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An experimental comparison of direct and indirect intergroup contact^{☆,☆☆,☆☆☆}

Maria Ioannou^{a,*}, Ananthi Al Ramiah^b, Miles Hewstone^c

^a University College Groningen, University of Groningen, Netherlands

^b Independent Scholar, Kuala Lumpur, Malaysia

^c University of Oxford, United Kingdom

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ABSTRACT

Indirect forms of intergroup contact, such as extended and vicarious contact, are thought to provide a promising alternative to direct contact, but very few studies have compared the effectiveness of these two types of contact to confirm this claim. Furthermore, Wright, Aron, McLaughlin-Volpe, and Ropp (1997) postulated, but did not test, that the usefulness of extended (or vicarious) over direct contact lies in these forms of indirect contact being likely to elicit less anxiety and more group salience at the time of the interaction, both of which are beneficial for contact. The present paper reports two experiments comparing the effects of direct and vicarious contact on: (i) outgroup attitudes and anxiety for future contact both immediately after contact (posttest) as well as a week later (delayed posttest), and (ii) their elicited interaction-induced anxiety and group salience. Both studies were conducted in Cyprus, with Greek Cypriot participants and the Turkish Cypriot community as the outgroup. Results did not support Wright et al.'s postulations. They furthermore showed that direct contact had a relative advantage over vicarious contact in leading to more positive outgroup attitudes at posttest, but that attitudes reverted to pretest levels for both conditions at delayed posttest. Vicarious, unlike direct, contact, did, however, lead to a persistent reduction of anxiety for future contact, thus suggesting that the greatest utility of indirect forms of contact may lie in their emotionally preparing individuals for subsequent face-to-face interactions.

1. Introduction

Sixty years of research on intergroup contact has yielded strong support for the hypothesis first proposed by Gordon Allport (1954), that intergroup contact can, under certain conditions (e.g., equal status of participating parties and cooperation towards a common goal), lead to prejudice reduction (see Pettigrew & Tropp's, 2006, meta-analysis). Yet, in the real world, intergroup contact may be scarce for multiple reasons. Contact may, for example, be unfeasible due to a lack of opportunities for contact as is the case in segregated contexts. Moreover, contact may not be pursued because of psychological barriers, like intergroup anxiety (Stephan & Stephan, 1985), that make individuals apprehensive about intergroup encounters. If, however, intergroup contact is as central to prejudice reduction as research suggests, then what happens in these situations in which direct intergroup contact is not possible? Researchers have proposed that indirect contact, which does not require face-to-face interactions between members of different groups,

may provide a means to reap some of the benefits of contact in segregated settings (Dovidio, Eller, & Hewstone, 2011; Hewstone & Swart, 2011).

The earliest study of indirect contact by Wright, Aron, McLaughlin-Volpe, and Ropp (1997) contended that there are two possible ways of attaining effects similar to those of direct contact without having to have a face-to-face interaction with the outgroup member. According to Wright et al., (i) knowing, or (ii) observing, an ingroup member having a close relationship with an outgroup member can lead to more positive intergroup attitudes. These two processes were later termed *extended* contact or *extended* friendships and *vicarious* contact, respectively (Dovidio et al., 2011). In their seminal study, Wright et al. showed: (1) that self-reported extended friendships (controlling for participants' own direct friendships) were associated with reduced prejudice; (2) that experimentally manipulated extended contact following an induction of intergroup conflict led to participants reporting more positive attitudes towards the outgroup than the attitudes they reported immediately

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* Corresponding author at: University College Groningen, University of Groningen, Hoendiepskade 23/24, 9718 BG Groningen, Netherlands.

E-mail address: M.ioannou@rug.nl (M. Ioannou).

after intergroup conflict was created: and (3) that observing a positive as opposed to a neutral or a negative interaction of an ingroup member with an outgroup member (vicarious contact) led participants to evaluate the outgroup more positively.

The majority of studies that proceeded to test the extended contact hypothesis typically asked participants to report how many ingroup members (normally friends, relatives, or colleagues) they know who have outgroup friends. Zhou, Page-Gould, Aron, Moyer, and Hewstone (under review) have recently completed a meta-analysis on studies investigating the relationship between extended contact and intergroup attitudes. Their sample comprised 116 studies with 251 effect sizes from 47,497 participants; the reported aggregate relationship between extended contact and intergroup attitudes was $r = 0.25$, 95% CI [0.22, 0.280], which reduced to $r = 0.17$, 95% CI [0.14, 0.19] after controlling for the contribution of direct friendship.

A recent comprehensive narrative review of the literature (Vezzali, Hewstone, Capozza, Giovannini, & Wölfer, 2014) investigated the effects of both extended and vicarious contact and found ample support for both of them. Both knowing an ingroup member who has outgroup friends (e.g., Andrighetto, Mari, Volpato, & Behluli, 2012; Tam, Hewstone, Kenworthy, & Cairns, 2009) as well as watching a friendly intergroup interaction (Mazziotta, Mummendey, & Wright, 2011; Ortiz & Harwood, 2007) were found to lead to more positive intergroup attitudes and more positive intergroup behavioral intentions. This paper examines the effects of one form of indirect contact, *vicarious contact*, on outgroup attitudes (Studies 1 and 2a) and anxiety for future contact (Study 2). In our research we operationalized vicarious contact as observing a friend, who is an ingroup member, having an interaction with an outgroup member. This means that our instance of vicarious contact is very close to extended contact since in both cases the indirect contact with the outgroup is mediated via a member of the ingroup, who is also a friend, but with the focus on *observing* (vicarious contact) rather than *knowing* about (extended contact) the intergroup contact.

1.1. What is the utility of indirect types of contact over direct contact?

Wright et al. (1997) proposed that group memberships are more salient during extended and vicarious contact than direct contact, as an observer of an intergroup encounter is more likely to perceive the encounter as more of an intergroup than an interpersonal event, in which the observer watches one member of the ingroup interact with an outgroup member. Perceiving group salience facilitates the generalization of the positive effects of contact from the individual outgroup member to the outgroup as a whole (Brown & Hewstone, 2005). Further, Wright et al. argued that observing or learning about an intergroup interaction is less anxiety-provoking, because the individual does not need to have a face-to-face encounter with a member of a feared, disliked, or unknown outgroup. Thus, intergroup anxiety experienced at the time of contact would be less likely to undermine extended or vicarious contact than direct contact.

Although Wright et al.'s (1997) postulations about group salience and interaction-induced anxiety were never explicitly tested, their demonstration that contact need not be face-to-face to reduce prejudice ignited a great deal of interest. There have subsequently been numerous tests confirming the effectiveness of indirect types of contact, particularly extended friendships, in reducing prejudice (Vezzali et al., 2014). The promise of indirect contact has even led some researchers (e.g., Eller, Abrams, & Gomez, 2012) to ask whether indirect forms of contact could provide *sustainable alternatives* to direct contact.

Little has been done, however, to test whether the effect of indirect forms of contact, like extended or vicarious contact, can be as powerful or as lasting as the effects of direct contact to justify such claims. Feddes, Noack, and Rutland (2009) compared the longitudinal effects of direct and extended friendships between German and Turkish school children on outgroup evaluation. They found, cross-sectionally, that both types of friendships were associated with more positive

evaluations of the outgroup, but that longitudinally, there was an effect *only for direct*, and not extended, friendships. Christ et al. (2010, Study 2) conducted a longitudinal study to examine the relationship between Catholics and Protestants recruited from mixed and segregated neighborhoods in Northern Ireland. They found that extended contact measured at Time 1 led, one year later, to increased attitude certainty (in addition to increased willingness to help and support the outgroup, but *only* for respondents in segregated settings), thus showing that, in this study and over time, extended contact can have as much impact on outgroup attitudes as direct contact does, when opportunities for direct contact are not in place. There has, however, been no study comparing the effects of direct and vicarious contact on measures of prejudice reduction.

It could of course be argued that the primary function of indirect forms of contact, like extended and vicarious contact, is not as an alternative to direct contact, but rather as a pre-contact tool (Crisp, Husnu, Meleady, Stathi, & Turner, 2010; Crisp & Turner, 2013). Extended contact has been proposed as a stepping stone to direct contact (Eller et al., 2012; Gomez, Tropp, & Fernandez, 2011; Turner, Hewstone, Voci, Paolini, & Christ, 2007a). Wölfer et al. (under review), showed in four longitudinal studies that extended friendships predicted direct friendships at a subsequent time point, and that this effect was mediated by lower intergroup anxiety. There is also evidence that vicarious contact leads to greater preparedness for actual contact (Mazziotta et al., 2011).

1.2. This research

We sought to address two points that in our opinion had been left underexplored in the intergroup contact literature. The first point pertained to Wright et al.'s (1997) hypotheses concerning group salience and interaction-induced anxiety. According to Wright et al., extended or vicarious as opposed to direct contact should: 1) elicit less anxiety at the time of the interaction because the observer of the interaction is not directly involved in it; and 2) be more likely to be perceived as an intergroup rather than an interpersonal event, and so it should elicit higher group salience. To our knowledge, we test these hypotheses for the first time. The second point concerned directly comparing in a controlled environment (experimental setting), the size as well as the duration of the effects of direct and indirect (vicarious) contact.

To test these hypotheses, we conducted two experiments (Studies 1 and 2a) that both used a pretest-intervention-posttest experimental design, with random allocation of participants to the experimental and control conditions, and with the variables of interest measured before and after the experimental treatment. To test the hypotheses derived from Wright et al.'s (1997) first point, we included, in both experiments, measures tapping how participants perceived the interaction at posttest, in terms of anxiety and group salience. To address their second point, we compared direct and vicarious contact in terms of their effectiveness in improving outgroup attitudes (Studies 1 and 2); and in reducing anxiety for future contact (Study 2). To determine and compare the duration of these effects, we included in Study 2a a follow-up measure, a delayed posttest, one week after the immediate posttest. This allowed us to assess whether any effects of the intervention remained or faded away a week after contact had taken place.

We conducted both studies in Cyprus, a post-conflict society characterized by extreme levels of segregation. The two main communities, Greek Cypriots (majority: 77%) and Turkish Cypriots (minority: 18%) have been living on opposite sides of the island since 1974. This has restricted both opportunities for and actual intergroup contact between them. The participants in all studies were students of Greek Cypriot origin, and the outgroup (Turkish Cypriots) was kept constant across studies.

2. Study 1

In our first study we sought to compare direct and vicarious contact in terms of both the way they were perceived by the participants and their effectiveness in promoting more favorable outgroup attitudes. To do this we adapted the paradigm used by Wright and his collaborators (see Study 4 of Wright et al., 1997, and Wright, Aron, & Brody, 2008, for similar set-ups) in which one participant in each dyad experienced face-to-face contact with an outgroup member (direct contact condition), while the other participant watched their fellow ingroup member's intergroup interaction via a one-way mirror (vicarious contact condition).

2.1. Hypotheses

Hypothesis 1. Following Wright et al. (1997), we expected participants in the vicarious contact condition to report greater group salience (Hypothesis 1a) and less interaction-induced anxiety (Hypothesis 1b) during contact. We expected participants in the direct contact condition, on the other hand, to report more positive attitudes towards the specific outgroup member they interacted with (outgroup interaction partner) than participants in the vicarious contact condition (Hypothesis 1c).

Hypothesis 2. We expected posttest outgroup attitudes in both conditions to be more positive than pretest attitudes (Hypothesis 2a), but that the direct contact condition would lead to even more favorable attitudes than the vicarious contact condition (Hypothesis 2b).

3. Method

3.1. Participants

Sixty-eight (34 dyads) female Greek Cypriot students participated in this study. The sample size was determined before any data analysis. All participants were undergraduate students studying at universities in Nicosia, the capital of the Republic of Cyprus. Participants were recruited in dyads of friends through announcements in undergraduate classes. The students attending each class were invited to participate along with a friend of theirs in a study on 'interpersonal relations'; the actual theme of the study was not disclosed to avoid sampling bias. Participation in the study was rewarded with entry to a raffle to win one of two 100-Euro prizes.

3.2. Procedure

Participants had to first complete an online questionnaire (pretest) independently, and then a week later to attend a 20-min experiment and complete another questionnaire (posttest). Within each dyad one participant was randomly assigned to each condition (direct and vicarious contact). The experimental design was a pretest-posttest randomized design with two treatment conditions (direct and vicarious contact) and no control condition.

3.2.1. Manipulation of direct and vicarious contact

Individuals in the direct contact condition had what was designed to be a positive and intimate interaction with an outgroup member (a confederate). The confederate employed for the study was a female Turkish Cypriot who was in the same age range as the Greek Cypriot participants, and was, like them, a university student. The confederate was instructed to behave as a naïve participant throughout the experiment. In the direct contact condition the participant and the confederate had to complete the Closeness Induction Task (Sedikides, Campbell, Reeder, & Elliot, 1998; see also Study 3 of Wright et al., 1997), a 9-min task designed to induce progressive closeness. This is done by asking participants to engage in a structured conversation

which encourages mutual disclosure. More specifically, the participants engaged in a natural conversation guided by three lists of questions. They were given one minute to go through the first list which was comprised of simple questions like: "How old are you?" and "What do you study?". They then went through the second and third lists, which were comprised of more intimate questions like: "What would you like to do after graduating from university?" and "If you could travel anywhere in the world, where would you go and why?" (second list), and "What is one of your biggest fears?" and "What is your happiest early childhood memory?" (third list).¹ The direct contact participants were given three minutes to complete the second list and five minutes to complete the third list. The answers of the confederate to these questions were the same in all interactions. The confederate prepared her answers on her own and she then showed them to the experimenter to ensure that sufficient information was disclosed, that the information was personal, but that it also repeatedly underlined that she was Turkish Cypriot. All answers were true facts apart from the confederate's name and town of origin. The confederate was asked to say that her name was Ayşe (a typical Turkish name) and that she was from Kyrenia (as opposed to Nicosia where she was actually from). Kyrenia too was chosen as it is a well-known town situated in the north of the island, the geographical part of the country that is inhabited exclusively by Turkish Cypriots. Finally, the participant in the vicarious contact condition was asked to watch the conversation between her friend and the Turkish Cypriot confederate as carefully as she could, via a one-way mirror, and to listen to it via a microphone-speaker link. To facilitate the observation, the vicarious contact participant was given the list of questions comprising the Closeness Induction Task.

The confederate (outgroup member) was introduced to both the direct and the vicarious contact participant using the exact same words, i.e., by name, ethnicity, and town of origin. Finally, the introductions, as well as the interaction itself were conducted in English which is typically the language of communication between Greek and Turkish Cypriots but not the mother tongue of either community (Greek and Turkish, respectively).

3.3. Measures

The pretest questionnaire contained the dependent measure (outgroup attitudes) along with some filler items (e.g., measures of collective self-esteem and other identification measures) in order to disguise the emphasis on intergroup relations and in order to protect the study as much as possible against demand characteristics. There were also items measuring the participants' attitudes towards groups other than Turkish Cypriots such as asylum seekers, political refugees) in order to remove focus from Turkish Cypriots as the target outgroup. Finally, measures of the participants' direct and extended friendships with Turkish Cypriots as well as personality measures on openness to experience and extraversion were also included to check that random allocation to the two conditions was successful and that the two groups did not differ on measures that might correlate with outgroup attitudes (like prior intergroup contact) or personality traits that could affect how open they are to the intergroup experience. The posttest questionnaire was primarily comprised of measures that tapped into the experience/perception of the intergroup interaction, to test whether the Closeness Induction Task served its purpose (to initiate closeness between the interaction partners), and to also test Wright et al.'s postulations on interaction-induced anxiety and group salience (see Hypothesis 2). It also included a post-measurement of outgroup attitudes to examine the pre-posttest differences in attitudes as an effect of direct vs. vicarious contact (see Hypothesis 1). The measures of both questionnaires are presented below.

¹ The script of the interaction is available from the first author.

3.3.1. Pretest questionnaire

3.3.1.1. Attitudes towards Turkish Cypriots. Participants rated their feelings towards Turkish Cypriots on a feeling thermometer (Converse & Presser, 1986) ranging from 1, *0 degrees* (very cold feelings) to 11, *100 degrees* (very warm feelings).

3.3.1.2. Prior direct friendships. One item asked how many Turkish Cypriot friends the participant had on a scale ranging from 1, *none* to 5, *more than ten*.

3.3.1.3. Prior extended friendships. One item asked participants how many of their close friends or family members have a Turkish Cypriot friend. The scale ranged from 1, *none* to 5, *more than ten*.

3.3.1.4. Personality measures. Two of the five personality traits of the Big Five theory were measured² using items from the NEO-FFI inventory (Costa & McCrae, 1992): (i) *extraversion* was measured with eight items asking participants to rate their agreement with statements like 'I see myself as someone who is talkative', '[...] as someone who is outgoing and sociable' (Cronbach's alpha = 0.72); (ii) *openness to experience* was measured by ten items asking participants to rate their agreement with statements like 'I see myself as someone who is curious about many different things', '[...] as someone who likes to reflect, play with ideas' (Cronbach's alpha = 0.69). The scale used ranged from 1, *strongly disagree* to 5, *strongly agree*.

3.3.2. Posttest questionnaire

3.3.2.1. Group Salience. A 4-item measure (Cronbach's alpha = 0.78) asked participants to rate on a 5-point scale the extent to which they experienced the following during the interaction: 1) that they were a member of the Greek Cypriot community, 2) that the other person (Turkish Cypriot confederate) belonged to a different group/community than their own, 3) that they were a Greek Cypriot interacting (or observing the interaction of a Greek Cypriot) with a Turkish Cypriot, and 4) they thought of the other person as Turkish Cypriot rather than anything else. The scale ranged from 1, *not at all* to 5, *extremely*.

3.3.2.2. Interaction-induced anxiety. We constructed a short (6-item) scale based on Stephan and Stephan's (1985) original intergroup anxiety measure on which participants rated on a 5-point scale (1, *not at all*, 5, *extremely*) to what extent they felt: 'threatened', 'anxious', 'awkward', 'comfortable', 'safe' and 'at ease' (the last three items were reverse-coded) while interacting (or observing the interaction of their friend) with the outgroup member (Cronbach's alpha = 0.60).³

3.3.2.3. Attitudes towards the interaction partner (Turkish Cypriot confederate). Participants rated their attitudes towards the Turkish Cypriot confederate on the same kind of feeling thermometer used to measure outgroup attitudes.

3.3.2.4. Typicality of outgroup member. Participants rated to what extent they thought that the person they (their friend) conversed with was a typical Turkish Cypriot. The scale ranged from 1, *not typical at all* to 5, *extremely typical*.

3.3.2.5. Ingroup member (self) disclosure. Participants rated how much information that was of private nature they (their friend) shared with their conversation partner; 1, *none* to 5, *very many*.

² A third personality measure, agreeableness, was also measured but its internal validity was not sufficiently high for the scale to be utilized.

³ Although the obtained alpha value is less than the conventional cut off, 0.7, we used it anyway because it could not be improved by dropping items, and the range of inter-item correlations was +0.15 to +0.64, indicating that the six items did measure a similar construct.

3.3.2.6. Outgroup member (other) disclosure. Participants rated how much information that was of private nature their (friend's) conversation partner shared with them (their friend); 1, *none* to 5, *very much*.

3.3.2.7. Attitudes towards Turkish Cypriots. The feeling thermometer was re-answered.

4. Results and discussion

The analyses were divided into three parts. First, we compared the scores of the participants in the two conditions on their pretest attitudes, prior direct and extended friendships, and the three personality measures to check the success of random allocation to the two conditions. Second, we inspected the means for the measures of typicality of outgroup member and ingroup and outgroup member disclosure to assess whether the confederate was perceived to be a (fairly typical) member of the outgroup, and that the Closeness Induction Task successfully induced closeness. Third, we compared the direct and vicarious contact conditions on group salience, interaction-induced anxiety, and attitudes towards the outgroup member (Hypotheses 1a–c). Finally, we assessed whether the two conditions yielded pre to posttest differences in outgroup attitudes and whether the magnitude of this effect differed between the two conditions (Hypothesis 2a–b).⁴ Table 1 presents the means and standard deviations for the two conditions on all variables.

4.1. Random allocation

A multivariate analysis of variance (MANOVA) using Pillai's trace, with Condition (direct contact vs. vicarious contact) as the independent variable and pretest outgroup attitudes, prior direct and extended friendships as well as openness to experience and extraversion scores as the dependent variables, yielded a non-significant multivariate effect, $V = 0.13$, $F(5, 62) = 1.92$, $p = .10$, partial $\eta^2 = 0.12$, thus confirming the successful random allocation of participants to the two conditions.

4.2. How participants perceived the intergroup encounter

The means for ingroup member (self) and outgroup member (other) disclosure as well as the means for typicality of outgroup member reported by both direct and vicarious contact participants indicated that a fairly high amount of information was disclosed by both the ingroup and the outgroup member (ingroup member disclosure: $M_{DirectContact} = 3.44$, $SD = 0.75$; $M_{VicariousContact} = 3.62$, $SD = 0.78$; outgroup member disclosure: $M_{DirectContact} = 3.38$, $SD = 0.60$; $M_{VicariousContact} = 3.41$, $SD = 0.74$), thus attesting to a successful implementation of the task in terms of closeness induction. The means for typicality of outgroup member indicated that direct and vicarious contact participants alike thought of the confederate as a moderately typical member of the outgroup ($M_{DirectContact} = 2.27$, $SD = 0.94$;

⁴ In both experiments the participants were dyads of friends. The use of dyads typically requires that the dyad, and not the individuals, becomes the unit of analysis, as the data of the members of each dyad are not considered to be independent of each other (Kenny, Kashy, & Cook, 2006). We reasoned, however, that the individual should serve as the unit of analysis for the following reasons: (i) while the participants registered for the studies as dyads, all questions tapped their individual experiences, and there were no measures in which participants were asked to answer questions about each other; (ii) we checked for the likelihood of the non-independence of the observations before automatically treating these data as interdependent. Since we had distinguishable dyads, the designated non-independence test was the calculation of the relevant Pearson (r) correlations. None of the correlations for either experiment was significant. The correlation coefficients were notably small, and their p -values non-significant. In fact p -values ranged from 0.18 to 0.90 thereby providing no support for the premise that the data between the individuals in the dyad were interrelated, which suggested independence of the data, and allowed us to use the individual as the unit of analysis.

Table 1

Means and standard deviations of the random allocation test measures, the interaction-related measures, and the pre and posttest measures of outgroup attitudes for direct and vicarious contact (Study 1).

		Direct contact M (SD)	Vicarious contact M (SD)
Random allocation test and Pretest	Pretest outgroup attitudes	5.15 (2.16)	5.26 (2.12)
	Direct outgroup friendships	1.32 (0.77)	1.24 (0.50)
	Extended outgroup friendships	1.59 (0.82)	1.85 (0.93)
	Extraversion	3.69 (0.80)	3.32 (0.56)
	Openness to experience	3.53 (0.57)	3.52 (0.53)
Interaction-related measures	Group salience	2.10 (0.82)	2.30 (1.00)
	Interaction-induced anxiety	1.50 (0.38)	1.47 (0.38)
	Attitudes towards outgroup member	7.70 (1.20)	8.15 (1.91)
	Posttest outgroup attitudes	6.91 (1.60)	6.12 (1.68)

$M_{\text{VicariousContact}} = 2.50$, $SD = 1.13$). There were no significant differences in the way the participants of the two conditions experienced disclosure and outgroup typicality.

As far as the main contact-related variables were concerned, participants reported low to moderate group salience (across conditions, $M = 2.20$, $SD = 0.92$), very low interaction-induced anxiety (across conditions, $M = 1.48$, $SD = 0.36$) at the time of the interaction, and positive attitudes towards the interaction partner (across conditions, $M = 8.37$, $SD = 1.18$). Table 1 presents the means for each of the contact conditions on these variables. A MANOVA with Condition as the independent variable and the three variables of interest as dependent variables yielded no effect of Condition, $V = 0.04$, $F(3, 63) = 0.84$, $p = .48$, partial $\eta^2 = 0.04$, thus revealing no differences between the direct and vicarious contact conditions on any of these measures. Hence there was no support for Hypotheses 1a–c.

4.3. Effects of direct and vicarious contact on outgroup attitudes

To test for pre to posttest differences in outgroup attitudes and whether the magnitude of this effect differed between the two conditions (see Hypotheses 2a–b), we conducted a mixed ANOVA with Condition (direct vs. vicarious) as the between-subjects variable and Time of measurement (pretest vs. posttest attitudes) as the within-subjects variable. The means for pre and posttest attitudes for both conditions are reported in Table 1. The analysis yielded a main effect for Time of measurement, $F(1, 66) = 38.75$, $p < .001$, partial $\eta^2 = 0.36$, and a significant interaction effect, $F(1, 66) = 4.70$, $p < .05$, partial $\eta^2 = 0.07$, and no effect for Condition, $F(1, 66) = 0.67$, $p = .42$, partial $\eta^2 = 0.01$. Attitudes towards the outgroup became more positive after contact for both direct (mean difference = 1.77, $SE = 0.30$, $p < .001$, CI: [1.17, 2.36], $d = 0.93$) and vicarious (mean difference = 0.85, $SE = 0.30$, $p < .01$, CI: [0.26, 1.45], $d = 0.45$) contact conditions, but the pretest–posttest difference was larger for direct contact. More specifically, while the pretest attitudes reported by participants in the two conditions did not differ ($p = .82$), direct contact participants reported more positive outgroup attitudes than did vicarious contact participants at posttest (mean difference = 0.79, $SE = 0.40$, $p = .05$, CI: [−0.002, 1.59], $d = 0.48$).

The results of this study did not confirm the hypotheses derived from Wright et al. (1997), as vicarious contact did not elicit higher group salience or lower interaction-induced anxiety than direct contact during (the observation of) the interaction with an outgroup member (Hypothesis 1a,b). Both types of contact led to equally favorable attitudes towards the interaction partner, although we had expected direct contact to lead to more positive attitudes (thus Hypothesis 1c was also not supported). In line with our final hypotheses, however, while both types of contact yielded more positive attitudes towards the outgroup as a whole at posttest (supporting Hypothesis 2a), outgroup attitudes were also even more positive for those in the direct contact rather than the vicarious contact condition (supporting Hypothesis 2b).

While Study 1 yielded positive findings in terms of the effectiveness

of both types of contact in promoting more favorable outgroup attitudes, one may wonder whether the attitude change engendered would endure. Additionally, while change was confirmed against the pretest baseline, this study lacked a no-contact control comparison to rule out the possibility that attitudes became more positive when measured over time for reasons other than the contact intervention. We addressed these two issues in Study 2.

5. Study 2

Study 2 was comprised of two parts: Study 2a which served as a replication and an extension of Study 1, and Study 2b, which addressed the issue of a no-contact control comparison. We added two main components to Study 2a; the first was an additional measurement one week after the intervention (delayed posttest) in order to address the question concerning the duration of the intergroup contact effects. We sought to investigate whether the positive effects yielded immediately after direct and vicarious contact were strong enough to be traced a week after the intervention and whether there would be differences in the effects of the two types of contact one week after the intervention. Secondly, we added one more dependent variable, anxiety for future contact which differed from interaction-induced anxiety in that anxiety for future contact addressed anxiety experienced at the idea of a future encounter with members of the outgroup, whereas interaction-induced anxiety pertained to anxiety experienced at the time of contact. Wright et al. (1997) argued that the observation of a positive relationship between an ingroup member and an outgroup member could reduce negative expectations about future interactions. While research has found support for this hypothesis (e.g., Gomez et al., 2011; Paolini, Hewstone, Cairns, & Voci, 2004; Turner, Hewstone, & Voci, 2007b), there has been no experimental comparison of the anxiety-reduction effects of direct and vicarious contact. Given what has been argued so far about indirect types of contact more generally, their effects are thought to be more likely to match those of direct contact on variables linked to preparing the individual for future contact (e.g., anxiety for future contact) rather than variables that directly concern the evaluation of the outgroup (e.g., outgroup attitudes) (Crisp et al., 2010).

Study 2b was a survey study in which we asked participants to respond to the same three questionnaires the participants in Study 2a responded to (excluding the contact intervention-related questions), maintaining the one-week gap between measurements. There was no intervention between measurements. This study essentially served as a control for Study 2a in an attempt to rule out the possibility that attitudes become more positive when measured over time for reasons other than the contact intervention.

5.1. Hypotheses

Hypothesis 1. (*perception of each type of contact*) Since Study 1 found no differences between the direct and vicarious contact conditions in group salience, interaction-induced anxiety, and attitudes towards the

Table 2

Means and standard deviations of the random allocation test measures, the interaction-related measures, and the pre, post, and delayed posttest measures of outgroup attitudes and anxiety for future contact for direct and vicarious contact (Study 2a).

		Direct contact (N = 27)	Vicarious contact (N = 27)
		M(SD)	M(SD)
Random allocation test and Pretest	Pretest outgroup attitudes	4.54 (2.57)	4.93 (1.88)
	Pretest anxiety for future contact	3.23 (0.90)	3.22 (0.90)
	Direct outgroup friendships	1.23 (0.65)	1.15 (0.46)
	Extended outgroup friendships	1.85 (1.00)	1.67 (0.73)
	Extraversion ($\alpha = 0.65$)	3.54 (0.49)	3.50 (0.31)
Interaction-related measures	Openness to experience ($\alpha = 0.62$)	3.57 (0.46)	3.25 (0.35)
	Group salience ($\alpha = 0.76$)	2.19 (0.72)	2.43 (0.97)
	Interaction-induced anxiety ($\alpha = 0.74$)	1.99 (0.74)	1.89 (0.70)
	Attitudes towards outgroup member	7.70 (1.20)	8.15 (1.41)
	Outgroup attitudes	6.11 (1.53)	5.96 (2.03)
Posttest	Anxiety for future contact	2.90 (0.97)	2.82 (0.77)
Delayed Posttest	Outgroup attitudes	4.54 (2.35)	4.70 (2.45)
	Anxiety for future contact	2.95 (0.90)	2.76 (0.69)

interaction partner, which was at odds with predictions by Wright et al. (1997), we re-tested these hypotheses in Study 2a.

Hypothesis 2. (outgroup attitudes) We expected to replicate the findings of Study 1 where posttest attitudes were significantly more positive than pretest attitudes for both contact conditions (Hypothesis 2a). We also expected that positive posttest attitudes would be maintained one week after contact (delayed posttest), which would mean that delayed posttest attitudes would be significantly more positive than pretest attitudes for both conditions (Hypothesis 2b). If there were any differences between the two types of contact at the post and delayed posttest, we predicted, from Study 1, that these would show more favorable attitudes for direct than vicarious contact (Hypothesis 2c). Finally, we expected no differences between the three measurements of outgroup attitudes in the no-contact group of Study 2b.

Hypothesis 3. (anxiety for future contact) We anticipated that participants in both contact conditions would report significantly less anxiety at posttest (Hypothesis 3a), and that the reduced anxiety levels would be maintained at delayed posttest (Hypothesis 3b). We did not, however, have any concrete prediction concerning whether direct contact would yield greater anxiety reduction than vicarious contact. Lastly, we predicted that there would be no change in anxiety levels in the no-contact group in Study 2b.

6. Method

6.1. Participants and design

Study 2a was comprised of 54 individuals (27 dyads) and Study 2b of 25 individuals. The sample size for both studies was determined before any data analysis was conducted. All of the participants were female and they were students at universities in Nicosia. At recruitment, the experimenter invited potential participants to participate as dyads (of friends) in a study on 'interpersonal relations' (Study 2a). She also added that if there were individuals who wanted to participate and did not have a friend who was interested right then, they could still indicate willingness to participate in another study on the same topic (Study 2b) that would be conducted simultaneously, and for which the experimenter sought individuals and not pairs of participants. In this way the experimenter could recruit dyads for Study 2a and individuals for Study 2b. Individuals participating in the two studies were rewarded for their time with an entry to two separate raffles to win one of the two 100-Euro prizes in Study 2a and one 100-Euro prize in Study 2b.

6.2. Procedure

Study 2a participants were randomly allocated to the two

experimental conditions. The design used was a pretest-posttest-delayed posttest randomized design with two experimental conditions (direct vs. vicarious contact). The procedure of Study 2a closely followed that of Study 1, with one notable difference. Upon completion of the experiment and the posttest questionnaire, participants were not, as in Study 1, immediately debriefed but were told instead that the study would only be concluded after they received an email from the experimenter confirming that the study had finished. That email contained a link to the final questionnaire (delayed posttest) and it was sent to the participants one week after the interaction. The participants were asked to fill in this questionnaire to successfully complete their participation in the study. Debriefing was then done via another e-mail. The manipulation of direct and vicarious contact was identical to Study 1.

The participants of Study 2b were asked to respond to questionnaires that would be sent to them via e-mail. The questionnaires were sent out once per week, on the same day of the week, for three consecutive weeks. Participants were asked to reply to each questionnaire on the day they received it. They were also told that once they had submitted their responses to the final questionnaire an e-mail would be sent to them explaining the study and its goals.

6.3. Measures

The measures were identical to the measures of Study 1 with two exceptions: (i) the measurement of the second dependent variable, anxiety for future contact, was added to those used in Study 1. Anxiety for future contact was measured with an adapted 6-item version of Stephan and Stephan's (1985) original intergroup anxiety measure asking participants to rate on a 5-point scale (1, *not at all*; 5, *extremely*), to what extent they would feel: "threatened", "anxious", "awkward", "comfortable", "safe", "at ease" (the last three items were reverse-coded), if they were the only Greek Cypriot in a group of Turkish Cypriots. This measure was reliable over the three time measurements ($\alpha_{\text{pretest}} = 0.85$, $\alpha_{\text{posttest}} = 0.85$, $\alpha_{\text{delayed posttest}} = 0.82$). The Cronbach's alphas of the remaining measures are shown in Table 2; (ii) one more measure, in addition to the amount of disclosed information and the typicality of the outgroup member, was added in order to better understand how participants experienced the intergroup encounter. The new measure assessed the perceived intimacy of the interaction. Participants rated how intimate they thought the interaction between themselves (direct contact)/their friend (vicarious contact) and the outgroup member was (1 = *not intimate at all*; 5 = *very intimate*).

The delayed posttest questionnaire was essentially identical to the posttest questionnaire but without the measures evaluating the intergroup interaction. Participants in Study 2b were given the same three questionnaires as the participants in Study 2a. The only difference was that the questionnaires in Study 2b included no items tapping an

intergroup interaction.

7. Results and discussion

The plan of analyses varied for each study. For Study 2a, our analytical steps were similar to Study 1: we first checked that participants had been randomly allocated to the two contact conditions. Second, we assessed the successfulness of inducing closeness, by inspecting the means of information disclosure, and to ensure that the confederate was perceived to be a typical member of the outgroup, by checking the means of outgroup member typicality. Third, we tested for differences between the two contact conditions in terms of how participants perceived the intergroup interaction ([Hypothesis 1](#)). The fourth step was to investigate the pretest, posttest, delayed posttest changes in outgroup attitudes and anxiety for future contact, and whether these differed by condition (Hypotheses 2 and 3). For Study 2b, we looked at Time 1, Time 2, Time 3 measurements⁵ for outgroup attitudes and anxiety for future contact to see if changes occurred or not. [Table 2](#) shows the means and standard deviations of the direct and vicarious conditions on all variables (Study 2a). [Table 3](#) shows the means and standard deviations for all the variables of Study 2b.

7.1. Random allocation

A MANOVA using Pillai's trace with Condition as the independent variable and direct and extended friendships, pretest outgroup attitudes, pretest anxiety for future contact, and extraversion and openness to experience as dependent variables, yielded a marginal multivariate effect for Condition, $V = 0.23$, $F(6, 46) = 2.25$, $p = .055$, partial $\eta^2 = 0.23$. Based on the new significance level after correcting for multiple comparisons one of the univariate effects was significant: the effect of Condition on openness to experience, $F(1, 51) = 8.19$, $p = .006$, partial $\eta^2 = 0.14$, such that direct contact participants had a greater openness to experience ($M = 3.57$, $SD = 0.46$) than the vicarious contact participants ($M = 3.25$, $SD = 0.35$). We therefore controlled for openness to experience in any analysis comparing the two conditions.

7.2. How participants perceived the intergroup encounter

As in Study 1, the means for ingroup and outgroup member disclosure and the means for outgroup member typicality reported by the participants in both contact conditions suggested that: (i) a rather high amount of information was disclosed by both the ingroup and the outgroup member (Ingroup member disclosure: $M_{\text{DirectContact}} = 3.37$, $SD = 1.08$; $M_{\text{VicariousContact}} = 3.37$, $SD = 0.97$; Outgroup member disclosure: $M_{\text{DirectContact}} = 3.52$, $SD = 0.89$; $M_{\text{VicariousContact}} = 3.48$, $SD = 0.89$); (ii) the confederate was perceived by both direct and vicarious contact participants as a moderately typical member of the outgroup ($M_{\text{DirectContact}} = 2.46$, $SD = 1.10$; $M_{\text{VicariousContact}} = 2.30$, $SD = 0.99$). Finally participants in both conditions perceived the interaction to have been rather intimate ($M_{\text{DirectContact}} = 3.59$, $SD = 0.84$; $M_{\text{VicariousContact}} = 3.37$, $SD = 0.93$). There were no differences in the way the participants in the two conditions experienced information disclosure, outgroup typicality, and intimacy of the interaction.

To test [Hypothesis 1](#) we compared the two contact conditions on perceived group salience, interaction-induced anxiety, and attitudes towards the outgroup member. Overall, the participants in the two contact conditions did not perceive the interaction to be an event between two salient groups as salience was rather low to moderate (across the two conditions, $M = 2.31$, $SD = 0.85$). Furthermore, participants reported on average rather low interaction-induced anxiety (across

Table 3

Means and standard deviations of prior contact, personality, and Time 1, Time 2 and Time 3 outgroup attitudes and anxiety for future contact measures (Study 2b)

	M(SD)
Direct outgroup friendships	1.76 (1.01)
Extended outgroup friendships	1.88 (1.01)
Extraversion ($\alpha = 0.60$)	3.57 (0.38)
Openness to experience ($\alpha = 0.58$)	3.43 (0.40)
Time 1 outgroup attitudes	5.16 (2.36)
Time 2 outgroup attitudes	4.08 (2.23)
Time 3 outgroup attitudes	3.72 (2.19)
Time 1 anxiety for future contact	2.79 (0.83)
Time 2 anxiety for future contact	2.80 (0.88)
Time 3 anxiety for future contact	2.83 (0.91)

conditions, $M = 1.94$, $SD = 0.72$) and positive attitudes towards the confederate (across conditions, $M = 7.93$, $SD = 1.32$). [Table 2](#) shows the means on these three variables for each type of contact. The MANOVA using Pillai's trace, with Condition as the independent variable and these three dependent variables, yielded a non-significant multivariate effect, $V = 0.09$, $F(3, 50) = 1.55$, $p = .21$, partial $\eta^2 = 0.09$. None of the univariate effects was significant either, thus providing no support for [Hypothesis 1](#), as was the case in Study 1.

7.3. Effects of direct and vicarious contact on outgroup attitudes and anxiety for future contact

To test and compare the effects of direct and vicarious contact on outgroup attitudes and anxiety for future contact, we ran two mixed ANOVAs, one for outgroup attitudes and one for anxiety for contact with Condition (Direct vs. Vicarious contact) as the between-subjects variable and Time of measurement (pretest vs. posttest vs. delayed posttest) as the within-subjects variable. We controlled for openness to experience in both analyses. [Table 2](#) shows the means of the two types of contact for all points of measurement for both dependent variables.

[Fig. 1](#) shows the pretest, posttest and delayed posttest scores of outgroup attitudes for each condition (adjusted for openness to experience). The mixed ANOVA yielded a main effect of Time of measurement, $F(2, 49) = 4.87$, $p = .01$, partial $\eta^2 = 0.09$, but no significant Condition effect, $F(1, 50) = 1.13$, $p = .29$, partial $\eta^2 = 0.02$, or interaction effect, $F(2, 49) = 2.28$, $p = .11$, partial $\eta^2 = 0.04$. Within-subjects contrasts yielded a significant quadratic trend for time, $F(1, 50) = 8.86$, $p < .05$, partial $\eta^2 = 0.12$, such that posttest attitudes increased from pretest attitudes, but regressed back to pretest levels at delayed posttest. More precisely, pretest-posttest comparisons of outgroup attitudes showed that outgroup attitudes, as in Study 1 and in line with [Hypothesis 2a](#), became significantly more positive at posttest for both direct (mean difference = 1.82, $SE = 0.31$, $p < .001$, CI: [1.05, 2.60], $d = 0.87$) and vicarious (mean difference = 1.82, $SE = 0.31$, $p < .001$, CI: [1.05, 2.60], $d = 0.41$) contact. Contrary to [Hypothesis 2b](#), however, the positive change in outgroup attitudes did not last over time: outgroup attitudes fell from posttest to delayed posttest (direct contact: mean difference = -1.61, $SE = 0.32$, $p < .001$, CI: [-2.40, -0.82], $d = -0.72$; vicarious contact: mean difference = -1.16, $SE = 0.31$, $p < .01$, CI: [-1.93, -0.34], $d = -0.41$), such that they reverted back to pretest levels when measured a week after contact. Finally there was no difference in outgroup attitudes for either of the two conditions when comparing pretest and delayed posttest outgroup attitudes.

To test [Hypothesis 2c](#) pertaining to differences between types of contact on their effect on outgroup attitudes, we decomposed the interaction to investigate whether, despite the absence of an interaction effect, there were differences between the two conditions as a function of time of measurement. These comparisons yielded no difference between the two types of contact across all time points, a finding that is

⁵ These times of measurement were the equivalent of pretest, posttest, delayed posttest measurements in Study 2a.

Fig. 1. Pretest, posttest, and delayed posttest scores of outgroup attitudes for the direct and vicarious contact conditions (Study 2a).

Note. Means adjusted for the covariate openness to experience.

not in line with either the findings of Study 1 or Hypothesis 2c, in which direct contact (should have) elicited (even) more positive attitudes than vicarious contact at posttest (and delayed posttest).

Fig. 2 presents the pretest, posttest, and delayed posttest means (adjusted for openness to experience) of the two contact conditions for anxiety for future contact. The mixed ANOVA yielded no significant main effect of Condition, $F(1,50) = 0.57, p = .45$, partial $\eta^2 = 0.01$ or Time of Measurement, $F(2, 50) = 1.19, p = .31$, partial $\eta^2 = 0.02$. There was also no interaction effect, $F(2,50) = 0.18, p = .84$, partial $\eta^2 = 0.004$. Once again we decomposed the interaction in order to investigate whether there were any significant pretest-posttest-delayed posttest differences within each condition and whether there were differences in the levels of anxiety for future contact between the two contact conditions at any of the time points.

Pairwise comparisons, for anxiety for future contact between points of measurement, showed a trend for lower anxiety for future contact at posttest (mean difference = -0.35 , $SE = 0.16, p = .10$, $CI: [-0.74, 0.49]$, $d = -0.36$) and delayed posttest (mean difference = -0.27 , $SE = 0.11, p = .10$, $CI: [-0.30, 0.25]$, $d = -0.35$) by comparison to pretest for direct contact. There was an even more pronounced difference between time points for vicarious contact. Posttest levels of anxiety for future contact were marginally lower than pretest levels (mean difference = -0.36 , $SE = 0.16, p = .08$, $CI: [-0.75, 0.03]$, $d = -0.38$), and at delayed posttest anxiety for future contact levels became significantly lower than pretest levels (mean difference = -0.43 , $SE = 0.14, p < .05$, $CI: [-0.78, -0.08]$, $d = -0.48$). These results provided partial support for Hypotheses 3a and b, which predicted that levels of anxiety would reduce at posttest

Fig. 2. Pretest, posttest, and delayed posttest scores of anxiety for future contact for the direct and vicarious contact conditions (Study 2a)

Note. Means adjusted for the covariate openness to experience.

and would remain reduced a week after contact. The results show that, at least for vicarious contact, anxiety for future contact reduced marginally at posttest and dropped even further at delayed posttest to render the reduction of anxiety significant at delayed posttest by comparison to pretest. There was no difference between the two conditions in terms of reported levels of anxiety for future contact at any of the time points.

7.4. Study 2b

Table 2 shows the means for all measurements included in Study 2b. We conducted a MANOVA using Pillai's test to test whether the participants in Study 2b differed significantly from participants in Study 2a with regards to prior contact, personality traits, and initial levels of outgroup attitudes and anxiety for future contact. The analysis yielded a significant multivariate effect for Condition (Direct vs. Vicarious vs. No contact), $V = 0.35, F(12, 142) = 2.50, p < .01$, partial $\eta^2 = 0.18$. Based on the new significance level after correcting for multiple comparisons, one of the univariate effects was significant: that on direct friendships, $F(2, 75) = 5.21, p = .008$, partial $\eta^2 = 0.12$. Participants in Study 2b reported more direct friendships with the outgroup than did direct and vicarious contact participants in Study 2a ($p < .05$).

Finally, we conducted two repeated measures ANOVAs to investigate possible Time of Measurement (Time 1 vs. Time 2 vs. Time 3) effects for outgroup attitudes and anxiety for future contact. The first ANOVA yielded a significant effect of Time of Measurement, $F(2, 48) = 16.60, p < .001$, partial $\eta^2 = 0.41$, and a significant linear trend, $F(1, 24) = 32.60, p < .001$, partial $\eta^2 = 0.58$, indicating a steady and significant linear change of outgroup attitudes across time. The means revealed a surprising worsening of outgroup attitudes with the progression of time. Time 2 and Time 3 outgroup attitudes were significantly more negative than Time 1 outgroup attitudes (mean difference_{Time1-Time2} = -1.08 , $SE = 0.30, p < .01$, $CI: [-1.85, -0.31]$, $d = -0.47$; mean difference_{Time1-Time3} = -1.44 , $SE = 0.25, p = .001$, $CI: [-2.09, -0.79]$, $d = -0.63$). This negative trend was not found for the second variable, anxiety for future contact. There was no effect of Time of Measurement for this variable, $F(2, 48) = 0.08, p = .92$, partial $\eta^2 = 0.00$, thus showing that levels of anxiety did not fluctuate across time for this group of participants.

The results of Study 2 showed that participants in both direct and vicarious contact conditions reported significantly more positive attitudes at posttest in comparison to pretest (as in Study 1) but that, contrary to our hypothesis, and failing to replicate the findings of Study 1, there were no differences between the two contact conditions on attitude change. Furthermore, our hypothesis that positive attitudes would last a week after contact was not supported. Instead, improvements in attitudes in both conditions faded away a week after contact and regressed back to their pretest levels at delayed posttest. The attitudes reported by participants in Study 2b had an unexpected course. Attitudes got worse at each subsequent measurement; both Time 2 and Time 3 attitudes were significantly worse than Time 1 outgroup attitudes. While it is hard to explain the unexpected worsening of outgroup attitudes in Study 2b, what can be argued in support of our positive findings, at least for posttest outgroup attitudes in Studies 1 and 2a, is that there is no general trend for attitudes to improve simply as an effect of repeated measurements. Hence, the positive change from pre to posttest attitudes in both studies can be attributed to the experience of intergroup contact.

With regards to anxiety for future contact, Study 2 showed, partially in line with our hypotheses, that anxiety levels marginally reduced after contact and that a week after contact they were found to be significantly lower than pretest anxiety levels, for vicarious but not direct contact. For direct contact there was only a weak trend for anxiety reduction at posttest measurements. Given that no time-changes were registered in Study 2b as far as anxiety for future contact is concerned this supports our case that the observed anxiety reduction in Study 2a

was indeed a result of intergroup contact.

To summarize, the results of Study 2 suggest that a one-off interaction with one outgroup member may have temporary effects on outgroup attitudes but that these attitude changes do not endure over time. This is not surprising, given decades of conflict in Cyprus, and division of the island into two ethnic enclaves, with resulting minimal contact between the groups. One would not expect a short, one-off encounter with a single outgroup member, against this backdrop, to engender durable change in attitudes towards the outgroup *as a whole*. A more permanent change of attitudes towards the outgroup would probably require multiple incidences of contact, with more than one outgroup members. On the other hand, a single intergroup interaction was enough to reduce posttest anxiety levels at least in the vicarious contact condition. An important finding is that the anxiety levels did not revert back to pretest levels for both contact conditions, and for vicarious contact they even became significantly lower than pretest anxiety levels. If it indeed takes multiple incidences of contact to induce durable attitude change towards the outgroup, then indirect contact (in our study vicarious contact), by reducing anxiety for contact, should facilitate future intergroup encounters and in this way contribute indirectly to a more solid attitudinal change. Finally, the reason that a single incidence of contact sufficed to induce changes in anxiety levels may have to do with the general lack of prior direct or indirect intergroup contact in our study sample. When the first experience one has with an outgroup member is a positive one, then this creates a positive precedent and, as results show, eases feelings of anxiety for a subsequent interaction. While being less anxious about future contact with outgroup members may seem to be a more limited kind of change than being more positive or less negative about the outgroup *in general*, reducing anxiety for contact is, as multiple studies of intergroup contact report (see Pettigrew & Tropp, 2008, for a meta-analysis), a first, but decisive step towards better intergroup relations, as it can lead to positive attitude change.

8. General discussion

The importance of alternative types of contact has been repeatedly stressed, and their potential benefits especially in segregated contexts have been outlined. We know by now that both direct and indirect types of contact can lead to positive changes in prejudice-related outcomes. Remaining gaps in the literature were, however, how indirect contact fared in comparison to face-to-face contact in terms of its effectiveness in promoting positive outcomes for intergroup relations (e.g., more favorable outgroup attitudes), and the longevity of these effects. It has also not been clear whether the true value of indirect types of contact lies in their being viable *replacements* for direct contact, or whether their primary function is as *gateways* to direct forms of contact (e.g., by psychologically preparing individuals for face-to-face intergroup contact). Lastly, relatively few studies in the intergroup contact literature have actually looked into the contact event itself to try to understand what happens during the interaction (the vast majority of studies in Pettigrew & Tropp's, 2006, meta-analysis were correlational surveys based on self-reports of contact). These lacunae in the literature were identified and addressed by this research. We will now briefly summarize the results of the two studies and draw general conclusions based on the findings, before acknowledging some limitations of these studies, and then making suggestions for future research.

The effects of vicarious and direct contact were compared with each other in Studies 1 and 2 on the variable of outgroup attitudes, and then on an additional variable, anxiety for future contact, in Study 2. As far as outgroup attitudes are concerned, the results showed that both types of contact led to more favorable outgroup attitudes at posttest. Although there was some evidence that direct contact could produce greater change in this measure in comparison to vicarious contact (Study 1), outgroup attitudes returned back to their initial (pretest) levels a week after the interaction (Study 2) for both types of contact.

In terms of anxiety for future contact, both types of contact led to a reduction in anxiety levels between pre and posttest and delayed posttest. This reduction was only significant (albeit marginally at posttest) for vicarious and not direct contact. This is an important finding, particularly for vicarious contact, as it speaks to the utility of indirect contact in rendering individuals significantly less apprehensive about a future interaction. Furthermore, it underscores the usefulness of indirect contact as a preparatory step towards potentially more demanding intergroup encounters where one finds oneself face-to-face with members of the outgroup. We would be hesitant to claim, however, that vicarious contact is more apt than direct contact to yield a substantial reduction of anxiety for future contact, especially because there was evidence of marginal effects for pretest-posttest and pretest-delayed posttest reductions for direct contact too. It is possible that a more highly-powered sample could have yielded additional significant differences between conditions, which we hope can be attempted in future research. Finally, Study 2b showed that the repeated measurement of outgroup attitudes and anxiety for future contact did not lead to a tendency to simply report more positive attitudes. On the contrary, in fact, participants in Study 2b reported progressively less positive outgroup attitudes. We will discuss these findings in greater detail below.

Both studies included measures that aimed to provide insight into the actual intergroup interaction. These measures primarily served to test Wright et al.'s (1997) conjectures that the advantage of extended contact over direct contact is that it elicits lower anxiety and higher group salience at the time of the interaction. We found, however, no support for these predictions in either of the experiments.

This was the first time Wright et al.'s (1997) hypotheses about salience and anxiety were put to the test, and we were surprised to find no support for these seemingly commonsensical ideas. We should point out that these results may be partly attributed to the way we operationalized vicarious contact, namely as 'observing a friend interacting with an outgroup member'. We chose friends over unknown ingroup members because we reasoned that friends would be a valid and trustworthy source for participants in vicarious contact, as opposed to unknown ingroup members who could be more easily classified as 'exceptions to the rule'. Observing a friend in an intergroup interaction, however, may have reduced the perceived group salience of vicarious contact participants, since a friend is more closely linked to oneself than to one's ingroup. So observing the interaction of a friend with an outgroup member may not, as the mean levels of perceived salience suggest, have been perceived as an intergroup event (high group salience) possibly because the personal element was very prevalent. This also suggests that had we operationalized vicarious contact as watching an ingroup member who is a stranger interacting with an outgroup member (also a stranger) this could have led, as predicted by Wright et al., to the perception of vicarious contact as a predominantly intergroup event, and yielded the expected differences in group salience between direct and vicarious contact. In any case, adding a measure of inclusion of the ingroup member in the self (Aron, Aron, & Smollan, 1992), an indicator of the closeness between the observer of the interaction and the person interacting with the outgroup member, in future research could test whether this is a possible explanatory mechanism for the lack of difference between direct and vicarious contact in the interaction-related variables.

As regards interaction-induced anxiety, for which we found no differences between conditions even though we expected vicarious contact to elicit lower levels of anxiety, it is important to note that the levels of interaction-induced anxiety were very low in both conditions, which may be why no differences emerged. The levels of interaction-induced anxiety were conspicuously low for the individuals in our experiments who, for the most part, had never had contact with the outgroup prior to the intervention. We contend that this might reflect how positive the interaction based on the closeness-induction task was. Further, it may reflect how the participants *ended up* feeling about the

interaction; this may not be very informative about how participants would have felt if told that their task involved entering (or observing) an intergroup interaction. Finally, low levels of interaction-induced anxiety could be due to the fact that the interaction took place in a university lab, which made participants feel as though they were in a safe space. In retrospect, we realize that if any anxiety had been experienced by the participants (and especially the direct contact participants) during the interaction, this must have probably taken place at the very early stages of the intervention when participants were *about* to engage in the intergroup interaction. To capture this initially elevated anxiety, we should have measured interaction-induced anxiety right after participants were told the task they had to complete. This procedure might have revealed differences in interaction-induced anxiety between the two conditions.

Also with an eye to future work, although it may be agreed that anxiety for future contact is a good indicator of an individual's emotional state in relation to the prospect of intergroup contact, it may equally be noted that there are alternative psychological constructs that are relevant to readiness and willingness for actual contact, which we did not measure in our research. In order to be ready to pursue contact, one also likely needs to have the confidence or the perceived (self-) efficacy that one can actually participate in a face-to-face interaction with an outgroup member successfully (Turner & Cameron, 2016). Perceived self-efficacy (Bandura, 1977) is a construct that has recently emerged in the sphere of indirect contact (e.g., Mazzitotta et al., 2011; Stathi, Crisp, & Hogg, 2011), and it is a construct that we believe would have great application for individuals whose major obstacle in interacting with the outgroup is not their negative evaluations of the outgroup but rather their feelings of inefficacy about sustaining intergroup encounters. We therefore strongly suggest that measures of contact-related self-efficacy, coupled with measures of behavioral intentions for future contact, should be included in future studies investigating the function of indirect contact as a stepping stone to face-to-face contact.

Finally, despite the methodological limitations of our own studies (noted above), we wish to highlight the usefulness of introducing measures investigating the process of contact. Apart from some noteworthy exceptions (e.g., Richeson & Shelton, 2010) contact has, to date, been treated somewhat as a 'black box', as Harwood (2010) put it, into which "people disappear and emerge with different attitudes" (p. 164).

9. Conclusion

This research contributed to filling in some gaps in the intergroup contact literature with regards to the effectiveness of indirect contact in bringing about positive intergroup outcomes analogous to those of direct contact, and to emotionally preparing individuals for direct contact. We also looked at how different types of contact were experienced by individuals taking part in them. Assessing how participants perceived the interaction enabled us, on the one hand, to investigate Wright et al.'s (1997) suggested differences between direct and extended contact and, on the other hand, to open the black box of contact.

What our results show, in essence, is that although vicarious contact elicited neither higher group salience nor lower interaction-induced anxiety in comparison to direct contact, as Wright et al. (1997) suggested, it still yielded effects that were comparable to the effects of direct contact in terms of improved outgroup attitudes and reduced anxiety for future contact. Vicarious contact was particularly useful in preparing individuals emotionally for a future intergroup encounter (by reducing their anxiety for future contact). Neither vicarious nor direct contact, however, led to long lasting effects on outgroup attitudes. The results of this research suggest that it might take a few instances of positive contact to more permanently reconstruct one's image of the outgroup, while a single instance of direct and (especially) vicarious contact has the potential to render one emotionally readier (less anxious) for a prospective intergroup encounter. This, to us, is an important finding since reduced anxiety for future contact is key to a

positive (Stephan & Stephan, 1985) and not cognitively-depleting (Shelton, West, & Trail, 2010) future intergroup encounter.

As a closing remark, we should emphasize that in our research we compared direct with only one type of indirect contact (vicarious contact), which we also operationalized as observing a *friend* interacting with a member of the outgroup. Other studies might be done comparing direct with different types of indirect contact (like imagined contact), or with different operationalizations of vicarious contact, and they might find differences in their relative efficacy. We believe, however, that this line of research, comparing direct and indirect contact in the same kind of paradigm, will inform both theory and practice. Theoretically, we will increase our knowledge of how the different types of contact work, and when each one is more effective. Practically, this new knowledge should prove to be very useful in contexts in which, for example, direct contact is minimal or current levels of hostility and anxiety are deemed too high for direct intergroup interaction. In such cases other types of contact may be needed in order to trigger individuals' interest in and willingness to meet the outgroup while psychologically preparing them for the encounter.

Open Practices

The research in this article earned Open Data badges for transparent practices. Data for the studies are available at <https://data.mendeley.com/datasets/9z652k7xnb/draft?a=ee073d09-59c0-478d-8393-cdf847fe048d>

References

- Andrighetto, L., Mari, S., Volpato, C., & Behluli, B. (2012). Reducing competitive victimhood in Kosovo: The role of extended contact and common ingroup identity. *Political Psychology*, 4, 513–529.
- Allport, G. W. (1954). *The nature of prejudice*. Cambridge, MA: Addison-Wesley.
- Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of other in the self scale and the structure of interpersonal closeness. *Journal of Personality and Social Psychology*, 63, 596–612.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, 191–215.
- Brown, R., & Hewstone, M. (2005). An integrative theory of intergroup contact. *Advances in Experimental Social Psychology*, 37, 255–343.
- Christ, O., Hewstone, M., Tausch, N., Wagner, U., Voci, A., Hughes, J., & Cairns, E. (2010). Direct contact as a moderator of extended contact effects: Cross-sectional and longitudinal impact on outgroup attitudes, behavioral intentions, and attitude certainty. *Personality and Social Psychology Bulletin*, 36, 1662–1674.
- Converse, J. M., & Presser, S. (1986). *Survey questions: Handcrafting the standardized Questionnaire*. Sage Publications.
- Costa, P. T., & McCrae, R. R. (1992). *Revised NEO personality inventory (NEO-PIR) and NEO five factor inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources.
- Crisp, R. J., & Turner, R. N. (2013). Imagined intergroup contact: Refinements, debates, and clarifications. In G. Hodson, & M. Hewstone (Eds.), *Advances in intergroup contact* (pp. 135–151). New York, NY: Psychology press.
- Crisp, R. J., Husnu, S., Meleady, R., Stathi, S., & Turner, R. N. (2010). From imagery to intention: A dual-route model of imagined contact effects. *European Review of Social Psychology*, 21, 188–236.
- Dovidio, J. F., Eller, A., & Hewstone, M. (2011). Improving intergroup relations through direct, extended and other forms of in direct contact. *Group Processes & Intergroup Relations*, 14, 147–160.
- Eller, A., Abrams, D., & Gomez, A. (2012). When the direct route is blocked: The extended contact pathway to improving intergroup relations. *International Journal of Intercultural Relations*, 36, 637–646.
- Feddes, A. R., Noack, P., & Rutland, A. (2009). Direct and extended friendship effects on minority and majority children's interethnic attitudes: A longitudinal study. *Child Development*, 80, 377–390.
- Gomez, A., Tropp, L. R., & Fernandez, S. (2011). When extended contact opens the door to future contact: Testing the effects of extended contact on attitudes and intergroup expectancies in majority and minority groups. *Group Processes & Intergroup Relations*, 14, 161–173.
- Harwood, J. (2010). The contact space: A novel framework for intergroup contact research. *Journal of Language and Social Psychology*, 29, 147–177.
- Hewstone, M., & Swart, H. (2011). Fifty-odd years of inter-group contact: From hypothesis to integrated theory. *British Journal of Social Psychology*, 50, 374–386.
- Kenny, D. A., Kashy, D. A., & Cook, W. L. (2006). *Dyadic Data Analysis*. New York: The Guilford Press.
- Mazzitotta, A., Mummendey, A., & Wright, S. C. (2011). Vicarious intergroup contact effects: Applying social-cognitive theory to intergroup contact research. *Group Processes & Intergroup Relations*, 14, 255–274.

- Ortiz, M., & Harwood, J. (2007). A social cognitive theory approach to the effects of mediated intergroup contact on intergroup attitudes. *Journal of Broadcasting & Electronic Media*, 51, 615–631.
- Paolini, S., Hewstone, M., Cairns, E., & Voci, A. (2004). Effects of direct and indirect cross-group friendships on judgments of Catholics and Protestants in Northern Ireland: The mediating role of an anxiety-reduction mechanism. *Personality and Social Psychology Bulletin*, 30, 770–786.
- Pettigrew, T. F., & Tropp, L. R. (2006). A meta-analytic test of intergroup contact theory. *Journal of Personality and Social Psychology*, 90, 751–783.
- Pettigrew, T. F., & Tropp, L. R. (2008). How does intergroup contact reduce prejudice? Meta-analytic tests of three mediators. *European Journal of Social Psychology*, 38, 922–934.
- Richeson, J. A., & Shelton, J. N. (2010). Prejudice and bias in intergroup interactions. In J. F. Dovidio, M. Hewstone, P. Glick, & V. M. Esses (Eds.). *The Sage handbook of prejudice, stereotyping, and discrimination* (pp. 276–293). Thousand Oaks, CA: Sage.
- Sedikides, C., Campbell, K. W., Reeder, G. D., & Elliot, A. J. (1998). The self-serving bias in relational context. *Journal of Personality and Social Psychology*, 74, 378–386.
- Shelton, J. N., West, T. V., & Trail, T. E. (2010). Concerns about appearing prejudiced: Implications for anxiety during daily interracial interactions. *Group Processes & Intergroup Relations*, 41, 540–551.
- Stathi, S., Crisp, R. J., & Hogg, M. A. (2011). Imagining intergroup contact enables member-to-group generalisation. *Group Dynamics: Theory, Research, and Practice*, 15, 275–284.
- Stephan, W. G., & Stephan, C. W. (1985). Intergroup anxiety. *Journal of Social Issues*, 41, 157–176.
- Tam, T., Hewstone, M., Kenworthy, J., & Cairns, E. (2009). Intergroup trust in Northern Ireland. *Personality and Social Psychology Bulletin*, 35, 45–59.
- Turner, R. N., & Cameron, L. (2016). Confidence in contact: A new perspective on promoting cross-group friendships among children and adolescents. *Social Issues and Policy Review*, 10, 212–246.
- Turner, R. N., Hewstone, M., Voci, A., Paolini, S., & Christ, O. (2007a). Reducing prejudice via direct and extended cross-group friendship. *European Review of Social Psychology*, 18, 212–255.
- Turner, R. N., Hewstone, M., & Voci, A. (2007b). Reducing explicit and implicit outgroup prejudice via direct and extended contact: The mediating role of self-disclosure and intergroup anxiety. *Journal of Personality and Social Psychology*, 93, 369–388.
- Vezzali, L., Hewstone, M., Capozza, D., Giovannini, P., & Wölfer, R. (2014). Improving intergroup relations with extended and vicarious forms of indirect contact. *European Review of Social Psychology*, 25, 314–389.
- Wölfer, R., Christ, O., Tausch, N., Schmid, K., Vertovec, S., & Hewstone (2017). *Extended contact prepares for direct contact: Systematic evidence across four longitudinal studies.* (under review).
- Wright, S. C., Aron, A., McLaughlin-Volpe, T., & Ropp, S. A. (1997). The extended contact effect: Knowledge of cross-group friendships and prejudice. *Journal of Personality and Social Psychology*, 73, 73–90.
- Wright, S. C., Aron, A., & Brody, S. M. (2008). Extended contact and including others in the self: Building on the Allport/Pettigrew legacy. In U. Wagner, L. R. Tropp, G. Finchilescu, & C. Tredoux (Eds.). *Improving intergroup relations: Building on the legacy of Thomas F. Pettigrew* (pp. 143–159). Oxford, UK: Blackwell.
- Zhou, S., Page-Gould, E., Aron, A., Moyer, A., & Hewstone, M. (2017). *A meta-analysis of the extended contact hypothesis.* (under review).