001$, for frequency; $r = .27$, $p < .01$, for quality; $r = .20$, $p < .05$, for elaboration). Regarding

the correlations between the imagined contact factors, frequency was correlated with quality

($r = .42$, $p < .001$) and with elaboration ($r = .26$, $p < .01$), while quality was not significantly

related to elaboration ($r = -.03$, ns). Moreover, all the previous correlations were significantly

different from 1; in fact, all the 95% confidence intervals, obtained considering two standard

errors above and below the estimated correlation, did not included 1.

Criterion validity

Criterion validity of SIICS was investigated with a mediation model using structural

equation modelling (Jöreskog & Sörbom, 2007). In particular, exogenous variables were the

three dimensions of imagined contact scale (frequency, quality and elaboration); intergroup

anxiety and empathy represented the mediators, and social distance with outgroup attitudes

were the dependent variables; finally, cross-group friendships and extended contact were

included as control variables at the exogenous variables level. Direct effects from the

exogenous variables (i.e., the three imagined contact dimensions and the two contact

measures) to the dependent variables, as well as the correlation between the same level

variables, were estimated. The significance of the indirect effects was tested by using

bootstrapping techniques with 5,000 resamples (Preacher & Hayes, 2008); mediation is

considered reliable when the 95% confidence interval does not include 0. For each latent

factor, except for the outgroup attitudes and the two-item measures, two parcels were created

following the suggestions by Little et al. (2002), namely parcels were created by pairing the

two highest loaded items with the lowest loaded ones (i.e., item-to-construct balance method); since the attitude thermometer was composed of a single item, the relative latent factor saturated a single parcel, and the relative error was fixed to 0. In structural equation modelling, using item aggregation has several advantages compared with loading factor single items (e.g., higher reliability and communality, increased model stability), and, since parcelling reduces the number of estimated parameters (thus reducing the number of participants required), it is useful for small sample sizes (for a more detailed description of the advantages and disadvantages of parcels, see Little et al., 2002; see also, Hau & Marsh, 2004). Direct effects between the exogenous variables with the two dependent measures, and correlations between the same level variables were estimated.

The proposed model showed a good fit to data, $\chi^2(84) = 131.82$, $p < .001$, $\chi^2/df = 1.57$, RMSEA = .04, CFI = .99, SRMR = .03. As indicated in Figure 1, the quality dimension of SIICS was positively associated with increased empathy and with favourable attitudes toward Eastern Europeans; in addition, negative relations emerged between imagined contact quality with both anxiety and social distance. Both mediators were significantly related to the outcome variables. That is, there was a positive correlation between empathy and outgroup attitudes, and a negative correlation with social distance, and anxiety was positively associated with increased social distance and with more negative outgroup attitudes. No associations emerged for imagined contact frequency and elaboration[5,6].

Table 5 reports the results concerning bootstrapping analyses. As can be seen, all paths concerning mediated association between imagined contact quality and the two dependent variables are significant (since the 95% confidence intervals did not include 0), with the exception of the indirect effect of anxiety in the relation between imagined contact quality and outgroup attitude (but a direct effect between the two variables was observed).

The results of Study 2 provided support for the hypothesis that the quality of spontaneous contact imagery predicts more positive attitudes and empathy as well as reduced social distance and anxiety, while controlling for a potent form of intergroup contact, i.e. cross-group friendships, and extended contact. Additionally, the results demonstrated that empathy mediated the relationship between imagined contact quality and social distance, as well as imagined contact quality and outgroup attitudes. Anxiety, on the other hand, mediated the path from imagined contact quality to social distance. Interestingly, while spontaneous imagined contact frequency correlated in the expected direction with all outcome variables, it did not emerge as a predictor when tested against all other variables. In this context, unlike Study 1, imagined contact elaboration did not correlate with any of the outcome variables, which will be further addressed in the discussion.

Study 3

Following the results obtained thus far, the aim of Study 3 was threefold: (a) to confirm the three-factor structure of the imagined contact scale with a different sample of participants (b) to replicate the results of Study 2 in a different intergroup context, specifically in Italy, focusing on Italians and Eastern European immigrants, while controlling for both direct quality and quantity of contact, and (c) to extend the previous findings by investigating contact behavioural intentions. The imagined contact literature has drawn attention to this variable as it is argued to act as a precursor of approaching the outgroup (Miles & Crisp, 2009).

Method

Participants and procedure

Two hundred and seventy six Italian nationals (246 females and 30 males, $M_{age} =$ 22.00, $SD = 4.99$) voluntarily took part in the survey. Participants were students at a medium-sized university located in the Northern part of Italy and were recruited during psychology lectures. Data collection aimed to guarantee a data sample suitable for detecting a medium effect size, with a power of .80, for structural equation modelling with 10 latent variables loading 19 observed indicators (required minimum sample = 190). Participants were invited to complete an online questionnaire investigating perceptions and attitudes toward Eastern Europeans immigrants in Italy. All participants saw the SIICS items first, then the direct contact measures, and then all attitudes measures. Upon completion, participants were asked to fill in their demographic details, and were then thanked and debriefed.

Measures

The same measures as in Study 2 were employed in this study with two differences. While the three dimensions of SIICS (i.e., frequency [$r = .73, p < .001$], quality [$r = .73, p < .001$], and elaboration [see CFA below, $r = .73, p < .001$]), anxiety [$\alpha = .86$], empathy [$\alpha = .77$], social distance [$\alpha = .92$], and outgroup attitudes were included as before, direct cross-group friendships and extended contact were replaced with actual contact quality and quantity. This allowed to test the predictive role of spontaneous imagined contact against different forms of actual intergroup contact. Moreover, a contact behavioural intentions scale was added to investigate whether spontaneous imagined contact is also associated, directly or indirectly, with intended behaviours toward the outgroup as suggested by imagined contact literature (Miles & Crisp, 2014). Unless otherwise stated, 5-point scales were used with higher numbers indicating higher endorsement of the items.

Quantity of contact. Two items measured the quantity of contact participants had with Eastern Europeans (based on Voci & Hewstone, 2003). The items were: "How many Eastern Europeans do you know?" (1 = *None*, 5 = *More than 10*) and "How frequently do you have contact with Eastern Europeans?" (1 = *Never*, 5 = *Very frequently*), $r = .56$, $p <$ .001.

Quality of contact. To measure quality of contact with Eastern Europeans, participants were asked to characterize the contact they have on four bipolar dimensions (based on Voci & Hewstone, 2003), for example: involuntary - voluntary, natural - forced (reverse-coded). On the 5-step scale, 1 was assigned to the negative pole and 5 to the positive one, with 3 (*neither… nor…*) as the neutral point, α = .77.

Contact intentions. Four items assessed contact behavioural intentions toward Eastern European immigrants (based on Asbrock, Gutenbrunner, & Wagner, 2013). Example items are: "I would like to have a conversation with an Eastern European in the Italy"; "I would like to have more contact with Eastern Europeans", α = .90.

Results

Introductory analyses

Means, standard deviations and correlations among constructs are reported in Table 6. From the means it appears that participants have a moderate amount of contact with Eastern Europeans, and this contact is positive, since the score is significantly greater than the neutral point of the scale, $t(275) = 15.65$, $p < .001$. Moreover, respondents reported feeling a fair amount of empathy toward the outgroup and a relatively high level of anxiety when imagining being among Eastern Europeans. Scores relative to social distance were relatively low and intentions to have contact with the outgroup were relatively high. Finally, the

attitudes toward Eastern Europeans were positive since the outgroup attitudes values were significantly higher than the neutral point of the scale, $t(275) = 11.59$, $p < .001$.

Confirmatory factor analysis

As in the previous studies, a CFA was run in order to confirm the three-factor structure of SIICS. The model obtained with the EFA in Study 1 was thus replicated by estimating item loadings to the respective factor. Thus, frequency factor loaded two items, as well as the quality factor, while the elaboration dimension loaded three items (see Study 1 and Study 2). For each latent variable, one loading was fixed to one. Factor and error variances were freely estimated as well as the correlations among factors.

The three-factor model showed a good fit to the data, $\chi^2(11) = 2.28$, $p < .05$, $\chi^2/df = 5.44$, RMSEA = .07, CFI = .98, SRMR = .07. Factor loadings ranged from .68 to .89 ($p < .001$) except for the item "When you imagine interacting with Eastern Europeans, do you share this interaction with your friends?" of the elaboration dimension ($\lambda = .21$, $p < .01$). For this reason, this further item was excluded from the scale in the Italian sample. Thus, the final model with each factor loaded two items presented an excellent fit to data, $\chi^2(6) = 4.12$, $p < .05$, $\chi^2/df = 0.69$, RMSEA $\approx .00$, CFI = 1.0, SRMR = .01.

To further confirm the three-factor dimension of the scale, the latter model was compared to four alternative models, a monofactorial one, and three two-factor models where two dimensions were merged as a single factor while the third one remained separated, namely: a) frequency with quality vs. elaboration; b) frequency with elaboration vs. quality; c) quality with elaboration vs. frequency. Results showed that all of the four models presented a poor adaptation to data, χ^2s > 101.90, $p < .001$, $\chi^2/df > 12.73$, RMSEA $> .19$, CFI $< .85$, SRMR $> .11$. Thus, in line with Study 1 and 2, the three-factor solution was replicated for the Italian sample.

Convergent validity

In order to examine convergent validity, a further CFA was conducted to test whether the three dimensions of SIICS were positively associated with two related constructs (i.e., quality and quantity of direct contact). For each of the five latent factors two indicators were employed. For imagined contact frequency, quality and elaboration, along with direct contact quantity, the single items were used as indicators; regarding, quality of direct contact, the two parcels were created by following Little and collaborators' (2002) instructions. The tested model presented an excellent adaptation to the data, $\chi^2(25) = 17.32$, $p = .87$, $\chi^2/df = 0.69$, RMSEA $\approx .00$, CFI $= 1.00$, SRMR $= .02$. Specifically, direct contact quantity was positively associated with all the three dimensions of the spontaneous imagined contact scale, namely with frequency ($r = .62$, $p < .001$), quality ($r = .50$, $p < .001$), and elaboration ($r = .17$, $p < .05$); on the other hand, quality of direct contact was significantly related with frequency ($r = .30$, $p < .001$), and quality ($r = .69$, $p < .001$), but not with elaboration ($r = -.04$, ns). Moreover, imagined contact frequency was significantly correlated with both quality ($r = .49$, $p < .001$) and elaboration ($r = .18$, $p < .05$), while no significant correlation emerged between quality and elaboration dimensions ($r = .05$, ns). Finally, since the 95% confidence intervals concerning the estimated correlations did not include 1, all the relations were significantly different from the perfect correlation.

Criterion validity

A structural equation model approach with latent variables (Jöreskog & Sörbom, 2007) was employed in order to test criterion validity of SIICS. Specifically, in the proposed model exogenous variables were the three dimensions of the imagined contact scale; first level mediators were intergroup anxiety and empathy, while second level mediators were social distance and outgroup attitudes (thermometer); finally, contact behavioural intentions was the dependent measure; as control measure, quality and quantity of contact were included

in the model as exogenous variables (i.e., at the same level as the imagined contact dimensions). Direct effects from the exogenous variables to the second level mediators and to the dependent variable, as well the direct relations from the first level mediators to contact intentions, were estimated; in addition, the correlations between the same level variables were assessed. Indirect effects' significance was tested by using bootstrapping techniques with 5,000 resamples (Preacher & Hayes, 2008); mediation is confirmed when the 95% confidence interval does not include 0.

For each latent factor, two indicators were created. In the case of the two-item scales (the three dimensions of SIICS and direct contact quantity) the single items represented the indicators; regarding outgroup attitudes, a single indicator was employed and the relative error was fixed to 0; finally, for the variables composed of more than two items, we used the item-to-construct balance method (Little et al., 2002) for building parcels (see Study 2).

Moreover, in the model direct effects from the exogenous variables to second level mediators and the dependent variable, and direct effects from first level mediators to contact intentions were estimated along with correlations between same-level factors.

The proposed model showed an excellent fit to the data, $\chi^2(108) = 119.00$, $p = .22$, $\chi^2/df = 1.10$, RMSEA = .02, CFI = 1.0, SRMR = .03. As can be seen in Figure 2, imagined contact quality was related to lower anxiety, positive attitudes toward Eastern Europeans, and with more contact intentions. Regarding first-level mediators, anxiety and empathy were associated with the second-level mediators; in particular, anxiety was related with both outgroup attitudes (negatively) and with social distance (positively); on the other hand, empathy was correlated with decreased social distance. Moreover, a positive relation between empathy and contact intentions emerged. In turn, considering second-level mediators, social distance, but not outgroup attitudes, was negatively related with contact intentions[7,8].

The significance of indirect effects is shown in Table 7. As can be seen, bootstrapping procedures confirmed all the mediational paths that emerged in the model. In particular, spontaneous imagined contact quality was associated with contact intentions both directly and via the indirect effect of anxiety and social distance. Interestingly, of the three imagined contact factors, quality was the only one that emerged as a significant predictor, above and beyond elaboration and frequency, as well as quantity and quality of contact. Elaboration specifically, did not correlate with any of the variables, replicating the findings of Study 2 in a different context.

General Discussion

This research was driven by premises of direct intergroup contact (Allport, 1954; Pettigrew & Tropp, 2006) and imagined contact (Crisp & Turner, 2009), and explored whether people's spontaneous, non-experimentally induced imagined interactions with the outgroup predict one's attitudinal stance toward the outgroup. As literature on imagined contact is rapidly growing and provides evidence that imagined interactions can affect outgroup attitudes and behavioural intentions (Miles & Crisp, 2014), questions regarding how people use their mind's eye arise. It is therefore important to understand the potential outcomes of imagined contact that takes place outside the laboratory, without carefully designed experimental instructions that guide participants to think about positive and co-operative intergroup encounters. In three correlational studies conducted in three different national contexts, we explored if spontaneous imagined contact, that is intergroup contact imagery that is not experimentally-manipulated and emerges in every day conditions, predicts people's stance toward outgroups. In order to explore the role of spontaneous imagined contact we designed and validated a measure (i.e., SIICS) that, driven by the relevant theory, comprised of three dimensions of contact, frequency, quality and elaboration.

Study 1 provided preliminary evidence of the validity of SIICS. The hypothesized three-factor structure was confirmed, and the reliability of the dimensions was good. Additionally, preliminary criterion validity was also supported, with the three dimensions significantly predicting more positive outgroup attitudes. Studies 2 and 3 further confirmed the hypothesized three-factor structure with two additional national samples. However, while the imagined contact quality presented good reliability and convergent and criterion validity across the three studies, the elaboration dimension did not. Specifically, in Study 3 two items had poor loadings and were removed from the analyses. Elaboration and frequency also revealed less robust results regarding convergent and criterion validity. Studies 2 and 3 showed that of the three dimensions, it is only imagined contact quality that predicts positive intergroup attitudes, even when controlling for actual interactions, namely, friendships and extended contact in Study 2, and quantity and quality (a parallel measure with imagined contact quality) in Study 3. In other words, our studies provide evidence that it is specifically imagined contact quality (Studies 1, 2 and 3), rather than frequency (only Study 1 for outgroup attitudes and social distance) and elaboration (only Study 1 for social distance), that predicts several measures of attitudes toward immigrant groups.

Importantly, to ensure the obvious and well-established relationship between actual contact and attitudes is taken into consideration, we tested and supported the predictive role of spontaneous imagined contact above and beyond extended contact and cross-group friendships (Study 2) and actual contact quality and quantity (Study 3). Furthermore, we explored whether spontaneous imagined contact also predicts behavioural contact intentions (Study 3), and found that the dimension of quality does so both directly and indirectly via anxiety and social distance. This research provides evidence that people imagine interactions with outgroups even when unprompted by experimental interventions such as imagined

contact (Crisp & Turner, 2009), and that this imagery predicts attitudes and intended behaviours.

In Studies 2 and 3, imagined contact frequency correlated positively with attitudes and empathy and negatively with anxiety and social distance, however it did not emerge as a predictor when tested against quality and elaboration, as well as other forms of contact. The fact that the frequency of imagined intergroup interactions did not predict how people feel toward the outgroup, but whether the interactions are perceived as positive did, is in line with contact literature that advocates the importance of positive contact (Islam & Hewstone, 1993; Tredoux & Finchilescu, 2010). In our research we did not measure explicitly how frequently participants imagine positive versus negative intergroup contact, and thus we cannot disentangle the precise valence of the imagery. Going beyond mere exposure to outgroups, scholars have long argued that contact between groups needs to take place under optimal conditions and be positive in order to ameliorate biases. Indirect support for this comes from findings that negative contact can have detrimental consequences for intergroup relations (Barlow et al., 2012; Graf & Paolini, 2017). Research on imagined contact has also recommended a more positive tone in the imagined scenario (Crisp et al., 2009, Stathi & Crisp, 2008). For example, West et al. (2011) showed that in some cases, neutral imagined contact can be ineffective or even damaging, whereas explicit experimental instructions to imagine positive contact can reduce anxiety and improve attitudes. Thus, positivity is also essential when looking into in every-day situations when people imagine interactions with the outgroup without explicit (experimental) instructions regarding the valence of the imagery.

Mixed support came for the role of imagined contact elaboration. Although in Study 1 elaboration was associated with reduced social distance and positive attitudes in line with the imagined contact literature (Husnu & Crisp, 2010), in Studies 2 and 3 elaboration did not correlate with any of the outcome variables. Driven by research on imagined contact, we had

hypothesised that the more people elaborate on their imagined interactions, the more favourable they will be toward the outgroup (see Husnu & Crisp, 2010). However, based on the results we obtained, elaboration in spontaneous, non-experimentally induced contact is largely irrelevant to outgroup attitudes. Perhaps the intricate details of the imagined scripts are important when people are in artificial, laboratory conditions but not particularly relevant in spontaneous situations.

Limitations and future directions

Despite the innovative nature of examining the potential effects of spontaneous contact imagery, this research has some limitations. Regarding the newly developed imagined contact measure our studies consistently replicated the expected three factor structure, in general with good reliabilities and supporting its convergent and criterion validity. However, the elaboration dimension presented poorer reliability than frequency and quality, and also less predictive power once other dimensions of imagined and actual contact were taken into account. It is unlikely that unprompted, people elaborate on aspects of intergroup contact. Thus, although elaboration can be a useful tool in experimental imagined contact research (Husnu & Crisp, 2010), it may be less central in everyday intergroup situations. Future studies could further examine the role of elaboration on imagined contact and consider the need to develop better indicators for this feature of contact.

At this point, we need to highlight a potential danger of elaborating on one's imagined contact with the outgroup. Despite evidence that supports the positive role of elaboration on subsequent behaviour (Husnu & Crisp, 2010; see also Gollwitzer, 1993), elaboration in spontaneous mental simulation of contact may be associated with more complicated mental processes. When imagining contact with people in the outgroup in non-experimental conditions, elaboration could suggest that people ponder over how intergroup interactions

will develop. This could lead to overthinking or ruminating about details of imagined contact situations, which could in turn impair positive attitudes. Research from the domain of interpersonal relationships suggests that rumination can harm one's ability to handle daily life stressors (Bauerband & Galupo, 2014; Lyubomirsky, Tucker, Caldwell, & Berg, 1999) and ruminating about events and ambivalent attitudes is linked to aggression (Bushman, 2002; Rusting & Nolen-Hoeksema, 1998) and decreased forgiveness (Worthington & Wade, 1999). As such, when considering spontaneous intergroup contact imagery, it is possible that people not only engage in negative imagined encounters, but also that they elaborate or ruminate on theses imagined encounters. Therefore, although the imagined contact literature has suggested that instructions that encourage elaboration on the imagined interactions enhance positive attitudes, evidence from research on rumination signals that elaboration may not always yield positive effects. Future research can delve into the role of rumination is spontaneous contact imagery.

A main limitation of our research relates to the correlational design of our studies that does not allow us to draw conclusions regarding causality between variables. We argue that the three studies that comprise this research provide initial evidence for our hypotheses, and future studies can maximise on carefully-implemented longitudinal designs to assess the effects of spontaneous imagined contact. We need to also acknowledge that although the results of spontaneous imagined contact were obtained while controlling for various potent forms of actual contact (intergroup friendships, extended contact, quality and quantity of direct contact) we cannot be certain that participants did not draw upon their own existing experiences while filling in the SIICS items. Since attitudes are formed based on personal experiences, and personal experiences are important factors that drive mental imagery, then one's experiences may also influence the mental imagery of related experiences. Future research can disentangle this further by, for example, including open response questions

where participants indicate details regarding their spontaneous imagery partners and interactions.

Our research cannot fully answer whether prevalence of general spontaneous contact imagery is high, it can however infer that when it manifests, quality of this imagery is a strong predictor of attitudes above and beyond the other dimensions of the imagery, and of actual contact. We argue that in daily situations, concepts regarding intergroup contact may become activated. Let us think, for example, of situations when one watches the news or browses newspapers; narratives around immigrants could spark contact imagery. Also, everyday actions like commuting or shopping may induce imagery regarding interactions with outgroup strangers. This may be particularly the case for some people who are more inclined to consider intergroup dimensions in social situations. Although our research did not consider individual differences and social ideology variables that may predict engagement with intergroup imagery, this can be a fruitful avenue for future research. Ashbrock et al. (2013), for example, showed that experimentally induced imagined contact is more effective for those high in right-wing authoritarianism. Future research can explore if individual difference variables also determine the frequency, quality or elaboration of spontaneous imagined contact.

Despite focusing on some key dimensions of spontaneous contact imagery, namely frequency, quality and elaboration, there are other aspects that we did not address in this research. For example, we did not assess the role of negative imagined contact in spontaneous situations. As current literature emphasises why we need to be cautious of negative direct and extended contact (Barlow et al., 2012; Wölfer, Jaspers, Blaylock, Wigoder, Hughes, & Hewstone, 2017) it is essential to also understand weather people imagine negative interactions with the outgroup. Husnu and Paolini (2018) showed that people disproportionally chose to engage in positive rather than negative imagined contact when

taking part in experimental research. Future research can explore weather this is also the case in real-life (rather than experimental) situations, while also examining potential outcomes of negative spontaneous imagined contact.

We consider the generalizable role of imagined contact quality, as evidenced by research in three distinct national contexts, a considerable strength of our research. Although all studies were conducted in Europe and looked at immigration attitudes, the level of conflict between the host society and immigrants was arguably different in the three counties. Let us take the case of Study 2, which was conducted in the UK shortly after the Brexit referendum in the summer of 2016, and explore it further. Following the expansion of the European Union (EU) in 2004, Eastern Europeans are among the most prevalent minority groups in the UK (Wadsworth, Dhingra, Ottaviano, & Van Reenen, 2016). Heated social and political debates on the meaning of "Britishness" at the time surrounding the referendum placed Eastern Europeans in the centre of political propaganda. During the referendum, there were offensive leaflets found on cars and posted to homes targeting the Polish community (Vina, Tarling, & Foy, 2016). The building of the Polish Social and Cultural Association in London was vandalized with the words "Go home" written on it, while in a different part of the country, in Cambridgeshire, leaflets that said, "Leave the EU/No more Polish vermin" written both in English and in Polish were distributed (Taylor, 2016). We provided evidence that in these conditions of heightened dissension, people still engaged in positive spontaneous imagined contact and that this positive imagery effectively predicted positive attitudes and reduced social distance. Future research can explore if these associations stand in contexts of conflict, or if direct forms of contact wipe out the effect of spontaneous imagery.

Having established that people's spontaneous thoughts regarding interactions with the outgroup predict several measures of attitudes, our research can contribute to tailoring prejudice-reduction interventions such that they take into consideration people's spontaneous

thoughts that emerge outside the laboratory. For example, having shown that imagined contact quality is particularly important suggests that prejudice-reduction interventions can steer people's focus toward intergroup experiences that are of high qualitative value, such as co-operation, kindness, and help.

In this research we explored if spontaneous, non-experimentally induced imagined contact predicts outgroup attitudes and found that it does, above and beyond other potent forms of contact (direct, friendships and extended). Three studies provided support for imagined contact quality as a particularly strong predictor of various attitude measures, such as social distance, general attitudes and intergroup anxiety. We suggest that further attention should be placed on examining people's every-day, spontaneous thinking processes and imagination in order to establish a more thorough understanding of the impact these processes have on intergroup relations.

Footnotes

1. The survey was part of a larger research project conducted by a Master student and included several measures that were not related to the goal of the current study (collective nostalgia, autochthony, perceived collective continuity and group identity representations).

2. All data in Studies 1, 2 and 3 were collected in accordance with the highest established (APA) ethical standards.

3. Since Z-points standardization does not allow running ANOVA, we used proportions (i.e., $a/b = x/c$) in order to create composite scores of items with different response scales.

4. In order to further test the associations between the SIICS dimensions with the dependent variables (i.e., social distance and outgroup evaluations), we compared regression coefficients using the method proposed by Cumming (2009). Specifically, a beta coefficient is significantly different from another if the respective 95% confidence intervals overlap by less than the 50%. Results showed that a) for African immigrants no differences emerge between imagined contact dimensions (i.e., quality [$\beta = -.25$, $p < .05$], frequency [$\beta = -.10$, *ns*], and elaboration [$\beta = -.16$, *ns*]) when social distance was the dependent variable; considering outgroup attitudes, a significant difference emerged between imagined contact quality ($\beta = .45$, $p < .001$) and elaboration ($\beta = .02$, *ns*), while no difference was observed between frequency ($\beta = .18$, $p < .06$) and quality; b) for Brazilian immigrants, imagined contact quality's beta ($\beta = -.41$, $p < .001$) for social distance was significantly different from frequency ($\beta = -.14$, *ns*) and elaboration ($\beta = -.04$, *ns*) betas; while, for outgroup attitudes, quality ($\beta = .43$, $p < .001$) and frequency ($\beta = .39$, $p < .001$) were significantly different from elaboration ($\beta = -.07$, *ns*, but no differences emerged between quality and frequency). Finally, c) considering Ukrainian immigrants, imagined contact quality ($\beta = -.32$, $p < .001$) was significantly different from frequency ($\beta = -.15$, *ns*) and elaboration ($\beta = -.18$, $p < .06$) when social distance was the dependent variable; the same result was obtained for outgroup attitudes as the dependent variable ($\beta = .48$, $p < .001$ for quality; $\beta = .06$, *ns*, for frequency; $\beta = .00$, *ns*, for elaboration). No other significant differences emerged.

5. Regarding the associations between control and dependent variables, only the variable of cross-group friendships was associated with anxiety ($\beta = -.23$, $p < .05$) and with empathy ($\beta = .25$, $p < .05$); bootstrapping procedure confirmed all the indirect paths with the exception of the relation between friendships with attitudes and social distance via anxiety (see Table 5). No significant results were obtained for extended contact (data are available upon request to the authors).

6. As in Study 1, regression coefficients were compared in order to detect differences in the three SIICS dimensions. Similar to Study 1, imagined contact quality, compared with the other two dimensions, represented a stronger predictor for both mediators and dependent variables. No other significant differences emerged.

7. In addition, contact quality was positively associated with empathy ($\beta = .68$, p < .001) while contact quantity was negatively related to anxiety ($\beta = -.28$, p < .05). Finally, when bootstrapping was applied, all the mediated paths were significant (data are available upon request to the authors).

8. A further analysis was conducted in order to test differences in beta coefficients. Similar to the previous studies, significant paths of imagined contact quality generally have significantly stronger effects on mediators and on the dependent variable with the exception of the comparison between quality and frequency for outgroup evaluation which turned out to be non-significant. Nevertheless, the association between imagined contact frequency and attitudes was non-significant (see Figure 2).

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Table 1. Exploratory Factor Analysis (EFA) for the spontaneous imagined intergroup contact scale (SIICS), Study 1

Items	Factors		
	I	II	III
I. Frequency			
In everyday life, how frequently do you imagine interacting with "target-group".	**-.83**	-.07	.04
Specifically, how often do you imagine having contact with "target-group".	**.92**	-.04	.02
II: Quality			
When you imagine interacting with "target-group", these encounters are unpleasant/pleasant.	.02	-.**86**	.01
When you imagine interacting with "target-group", these encounters are hostile/friendly.	-.03	-.**64**	-.01
III: Elaboration			
When you imagine interacting with "target-group", do you imagine the reason behind this contact?	-.09	.10	**.78**
When you imagine interacting with "target-group", do you think about the details of where and when this contact takes place?	.06	.04	**.92**
When you imagine a interacting with "target-group", do you share this interaction with your friends?	-.03	-.04	**.73**
On average, when you imagine having contact with "target-group", how much time do you spend imagining the contact scene?	.02	-.05	.40
Eigenvalue	1.18	1.7	3.00
Pearson r & Cronbach's alphas	-.77(r)	.57(r)	.79(α)

Note: Factor loadings > .40 are boldfaced.

Table 2. Means, standard deviations and correlations among the constructs, Study 1

	1	2	3	4	5
1. Imagined contact: Frequency	-				
2. Imagined contact: Quality	.25***	-			
3. Imagined contact: Elaboration	.31***	.10†	-		
4. Social distance	-.28***	-.36***	-.23***		
5. Outgroup attitude	.35***	.49**	.11†	-.61 **	-
Mean	----	----	----	2.39	67.51
SD	----	----	----	0.82	19.09

Note: SIICS scores were standardized (*Z* points).
*$p < .05$, ***$p < .01$; † $p < .09$.

Table 3. Regression analyses of the relation between the SIICS dimensions, and attitudes and

social distance, Study 1.

	Africans	Brazilians	Ukrainians
	Social distance		
Imagined contact: Frequency	-.10	-.14	-.15
Imagined contact: Quality	-.25*	-.41***	-.32***
Imagined contact: Elaboration	-.16	-.04	-.18†
R^2	.09	.18	.18
F	3.94*	7.68***	8.12***
df	(3, 90)	(3, 85)	(3, 96)
	Attitudes		
Imagined contact: Frequency	.18†	.39***	.06
Imagined contact: Quality	.45***	.43***	.48***
Imagined contact: Elaboration	.02	-.07	.00
R^2	.30	.30	.22
F	14.02***	13.46***	10.35***
df	(3, 89)	(3, 86)	(3, 96)

Note: Standardized coefficients are reported.
*$p < .05$, ***$p < .01$; † $p < .06$.

Table 4. Correlations among the constructs, Study 2

	1	2	3	4	5	6	7	8	9
1. Imagined contact: Frequency	-								
2. Imagined contact: Quality	.37***	-							
3. Imagined contact: Elaboration	.20**	-.04	-						
4. Intergroup friendships	.47***	.19**	.17*	-					
5. Extended contact	.43***	.26***	.15*	.48***	-				
6. Empathy	.14*	.36***	-.08	.22**	.21**	-			
7. Anxiety	-.23**	-.40***	.07	-.28***	-.27***	-.28***	-		
8. Social distance	-.28***	-.57***	.12	-.28***	-.34***	-.62***	.52***	-	
9. Outgroup attitude	.33***	.56***	-.01	.26***	.30***	.43***	-.41***	-.62***	-
Mean	----	----	----	1.82	2.64	3.89	2.58	2.30	64.97
SD	----	----	----	0.94	1.01	0.96	0.94	1.10	24.87

Note: SIICS scores were standardized (*Z* points).
* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 5. Models comparison, Study 2

Model	χ^2	*df*	χ^2/df	SRMR	RMSEA	CFI
3 Factors	16.18	11	1.47	0. 05	0.05	0.99
2 Factors (frequency with quality)	197.62	13	15.21	0.13	0.23	0.71
2 Factors (frequency with elaboration)	174.58	13	13.43	0.16	0.23	0.71
2 Factors (quality with elaboration)	192.29	13	14.79	0.18	0.25	0.66
1 Factor	355.05	14	25.36	0.20	0.32	0.43

Table 6. Indirect effects in the hypothesized model, Study 2

Predictor	Mediator variable	Dependent variable	Mean bootstrap estimate	Percentile confidence interval (95%)
Imagined contact: Quality	Anxiety	Social distance	-0.1031	[-0.1926, -0.0344]
Imagined contact: Quality	Anxiety	Outgroup attitude	1.2413	[-0.5779, 3.2678]
Imagined contact: Quality	Empathy	Social distance	-0.2058	[-0.3371, -0.1052]
Imagine contact: Quality	Empathy	Outgroup attitude	2.5118	[0.8334, 4.9873]
Intergroup friendships	Anxiety	Social distance	-0.0764	[-0.2158, 0.0188]
Intergroup friendships	Anxiety	Outgroup attitude	1.0287	[-0.1749, 4.2175]
Intergroup friendships	Empathy	Social distance	-0.1546	[-0.3515, -0.0069]
Intergroup friendships	Empathy	Outgroup attitude	1.8952	[0.1197, 5.1397]

Note: Mean bootstrap estimates are based on 5,000 bootstrap samples.

Table 7. Correlations among the constructs, Study 3

	1	2	3	4	5	6	7	8	9	10
1. Imagined contact: Frequency	-									
2. Imagined contact: Quality	.43***	-								
3. Imagined contact: Elaboration	.15*	.05	-							
4. Contact quality	.25***	.57***	-.04	-						
5. Contact quantity	.47***	.39***	.12†	.46***	-					
6. Empathy	.20***	.20***	.09	.34***	.20***	-				
7. Anxiety	-.14*	-.25***	.10	-.17**	-.25***	-.05	-			
8. Social distance	-.20***	-.35***	-.02	-.42***	-.33***	-.44***	.29***	-		
9. Outgroup attitude	.26***	.49***	-.01	.46***	.26***	.29***	-.28***	-.47***	-	
10. Contact intentions	.32***	.53***	.03	.44***	.36***	.55***	-.29***	-.62***	.50***	-
Mean	----	----	----	3.69	2.91	3.86	3.39	2.77	62.75	3.36
SD	----	----	----	0.73	1.19	0.89	0.83	1.05	18.27	0.93

Note: The elaboration dimension was created by averaging the two items that emerged from the CFA (see the relevant paragraph).
* $p < .05$; ** $p < .01$; *** $p < .001$; † $p = .051$.

Table 8. Indirect effects in the hypothesized model, Study 3

Predictor	First level mediator	Second level mediator	Dependent variable	Mean bootstrap estimate	Percentile confidence interval (95%)
Imagine contact: Quality	Anxiety	Social distance	Contact intentions	0.0194	[0.0008, 0.0586]
Imagine contact: Quality	Anxiety	Social distance	-	-0.0763	[-0.2095, -0.0047]
Imagine contact: Quality	Anxiety	Outgroup attitude	-	1.2658	[0.0421, 3.3924]
-	Anxiety	Social distance	Contact intentions	0.1130	[0.0436, 0.2245]
-	Empathy	Social distance	Contact intentions	-0.0572	[-0.1282, -0.0086]
Contact quantity	Anxiety	Social distance	Contact intentions	0.0160	[0.0202, 0.0192]
Contact quantity	Anxiety	Social distance	-	-0.0633	[-0.0379, -0.0133]
Contact quantity	Anxiety	Outgroup attitude	-	1.0917	[0.0663, 8.4909]
Contact quality	Empathy	Social distance	Contact intentions	0.0653	[0.0234, 0.2194]
Contact quality	Empathy	-	Contact intentions	0.5515	[0.1763, 1.1882]
Contact quality	Empathy	Social distance	-	-0.3966	[-0.9258, -0.1222]

Note: Mean bootstrap estimates are based on 5,000 bootstrap samples.

Figure captions

Figure 1

Structural equation model of the effects of imagined contact measure on social distance and outgroup attitudes through the indirect effect of anxiety and empathy, controlling for direct cross-group friendships and extended contact, British sample ($N = 185$). Only significant standardized coefficients are reported.

Correlations among latent factors: imagined contact frequency with imagined contact quality ($r = .43^{***}$) and elaboration ($r = .23^{**}$), cross-group friendships ($r = .57^{***}$), and extended contact ($r = .49^{***}$); imagined contact quality with cross-group friendships ($r = .20^{*}$) and extended contact ($r = .29^{***}$); imagined contact elaboration with cross-group friendships ($r = .19^{*}$) and extended contact ($r = .19^{*}$); cross-group friendships with extended contact ($.55^{***}$); social distance with outgroup attitudes ($-.10^{*}$).

$* p < .05$, $** p < .01$, $*** p < .001$.

Figure 2

Structural equation model of the effects of imagined contact measure on contact intentions through the indirect effect of anxiety and empathy, and the indirect effect of social distance and outgroup attitudes, controlling for contact quantity and quality, Italian sample ($N = 276$). Only significant standardized coefficients are reported.

Correlations among latent factors: imagined contact frequency with imagined contact quality ($r = .49^{***}$) and elaboration ($r = .18^{*}$), contact quantity ($r = .62^{***}$), and contact quality ($r = .31^{***}$); imagined contact quality with contact quantity ($r = .49^{***}$) and contact quality ($r = .71^{***}$); imagined contact elaboration with contact quantity ($r = .16^{*}$); contact quality with contact quantity ($r = .61^{***}$); social distance with outgroup attitudes ($r = -.14^{**}$).

$* p < .05$, $** p < .01$, $*** p < .001$.
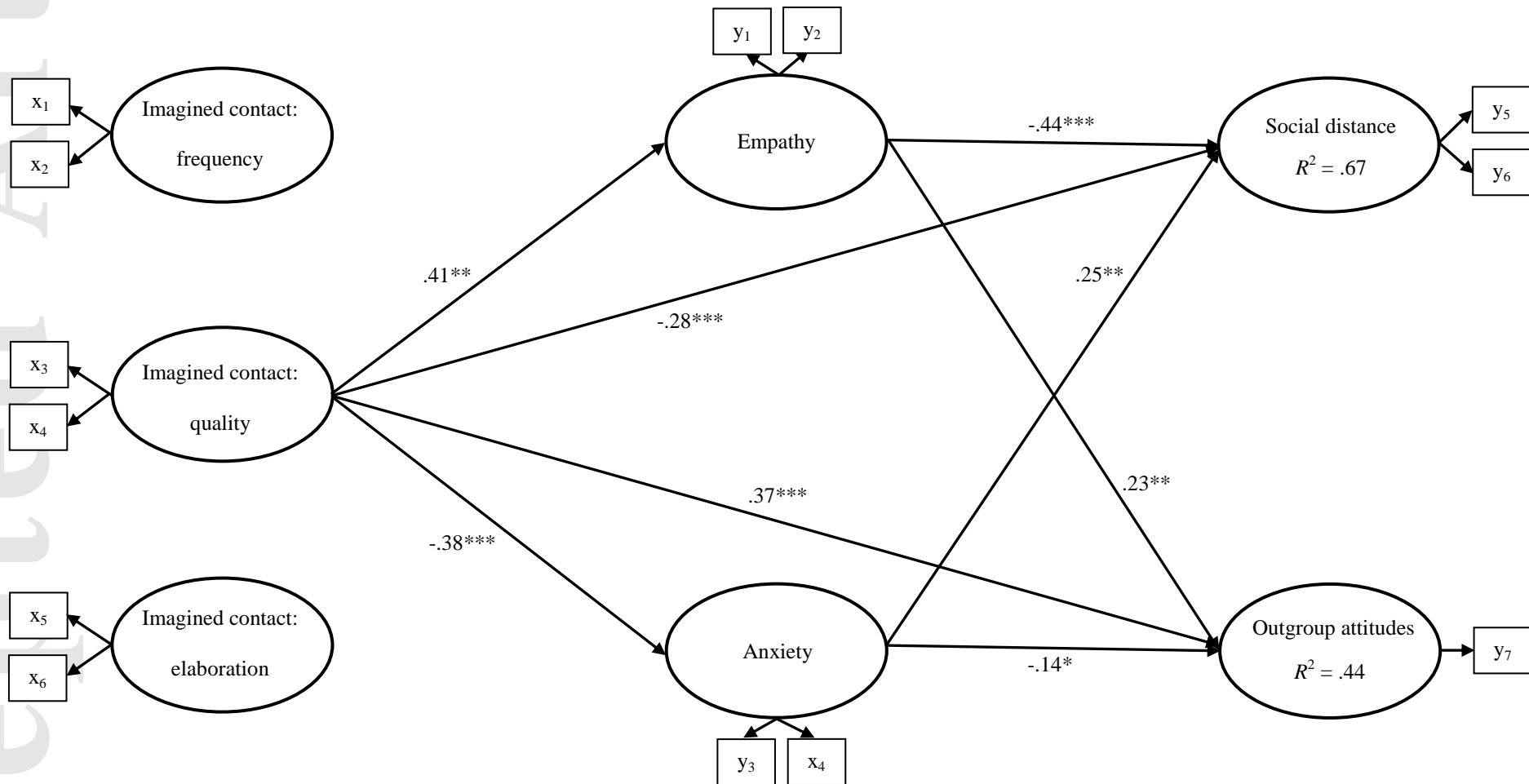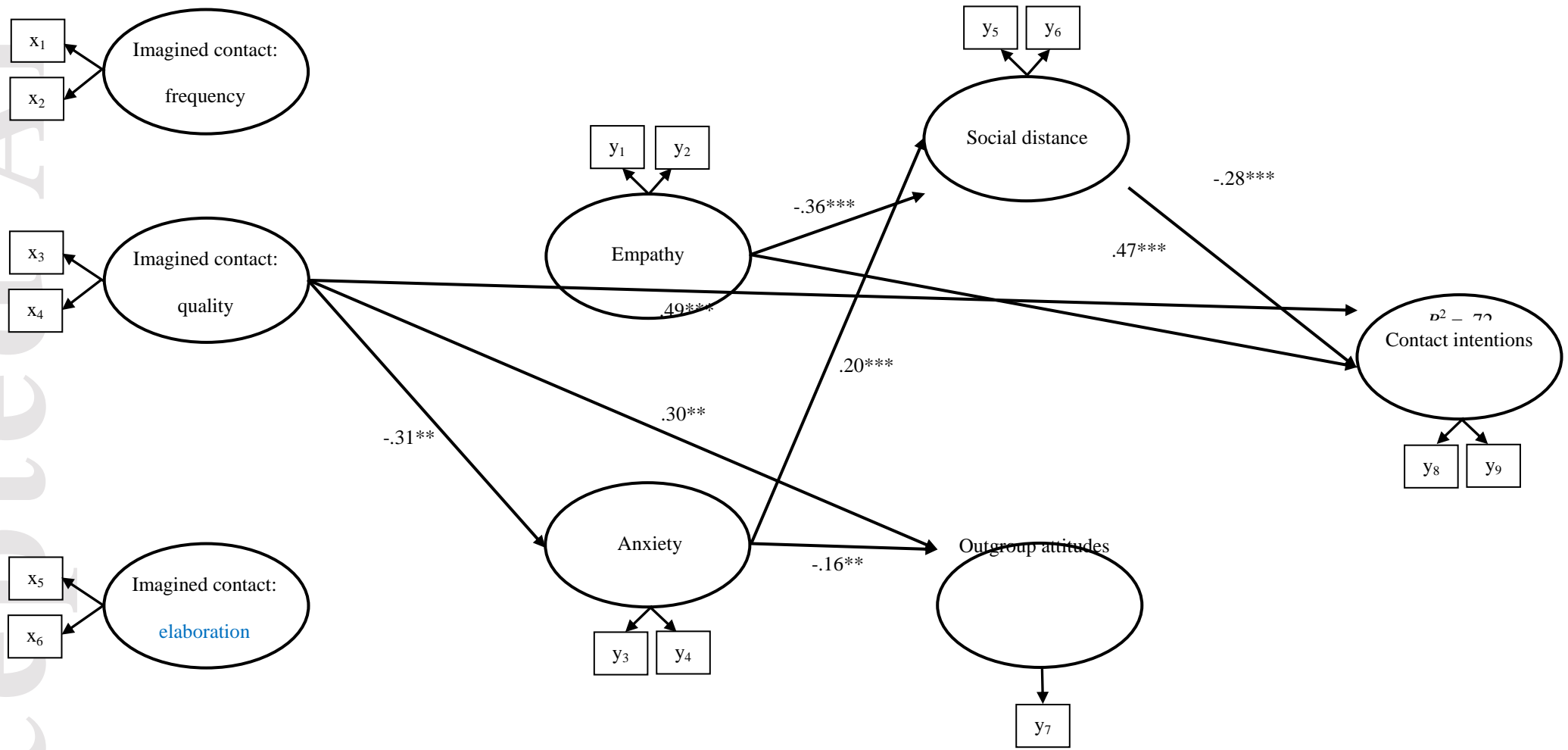
Appendix A. Means (standard deviations) of the spontaneous imagined intergroup contact Scale (SIICS) items (unstandardized scores)

Items	Study		
	1	2	3
I: Frequency			
a) In everyday life, how frequently do you imagine interacting with "target-group"	2.16 (1.13)	2.74 (1.13)	2.16 (1.12)
b) Specifically, how often do you imagine having contact with "target-group"	3.68 (2.44)	5.19 (2.11)	4.03 (2.20)
II: Quality			
c) When you imagine interacting with "target-group", these encounters are unpleasant/pleasant	3.84 (0.89)	3.85 (0.95)	3.45 (0.84)
d) When you imagine interacting with "target-group", these encounters are hostile/friendly	3.74 (1.11)	3.85 (0.97)	3.48 (0.85)
III: Elaboration			
e) When you imagine interacting with "target-group", do you imagine the reason behind this contact?	1.87 (1.06)	2.47 (1.23)	2.19 (1.15)
f) When you imagine interacting with "target-group", do you think about the details of where and when this contact takes place?	1.67 (0.96)	2.42 (1.12)	2.06 (1.18)
g) When you imagine a interacting with "target-group", do you share this interaction with your friends?	1.75 (1.08)	2.19 (1.07)	-----

Note. For Imagined Contact: Frequency, for item a), responses ranged from 1 (*never*) to 5 (*always*); for item b), responses were 1 (*less than once per year*), 2 (*once or twice a year*), 3 (*once every two months*), 4 (*once or twice a month*), 5 (*approximately once per week*), 6 (*approximately twice a week*), 7 (*three to four times per week*), 8 (*at least once a day*). For Imagined Contact: Quality, items c) and d), participants provided their responses on two bipolar items ranging from 1 (negative pole) to 5 (positive pole). For Imagined Contact: Elaboration, items e), f), and g), responses ranged from 1 (*never*) to 5 (*always*).