Dispositional empathy and personality as predictors of contact quality: The mediating roles of contact self-efficacy and effort towards contact

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A R T I C L E   I N F O

A B S T R A C T

While the prejudice-reduction effect of intergroup contact has been extensively demonstrated, research identifying antecedents of positive contact and underlying mechanisms is limited. Two studies, in Italy ($N = 239$ Italian adolescents) and the UK ($N = 299$ White British adults), examined dispositional empathy and personality traits as predictors of contact quality, with effort towards contact and contact self-efficacy as underlying mechanisms. Study 1 revealed that empathic concern and extraversion was associated with higher contact quality with immigrants in Italy via greater contact effort. Study 2 replicated and extended these findings, showing that contact self-efficacy and then contact effort sequentially mediated the associations of empathic concern and personality (extraversion, openness to experience, agreeableness) with contact quality with Asian British in the UK. Perspective-taking was not associated with contact quality. Our findings highlight the value of integrating dispositional/personality, social cognitive and intergroup approaches in the study of antecedents of contact quality and underlying mechanisms, with implications for the design of prejudice-interventions.

While a wealth of research has demonstrated the impact of positive intergroup contact on intergroup relations, research examining antecedents of positive contact with outgroups has rarely been considered. Research has provided evidence for some personality traits as predictors of intergroup contact (Vezzali et al., 2018). In two studies, this research not only provides further evidence regarding this

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relationship, it also expands the previous literature by 1) considering empathic concern and perspective-taking as dispositional traits as predictors of contact quality, 2) examining mediating processes related to contact self-efficacy and effort towards contact, and 3) testing the effects in two different intergroup contexts, with adolescents' contact with immigrants in Italy (Study 1), and White British adults' contact with Asian British in the United Kingdom (Study 2).

Antecedents of intergroup contact

Many countries in the world are characterized by a complex combination of multiple identities, in particular in schools and the workplace, contexts in which people spend the majority of their lifetime. Such social and cultural diversity enhances opportunities for contact with group members different from one's own background (Crisp & Turner, 2011). Meta-analyses have established that intergroup contact, i.e., meaningful interactions between members of diverse groups (Allport, 1954), is a robust way to promote positive intergroup relations (Van Assche et al., 2023), with evidence coming from studies ranging from those conducted in laboratory settings (Pettigrew & Tropp, 2006) through to those in real world contexts characterized by severe intergroup conflict (Lemmer & Wagner, 2015).

However, despite increasing opportunities for contact with diverse groups, not all opportunities are utilized, and are in fact often avoided (for a systematic review see Bettencourt et al., 2019). For example, people tend to form same-race friendships rather than cross-race friendships, i.e., racial homophily (DiPrete et al., 2011; McPherson et al., 2001). When intergroup contact does take place, it is not necessarily positive or of high quality (Birtel et al., 2020; McKeown & Dixon, 2017; Schäfer et al., 2021). For example, in a longitudinal study, Birtel et al. (2020) revealed that when school children transitioned from an ethnically segregated elementary school to a mixed secondary school, only the minority group benefited from the diversity exposure and contact opportunities, but not the majority group. Asian British (but not White British) children reported more positive contact experiences, willingness for future contact and greater intergroup empathy. Importantly, it is not simply the quantity or opportunity of contact but rather the quality of contact that promotes harmony (Davies et al., 2011; see also Drury et al., 2022).

Contact quality is an important variable to consider, as it is quality contact that encourages people to continuously seek further contact, a rewarding experience that is known to improve intergroup relations in the long-term (Van Assche et al., 2023). Knowing the importance of intergroup contact for intergroup relations, it is crucial to understand a) which idiosyncratic factors predict high quality contact experiences with outgroup members within the opportunities modern societies offer, and b) how positive intergroup contact can be created through interventions. Our research focused on the first aspect, i.e., examining individual factors that may predict intergroup contact quality, and the cognitive processes of this relationship.

Kauff et al. (2021) suggested that factors on three different levels predict whether people are willing to seek intergroup contact (see also Paolini et al., 2018; Ron et al., 2017; Turner et al., 2020). On the macro-level, not only contact opportunities play a role but also, for example, societal norms. On the meso-level, they consider, for example, the history of the intergroup conflict and intragroup processes. On the micro-level, factors such as prior direct or imagined contact (Crisp & Turner, 2009), personality, perspective-taking and confidence in contact may predict contact. For example, asking participants to mentally simulate positive intergroup contact was associated with a higher quality of outgroup communication and a lower perceived communication difficulty in a subsequent task (Birtel & Crisp, 2012). In this research, we focused on testing micro-level predictors of contact, i.e., dispositional empathy (empathic concern, perspective-taking), personality factors (extraversion, openness to experience, agreeableness), confidence in contact and effort towards contact.

A small number of studies have investigated the relation between personality and contact, though findings are mixed. Cross-sectional evidence suggests that openness to experience and agreeableness are associated with more positive contact with African Americans and Asian Americans, and in turn with more positive outgroup attitudes (Jackson & Poulsen, 2005). Furthermore, extra-version (but not openness to experience and agreeableness) is associated a greater frequency of cross-group friendships, and in turn with more positive outgroup attitudes of White British towards South Asians in the United Kingdom (Turner et al., 2014). Vezzali et al. (2018) provided the first longitudinal evidence of a bidirectional relationship between personality traits and intergroup contact for both majority (Italians) and minority (immigrants) group members. Higher openness to experience and agreeableness (but not ex-traversion) at the beginning of the high school year predicted greater contact quality at the end of the high school year, and vice versa. Openness to experience and openness to others, but not agreeableness, also predicted lower racial homophily (Antonoplis & John, 2022). In line with previous evidence, this research focussed on three personality factors of the five-factor model of personality (Goldberg, 1993; McCrae & Costa, 1999) that seem to be particularly relevant in intergroup relations – extraversion, openness to experience and agreeableness – as predictors of contact quality. While a link between personality and contact has been found in prior research, studies on the *underlying processes* of the relationship between personality factors and contact are lacking as well as studies taking into consideration dispositional empathy as an antecedent of contact. Understanding the complex picture about which individual factors may facilitate high quality intergroup contact and which kind of individuals actively avoid contact, will be instrumental in informing the design of future, tailored contact interventions, specifically targeting those individuals who are more reluctant to engage in contact.

Dispositional empathy as antecedent of contact

Dispositional empathy[1] has an affective and a cognitive component (Davis, 1980, 1983). Affective empathy (empathic concern) encompasses emotions directed at others such as compassion. Cognitive empathy (perspective-taking) captures the ability to take the perspective of another person's mental state. Empathy towards outgroups (i.e., intergroup empathy) has been shown to play a key role in harmonious intergroup relations, being a consequence of positive contact and a key mediator of the contact-prejudice relationship (Pettigrew & Tropp, 2008). However, research has overlooked the role of the larger construct of dispositional empathy in intergroup relations. There is scarce evidence on dispositional empathy in intergroup relations, and initial findings on dispositional empathy as a predictor of contact are mixed. Trifiletti et al. (2019) found an unexpected negative longitudinal relation from empathic concern to cross-group friendships. Jugert and colleagues (2013) found a marginally significant positive longitudinal effect of dispositional empathy on cross-group friendship stability. Dispositional perspective-taking predicted willingness to seek intergroup contact with stigmatized groups (Wang et al., 2014). Due to the mixed findings, further investigation is needed.

To address this gap, we considered dispositional empathic concern and perspective-taking. In addition to personality, empathic concern and perspective-taking may be antecedents of contact (Kauff et al., 2021; Turner et al., 2020). While negative experiences with outgroups and prejudice hinder people from seeking contact and engage in high quality contact with outgroups, higher dispositional empathic concern and perspective-taking should predict a higher quality of contact. Dispositional empathy and personality haven not yet been considered together, and testing both as predictors in the study will allow an understanding which may have greater predictive validity. But why may dispositional empathy and personality predict contact quality? We consider two antecedents of successful actions: effort towards contact and contact self-efficacy.

Contact effort and contact self-efficacy as mechanisms

Antecedents of actions and their successful outcomes are 1) the *effort* put into actions and 2) the *belief to possess the capability* to engage in certain behaviors required to achieve desired results and goals, i.e., perceived self-efficacy (Bandura, 1977). Applied to the intergroup context, this literature suggests that successful outcomes in intergroup relations, such as high-quality contact, could be a result of the effort put into the contact, and the perceived self-efficacy in contact situations.

Effort towards contact

We tested the effort made towards contact as a mediating mechanism between dispositional empathy as well as personality, and contact quality, in line with the argument that simply exposing ingroup members to outgroup members will not result in high quality contact (Al Ramiah et al., 2015; Birtel et al., 2020; Davies et al. 2011). Rather than being passively exposed to outgroup members, high quality contact is expected to be a result of active engagement in approaching and communicating with outgroup members, in other words, when individuals make an effort during intergroup contact. For example, interventions based on mentally simulating positive contact emphasize the active engagement with the task to achieve high quality communication during interactions (Birtel & Crisp, 2012). Therefore, we predicted that greater effort towards contact is associated with greater contact quality.

We further predicted that dispositional empathy and personality are associated with greater contact effort. People high in extraversion, openness to experience and agreeableness are proposed to make a greater effort in intergroup contact situations. This is because meeting new people energizes people high in extraversion, intergroup contact situations are usually novel situations that people high in openness should enjoying trying out, and people high in agreeableness and empathy should care about interaction partners and the positive nature of interactions independently of whether they are familiar or not.

Contact self-efficacy

We also tested contact self-efficacy as a mediating mechanism between dispositional empathy as well as personality, and contact quality. Turner and Cameron (2016) proposed a theoretical model shedding light on the factors that facilitate and encourage successful contact and friendships between groups, conditions which ensure that the benefits of intergroup contact are reaped in intergroup relations. At the core of their model is the concept of confidence in contact. For intergroup contact to lead to harmonious relations between groups, for example in schools or the workplace which provide many opportunities for contact and friendships, contact requires to be successfully sought and implemented. Promoting confidence in contact and equipping individuals with the self-efficacy to engage in contact is a key step for cross-group contact and friendships to be successful and sustained. Turner and Cameron propose individual (e.g., empathic concern and perspective-taking, self-efficacy, intergroup anxiety), situational (norms) and interventional (e. g., indirect contact) factors that increase the "readiness for contact". Previous research has shown that observing intergroup interactions (Mazziotta et al., 2011), mentally simulating intergroup contact (Stathi et al., 2011) as well as direct and vicarious contact experiences (Bagci et al., 2019) enhance contact self-efficacy. In particular, Bagci et al. (2019) found that prior intergroup contact predicted the belief that one can form and maintain successful quality cross-ethnic friendships. Interestingly, in return this contact self-efficacy also predicted the quality of current cross-ethnic friendships. In contrast, Meleady and Forder (2019) demonstrated that

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[1] For clarity, in the current manuscript, we speak of personality when referring to the Big Five and of disposition when referring to empathy.

negative contact reduces contact self-efficacy. In our research, while we are not directly measuring certain behaviors, intergroup contact quality would be considered as a subjective perception that arises from behaviors during intergroup interactions. Such perceptions of contact behavior are influenced by the participants' behavior and the behavior of the interaction partners. Therefore, we argue that behavior in those intergroup contexts would be influenced by effort towards contact and perceived contact self-efficacy, translating into the perceptions of the behavior the participants are reporting in the study.

We further predicted that dispositional empathy and personality are associated with greater contact self-efficacy. The link between dispositions and self-efficacy has received little attention. There is evidence that personality factors (openness, conscientiousness) predict academic self-efficacy, and that self-efficacy mediates the relationship between conscientiousness and academic as well as military performance (Caprara et al., 2011; Fosse et al., 2016). Caprara et al. (2011) argue that personality traits and self-efficacy function on different levels, with personality referring to the character of a person and self-efficacy referring to how individuals regulate their behavior. In other words, self-efficacy is considered as self-related beliefs that function between broader dispositions (e. g., personality, empathy) and behavior. We argue that those who are more extraverted, more open to new experiences, more agreeable, and have a greater ability to empathize and take the perspective of another person, should experience a greater self-efficacy in contact situations.

Contact self-efficacy and effort

Individuals high in *self-efficacy* have been shown to make a greater *effort* to achieve successful outcomes. According to social-cognitive theory (Bandura, 1986), self-efficacy determines successful outcomes through the type of behavior chosen as well as effort put into the actions and persistence (i.e., motivation). Performance is the relative contribution of ability and effort. Self-efficacy is associated with the ability to estimate how much effort is required to successfully achieve a goal or performance (Bandura, 1997; Bandura, 2001). Self-efficacy has been related to performance in various setting such as education, sports, work, and health (Moritz et al., 2000; Stajkovic & Luthans, 1998). Research in other domains shows that self-efficacy has a direct effect on effort and an indirect effect on performance via effort (Gist & Mitchell, 1992; Krishnan et al., 2002; Locke & Latham, 1990; Seo & Ilies, 2009). Individuals high in self-efficacy are also more likely to attribute poor performance to a lack of effort (Bandura, 2010). Self-efficacy and effort have been shown to be important for successful outcomes in various domains, and there are indications that they could also be important for positive outcomes in intergroup relations. Therefore, we tested whether contact self-efficacy and then contact effort serially mediate the relationship between personality and contact quality.

In sum, our research integrates social cognitive theory, theories of personality and empathy, and intergroup contact theory. In line with Turner and Cameron's (2016) model, we considered contact self-efficacy (i.e., the belief that one can successfully engage in intergroup contact) as antecedents of high-quality intergroup contact, via contact effort, in line with the social-cognitive theory (Bandura, 1986). We tested whether dispositional empathy as well as personality factors predict greater contact-self efficacy and effort, and in return contact quality.

The present research

The present research had three aims: Firstly, we included dispositional empathy in addition to personality. We tested two dimensions of dispositional empathy (empathic concern and perspective-taking) as well as the three personality factors of the Big Five that appeared most relevant to intergroup relations (extraversion, openness to experience, agreeableness) as predictors of contact quality. Secondly, we aimed at providing insight into the processes as to why dispositional empathy and personality may be associated with a higher quality of intergroup contact. To this end, we tested the effort individuals make in contact situations (contact effort) as well as the belief that they can successfully form social connections with the outgroup (contact self-efficacy) as mediators. Thirdly, we tested the effects in two different intergroup contexts, with Italian adolescents' contact with immigrants in Italy and White British adults' contact with South Asians in the United Kingdom. Study 1 focused on empathic concern and perspective-taking as well as extraversion and openness to experience as predictors of contact quality, and contact effort as mediator. Study 2 aimed at replicating and expanding these findings by including also agreeableness as a predictor, and contact self-efficacy as a further mediator. To generalize the findings, we included two different countries (Italy, UK) with two different samples (adolescents, adults). Previous research has emphasized the importance of studying intergroup relations not only in adult samples but also in adolescent samples. Adolescents are developing their ethnic identity during this period which can be challenging and have implications for wellbeing. Additionally, intergroup contact has particularly strong effects on attitudes in this sample (Wölfer et al., 2016), and can change personality in adolescents (Vezzali et al., 2018).

We tested the following hypotheses:

Hypothesis 1. Greater dispositional empathy (empathic concern, perspective-taking) is associated with a higher quality of intergroup contact (Studies 1, 2), in addition to personality, i.e., greater extraversion and openness to experience (Studies 1, 2), and agreeableness (Study 2).

Hypothesis 2. Contact effort mediates the association between dispositional empathy as well as personality and contact quality (Study 1).

Hypothesis 3. Contact self-efficacy and contact effort sequentially mediate the association between dispositional empathy as well as personality and contact quality (Study 2).

Table 1

Zero-Order Correlation Matrix for All Measures of Study 1.

Measures	1	2	3	4	5	6	*M*	*SD*
1. Empathic Concern	–						3.64	0.68
2. Perspective-Taking	.49**	–					3.23	0.61
3. Extraversion	.20**	.10	–				3.35	0.79
4. Openness	.31**	.29**	.13	–			3.28	0.72
5. Contact Effort	.36**	.26**	.19**	.17**	–		2.61	0.87
6. Contact Quality	.31**	.21**	.04	.15*	.42**	–	3.48	0.73

Note: * $p < .05$, ** $p < .01$ (two-tailed). All measures had a 5-point scale.

Study 1

Method

Participants and procedure

A total of 239 Italian adolescents (102 female, 136 male), aged between 14–21 years ($M = 16.25$, $SD = 1.48$), took part in the study. Of the original 290 participants, 51 had to be excluded because they did not meet the inclusion criterion of being Italian or they did not complete the Italian version of the questionnaire. An a priori power analysis (Soper, 2022) revealed that this sample is sufficient to run a multiple regression model with five predictors allowing a power of .80 to detect a small to medium effect size ($f^2 = .06$) (required sample size: 218). Participants, recruited in three high schools in Italy, completed a questionnaire during school hours. For underage participants, an informed consent, explaining aims, procedure, and participants' rights, was provided to parents. The study received ethical approval from the local institutional ethics committee (UREC/18.1.5.9).

Measures

All measures were assessed on 5-point scales (anchors reported below). Composite scores were created by the mean of the relevant items (items were recoded where appropriate), which yielded reliable scales as indicated by Cronbach's α. Higher scores represent higher expression on the relevant construct.

Dispositional empathy. The Interpersonal Reactivity Index (IRI; Davis, 1980, 1983) was used to measure dispositional affective and cognitive empathy, i.e., empathic concern (EC) and perspective-taking (PT) on 7 items each, ranging from 1 = *does not describe me very well* to 5 = *describes me very well*. Example items for empathic concern were "I often have tender, concerned feelings for people less fortunate than me", "Sometimes I don't feel very sorry for other people when they are having problems", and "When I see someone being taken advantage of, I feel kind of protective towards them". Example items for perspective-taking were "I sometimes find it difficult to see things from the "other guy's" point of view", "I try to look at everybody's side of a disagreement before I make a decision", and "I sometimes try to understand my friends better by imagining how things look from their perspective" (Cronbach's $α_{EC} = .74$, Cronbach's $α_{PT} = .59$, the reliability for perspective-taking was borderline).

Personality. Extraversion and openness to experience were measured using the Big-Five Inventory (John et al., 1991); see also Turner et al., 2014; Vezzali et al., 2018). Participants indicated how much each of a series of personality statements applied to them (common stem: "I see myself as someone who […]"), ranging from 1 = *disagree strongly* to 5 = *agree strongly*. Extraversion was measured with eight items, e.g., "is talkative", "is reserved", "is full of energy". Openness to experience was measured with 10 items, e.g., "is original, comes up with new ideas", "is curious about many different things", "is ingenious, a deep thinker" (Cronbach's $α_{Extraversion} = .81$, Cronbach's $α_{Openness} = .82$).

Contact effort. Participants reported on five items how much effort they make with contact with immigrants, e.g., "I try hard in social gatherings with immigrants", "I make an effort to make new friends with immigrants", "If I see an immigrant I would like to meet, I go to them instead of waiting for them to come to me" (adapted from Fan & Mak, 1998), ranging from 1 = *strongly disagree*, 5 = *strongly agree* (Cronbach's α = .81).

Contact quality. Participants reported the quality of their outgroup contact on six items how *forced-natural, unpleasant-pleasant, competitive-cooperative, superficial-deep, of inequality-of equality* they characterize their contact with people with immigrants on a semantic differential, 1 indicated the lower quality pole and 5 the higher quality pole (Capozza et al., 2013) (Cronbach's α = .77).[2]

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[2] We included further exploratory measures that were part of a larger project and not relevant to the current research question and analysis. Due to an error during data collection, agreeableness was not included in the questionnaire of Study 1.

Table 2
Results of Regression Analyses, Study 1.

Predictors	Outcome Variables	
	Contact Effort	Contact Quality
Empathic Concern	.34 (.09)***	.20 (.08)**
Perspective-Taking	.16 (.10)	.01 (.08)
Extraversion	.14 (.07)*	−.08 (.06)
Openness to Experience	.02 (.08)	.05 (.07)
Contact Effort	—	.31 (.05)***
R^2	.15	.22
f^2	.24	.53
F	9.80***	12.97***
df	(4, 225)	(5, 224)

Note: * $p < .05$, *** $p < .001$. Unstandardized regression coefficients are reported (standard errors in parentheses).
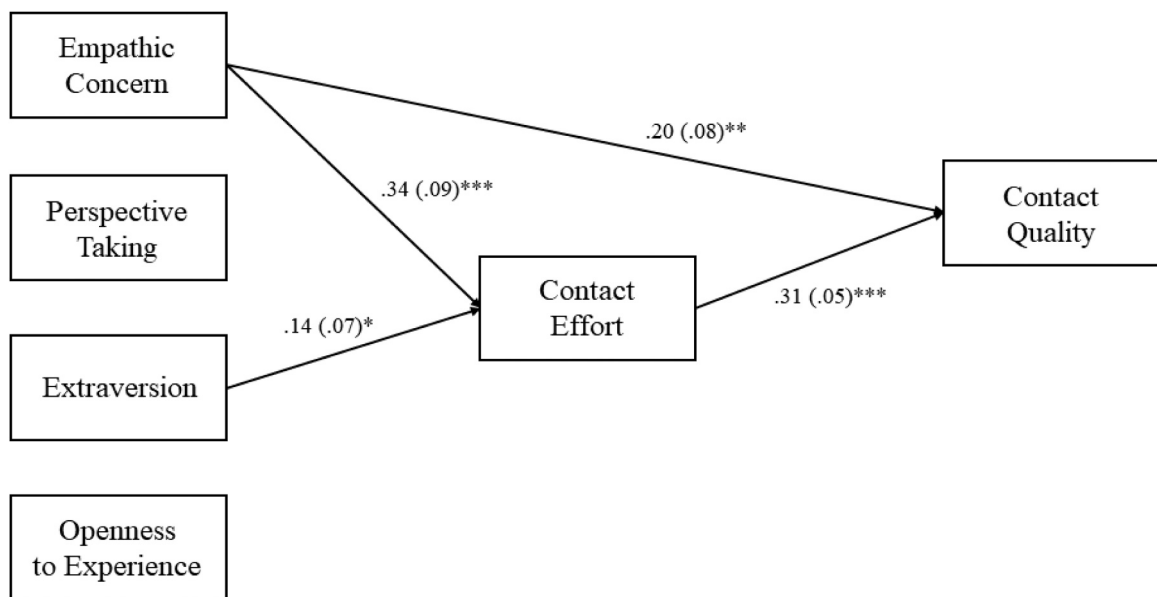

Fig. 1. Mediation analysis of the relation between dispositional empathy as well as personality and contact quality via the indirect effect of contact effort, Study 1. Unstandardized coefficients (standard errors in parentheses) are reported. Only significant regression coefficients are reported. * $p < .05$, ** $p < .01$, *** $p < .001$.

Results

Descriptive statistics and correlations can be found in Table 1. All measures (but not extraversion) significantly correlated with the contact quality. Correlations were small for openness to experience and perspective-taking, and moderate for empathic concern and contact effort. In addition, all personality and empathy measures correlated positively with contact effort, with indexes ranging from small to moderate. Extraversion had a small correlation with empathic concern, there were also moderate correlations between openness to experience and both empathy dimensions. Empathic concern was moderately correlated with perspective-taking.

Mediation analysis

A multiple regression mediation model was employed using the PROCESS macro for SPSS (Model 4; Hayes, 2022); bootstrapping procedures (5000 samples) were employed for assessing the significance of the indirect effects (Table 2, Fig. 1).[3] First, to test whether

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[3] While PROCESS allows for only one criterion variable, it is possible to run a mediation model with several predictors and mediators. To run a mediation model in PROCESS that includes several predictors, the same PROCESS model is run multiple times (i.e., as many as the number of predictors) to obtain all indirect effects. This means specifying one predictor while controlling for the other variables, and this analysis is repeated while changing the predictors. These are the same regressions (i.e., the regression coefficients R^2, *F* and *df* remain the same) and PROCESS calculates the relevant indirect effect each time.

dispositional empathy and personality were positively associated with contact quality (*H1*), we calculated the direct effects (without the mediator). Specifically, we ran a linear multiple regression in which the two empathy dimensions along with the two personality factors, were the predictor variables and contact quality was the outcome variable. Results showed a significant F change, $F(4, 225) = 6.90$, $p < .001$, and the predictor variables explained 11% of the outcome variance with an effect size of $f^2 = .12$. More importantly, the direct effect for empathic concern ($B = .31$, $SE = .08$, $p < .001$) was significant, greater empathic concern was associated with higher contact quality. The other predictors were not significant (perspective-taking, $p = .470$; extraversion, $p = .603$, openness to experience, $p = .406$).

Second, to test in the hypothesized model for *H2*, the two empathy dispositions (i.e., empathic concern and perspective-taking) and two personality factors (i.e., extraversion and openness to experience) were simultaneously included as predictors, contact effort was the mediator, and contact quality the outcome variable. Specifically, mediation was tested by running two regression mediation models: In the first model, contact effort was regressed on the IRI dimensions and the personality factors; in the second model, the dependent variable (i.e., contact quality) was regressed on the four predictor variables and the mediator. Result showed that extraversion and empathic concern were positively associated with greater contact effort, which in turn was significantly related to greater contact quality. In addition, the regression coefficient for the direct effect between empathic concern and contact quality was significant. Bootstrapping analysis confirmed that the two indirect paths were significant, specifically, contact effort mediated both the relation between empathic concern and contact quality, *mean effect* = .1061 ($SE = .04$), 95% CI [0.0387, 0.1897] and the relation between extraversion and contact quality, *mean effect* = .0447 ($SE = .02$), 95% CI [0.0004, 0.0911]; the other two mediation paths were not significant, from perspective-taking, *mean effect* = .0494 ($SE = .03$), 95% CI [−0.0129, 0.1214] and from openness to experience, *mean effect* = .0058 ($SE = .03$), 95% CI [−0.0487, 0.0598], to contact quality.

In sum, empathic concern (but not perspective-taking or the two personality factors) were positively associated with contact quality (partial support for *H1*). Contact effort mediated the paths from empathic concern and extraversion to contact quality; the paths from perspective-taking and openness to experience were not significant (partial support for *H2*).

Study 2

Study 1 revealed that empathic concern was a significantly and positively associated with the quality of contact Italians reported to have with immigrants. Individuals who expressed greater empathic concern reported a higher quality of intergroup contact. In addition, empathic concern and extraversion were positively associated with contact quality via the indirect effect of greater contact effort with the outgroup. Study 2 was designed to replicate the findings in a new intergroup context, contact with Asian British in the United Kingdom. Further aims were to test agreeableness as an additional personality predictor and contact self-efficacy as an additional mediator, to test sequential mediation.

Method

Participants and procedure

A total of 299 White British participants (149 women, 150 men), aged between 20–64 years ($M = 34.68$, $SD = 8.81$), took part in on online study on Qualtrics, recruited via Prolific. The sample size was determined with an a priori power analysis as in Study 1 revealing that about 293 participants allowed a power of .80 to detect a small to medium effect size ($f^2 = .05$) for a multiple regression model with 7 predictors. Compared to Study 1, we increased the effect size (and thus the number of participants) from .06 to .05 in order to have more reliability in testing the hypotheses. The study received ethical approval from the local institutional ethics committee (UREC/18.1.5.9).

Measures

Composite scores were created by the mean of the relevant items (items were recoded where appropriate), which yielded reliable scales as indicated by Cronbach's α. Higher scores represent higher expression on the relevant construct.

Dispositional empathy

Empathic concern (EC) and perspective-taking (PT) were measured as in Study 1 (scale anchor points were recoded from 0–4 to 1–5 to match Study 1) (Cronbach's $\alpha_{EC} = .86$, Cronbach's $\alpha_{PT} = .83$).

Personality

Extraversion and openness to experience were measured as in Study 1. Additionally, we included agreeableness measured on nine items, e.g., "tends to find fault with others", "is helpful and unselfish with others", "has a forgiving nature" (Cronbach's $\alpha_{Extraversion} = .84$, Cronbach's $\alpha_{Openness} = .81$, Cronbach's $\alpha_{Agreeableness} = .76$).

Contact effort

Contact effort was measured as in Study 1 on a 7-point Likert scale, using Asian British as the target outgroup (Cronbach's $\alpha = .88$).

Contact self-efficacy

The belief that one can build high-quality contact with friends from another ethnic group was measured using the Cross-Ethnic Friendships Self-Efficacy Scale (CEFSE; Bagci et al., 2019) on nine items, e.g., "For me, making new friends from other ethnic groups is easy", "I am confident I would be able to get close to a new friend from another ethnic group", "I believe I would have fun with a new friend from another ethnic group" on a 5-point Likert scale ranging from 1 = *strongly disagree* to 5 = *strongly agree* (Cronbach's α = .92).

Contact quality

Contact quality was measured as in Study 1 on a 7-point Likert scale, using Asian British as the target outgroup (Cronbach's α = .79).[2]

Results

Descriptive statistics and correlations can be found in Table 3. Contact quality had small and moderate positive correlations with all predictors; similarly, for contact self-efficacy and for contact effort. Positive small correlations were found between the three personality factors; they were also moderately correlated with both empathic concern and perspective-taking. Finally, a moderate correlation emerged between empathic concern and perspective-taking.

Mediation analysis

A multiple regression serial mediation model was employed to test our hypotheses. The analysis was ran using the PROCESS macro for SPSS (Model 6; Hayes, 2022), and the significance of the indirect effects were tested using bootstrapping (5000 samples). Results can be found in Table 4 and Fig. 2. First, to test whether dispositional empathy and personality were positively associated with contact quality (*H1*), we calculated the direct effects (without the mediator). Thus, similarly to Study 1, a multiple regression model in which the two IRI dimensions and the three personality factors were included as predictor variables, and contact quality was the outcome variable. The model showed a significant F change, $F(5, 293) = 10.58$, $p < .001$, and the predictors explained 15% of the outcome's variance with an effect size of $f^2 = .18$. Specifically, the direct effects for empathic concern ($B = .26$, $SE = .09$), $p = .005$) and openness to experience ($B = .21$, $SE = .09$, $p = .020$) to contact quality were significant, with greater empathic concern and greater openness to experience being associated with higher contact quality. Extraversion was marginally significant ($B = .14$, $SE = .08$, $p = .062$), perspective-taking ($p = .536$) and agreeableness ($p = .143$) were not significant.

Second, to test in the hypothesized model for *H3*, the two dispositional empathy dimensions (empathic concern, perspective-taking) and the three personality factors (extraversion, openness to experience, agreeableness) served as the predictor variables (included simultaneously in the regression model), contact self-efficacy and contact effort were the first and second level mediator respectively, and contact quality was included as the outcome variable. Specifically, we run three regression models: in the first one, contact self-efficacy was regressed on the two IRI dimensions and the three personality factors; in the second model, contact effort was regressed on the five predictor variables along with contact self-efficacy; finally, in the last model, contact quality was regressed on all the previous measures (i.e., the five dependent variables and the two serial mediators).

We found that empathic concern along with all the three personality factors were associated with greater contact self-efficacy; empathic concern and extraversion were also positively related to greater contact effort, as well as self-efficacy; higher self-efficacy was associated with greater contact effort; finally, both mediators were associated with greater contact quality. Regarding indirect effects, bootstrap results are reported in Table 5: Serial mediation via self-efficacy (level 1) and effort (level 2) was significant for all the predictors except perspective-taking.

In sum, results of Study 2 replicated and extended the findings from Study 1. In addition to empathic concern (extraversion was marginal), also openness to experience (but not perspective-taking and agreeableness) were significantly and positively associated with contact quality (partial support for *H1*). As in Study 1, contact effort mediated the relation between extraversion as well as empathic concern and contact quality. Extending Study 1, contact self-efficacy (level 1) and contact effort (level 2) mediated the relation between empathic concern (but not perspective-taking) as well as personality (extraversion openness to experience, agreeableness) and contact quality (partial support for *H3*).

Table 3
Zero-Order Correlation Matrix for All Measures of Study 2.

Measures	1	2	3	4	5	6	7	8	*M*	*SD*
1. Empathic Concern	—								3.88	0.74
2. Perspective-Taking	.46**	—							3.64	0.70
3. Extraversion	.29**	.16**	—						2.90	0.75
4. Openness	.27**	.27**	.24**	—					3.45	0.63
5. Agreeableness	.50**	.57**	.17**	.15*	—				3.58	0.58
6. Contact Effort	.46**	.27**	.27**	.20**	.26**	—			3.98	1.20
7. Contact Self-Efficacy	.38**	.28**	.26**	.27**	.34**	.41**	—		3.73	0.84
8. Contact Quality	.33**	.24**	.22**	.24**	.26**	.44**	.42**	—	4.83	1.00

Note: ** $p < .01$ (two-tailed). All measures had a 5-point scale, with the exception of contact effort and contact quality, which had a 7-point scale.

Table 4

Results of Regression Analyses, Study 2.

Predictors	Outcome Variables		
	Contact Self-Efficacy	Contact Effort	Contact Quality
Empathic Concern	.23 (.07)**	.53 (.10)***	.05 (.09)
Perspective-Taking	.02 (.08)	.09 (.11)	.03 (.09)
Extraversion	.14 (.06)*	.17 (.08)*	.05 (.07)
Openness to Experience	.20 (.07)**	.02 (.10)	.13 (.09)
Agreeableness	.28 (.10)**	−.09 (.13)	.10 (.11)
Contact Self-Efficacy	–	.37 (.08)***	.28 (.07)***
Contact Effort	–	–	.23 (.05)***
R^2	.22	.29	.28
f^2	.53	.64	.62
F	16.61***	20.05***	16.13***
df	(5, 293)	(6, 292)	(7, 291)

Note: * $p < .05$, ** $p < .01$, *** $p < .001$. Unstandardized regression coefficients are reported (standard errors in parentheses).
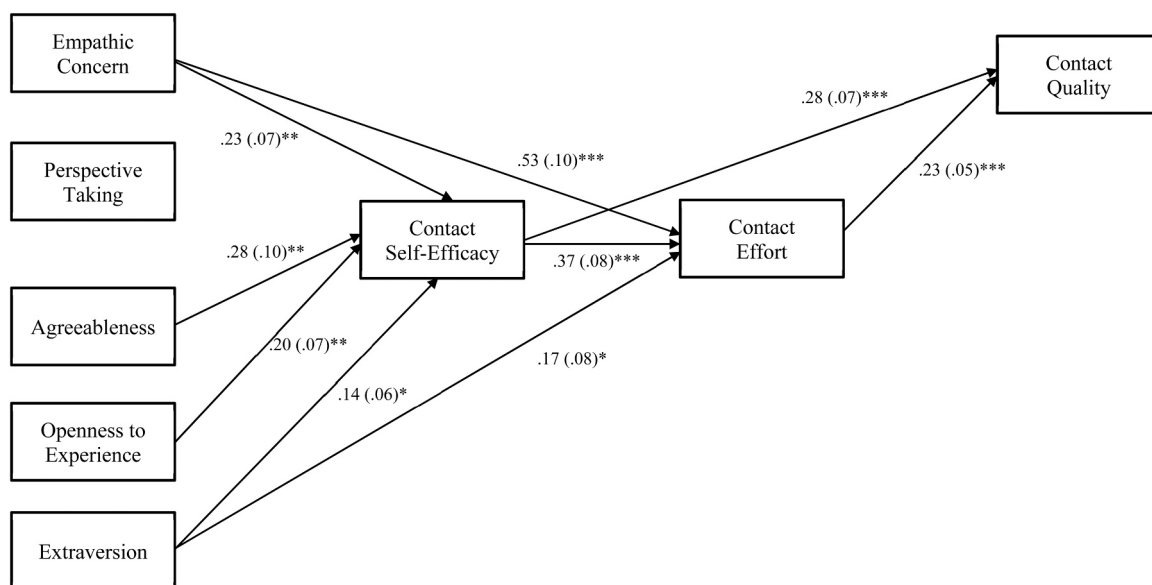

Fig. 2. Mediation analysis of the relation between dispositional empathy as well as personality and contact quality via the indirect effect of contact self-efficacy and contact effort, Study 2. Unstandardized coefficients (standard errors in parentheses) are reported. Only significant regression coefficients are reported. * $p < .05$, ** $p < .01$, *** $p < .001$.

Discussion

This research tested dispositional empathy, in addition to personality, as potential antecedents of the quality of intergroup contact. It further shed light onto the processes why dispositional empathy and personality may predict intergroup experiences, i.e., the effort and self-efficacy in intergroup contexts. Our findings support the value of integrating personality/dispositional, social cognitive and intergroup perspectives to promote harmonious intergroup relations.

In two studies, we found that dispositional empathy, in addition to personality, is a potential antecedent of contact quality. We also found that effort towards contact and contact self-efficacy are two underlying mechanisms of the relationship between dispositional empathy as well as personality and contact quality. Specifically, empathic concern and extraversion were associated with greater contact effort of adolescent Italians with immigrants and in return greater contact quality with immigrants in Study 1. Study 2 replicated effort towards contact as a mediator of the relationship between dispositional empathy as well as personality and contact quality in a sample of adult White British. In addition to empathic concern and extraversion, also openness to experience and agreeableness were significantly associated with contact quality. In addition to effort towards contact, contact self-efficacy was a second mediator. Specifically, we found serial, and single, mediation via contact self-efficacy (level 1) and contact effort (level 2). Empathic concern as well as all personality factors were significantly associated with greater contact self-efficacy, which in turn was associated with greater contact effort, which then was associated with greater contact quality.

Previous research has yielded mixed findings regarding which personality traits are predictors of contact. Our results are in line

Table 5
Unstandardized Indirect Effects in the Hypothesized Model, Study 2.

Predictor	First-Level Mediator	Second-Level Mediator	Outcome Variable	Mean Effect (Boot SE)	Percentile Confidence Interval (95%)
Empathic Concern	Contact Self-Efficacy	Contact Effort	Contact Quality	.0195 (.01)	[0.0062, 0.0479]
Perspective-Taking	Contact Self-Efficacy	Contact Effort	Contact Quality	.0016 (.01)	[−0.0100, 0.0183]
Extraversion	Contact Self-Efficacy	Contact Effort	Contact Quality	.0122 (.01)	[0.0025, 0.0315]
Openness to Experience	Contact Self-Efficacy	Contact Effort	Contact Quality	.0174 (.01)	[0.0051, 0.0435]
Agreeableness	Contact Self-Efficacy	Contact Effort	Contact Quality	.0237 (.01)	[0.0076, 0.0562]
Empathic Concern	Contact Self-Efficacy	—————	Contact Quality	.0631 (.03)	[0.0198, 0.1370]
Perspective-Taking	Contact Self-Efficacy	—————	Contact Quality	.0052 (.02)	[−0.0353, 0.0537]
Extraversion	Contact Self-Efficacy	—————	Contact Quality	.0394 (.02)	[0.0050, 0.0982]
Openness to Experience	Contact Self-Efficacy	—————	Contact Quality	.0565 (.03)	[0.0175, 0.1201]
Agreeableness	Contact Self-Efficacy	—————	Contact Quality	.0769 (.03)	[0.0265, 0.1583]
Empathic Concern	—————	Contact Effort	Contact Quality	.1243 (.04)	[0.0592, 0.2196]
Perspective-Taking	—————	Contact Effort	Contact Quality	.0202 (.03)	[−0.0293, 0.0829]
Extraversion	—————	Contact Effort	Contact Quality	.0402 (.02)	[0.0022, 0.0928]
Openness to Experience	—————	Contact Effort	Contact Quality	.0057 (.03)	[−0.0430, 0.0570]
Agreeableness	—————	Contact Effort	Contact Quality	−.0204 (.03)	[−0.0919, 0.0360]

with previous research that found that extraversion was associated with greater cross-group friendships (Turner et al., 2014), and openness to experience and agreeableness longitudinally predicted greater contact quality (Vezzali et al., 2018). We extend previous research by indicating that in addition to personality, dispositional empathic concern could be a predictor of contact quality (Kauff et al., 2021; Turner et al., 2020). For the first time, we consider dispositional empathy and personality together in the same study as antecedents of contact to test their predictive validity.

Furthermore, in line with Turner and Cameron's (2016) model, contact self-efficacy (Bagci et al., 2019) mediated the relationship between personality and contact quality. In line with the social-cognitive theory (Bandura, 1986), self-efficacy was associated with effort, and self-efficacy and effort serially mediated the relationship between personality and contact quality. Our findings also indicate that affective empathy may play a larger role than cognitive empathy (perspective-taking). This is in line with findings that affect may be particularly important in mediating contact effects (Pettigrew & Tropp, 2008).

This research contributes to the ongoing academic and political debate on how society manages the increasing diversity, and the opportunities for diverse interactions society offers. Gaining insight into which individuals report high quality contact and which do not will improve theories that inform intergroup interventions as well as inform policy makers in their new social policies.

By understanding which types of disposition and personality seek out intergroup experiences and attract outgroup members into their social network, we can tailor intergroup contexts and prejudice-interventions to capitalize on and maximize the benefits of contact and prevent the risks of negative contact. For example, for individuals who are more introverted, who have a higher need for certainty and structure, and who have difficulties with experiencing empathy towards others, contact situations may need to be designed differently than those for individuals high in extraversion, openness and agreeableness (see Kauff et al., 2021, for suggestions around social policy measures and interventions).

Furthermore, we can identify ways to increase ingroup members' effort and self-efficacy in contact with outgroups. Equipping individuals with behavioral scripts (e.g., as in imagined contact interventions) and other tools to increase self-efficacy (Turner & Cameron, 2016) could open new ways of dealing with the increase in diversity in many areas of society.

We provide consistent evidence in two different samples, adolescents in Italy and adults in the United Kingdom. A limitation of this research is that causal inferences cannot be drawn from cross-sectional data. While we know from longitudinal evidence by Vezzali et al. (2018) that there is a bidirectional relationship between personality factors and intergroup contact, future research may wish to study longitudinally whether dispositional empathic concern and perspective-taking are predictors of contact quality over time. Such research could also include neuroticism as personality trait in relation to intergroup anxiety and contact avoidance.

Conclusion

Today's increasingly multicultural societies provide opportunities and challenges of such diversity and the accompanying op-portunities for contact. This research further emphasizes an integration of dispositional, personality, social cognitive and intergroup theories in order to capitalize on the positive impact of contact on intergroup relations. Specifically, dispositional empathy as well as

personality factors such as extraversion, openness to experience, and agreeableness may facilitate effort towards and confidence in intergroup contact, and in return the quality of contact. These findings are important to understand when individuals seek contact, and can inform the design of prejudice-interventions that take into account idiosyncratic factors.

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The research received ethical approval from the local institutional ethics committee.

CRediT authorship contribution statement

Michèle D. Birtel: Writing – original draft, Funding acquisition, Project administration, Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Writing – review & editing. **Gian Antonio Di Bernardo:** Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Writing – review & editing. **Loris Vezzali:** Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Writing – review & editing. **Rhiannon N. Turner:** Conceptualization, Methodology, Writing – review & editing. **Richard J. Crisp:** Conceptualization, Methodology, Writing – review & editing. **Robin Martin:** Conceptualization, Methodology, Writing – review & editing.

Declaration of Competing Interest

All authors declare that there are no conflicts of interest.

Data Availability

Material and data are available at https://osf.io/pfsge/?view_only= 3f072f3a930344689f5288db2e1ef488.

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