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The Longitudinal Relationship Between Youth Intergroup Contact and Social Cohesion Outcomes in Two Divided Societies

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ABSTRACT

Intergroup contact has long been established as a prejudice-reduction tool in divided societies, with contact being particularly effective during adolescence. A large proportion of evidence, however, draws on cross-sectional surveys or analytical approaches that do not distinguish between- and within-person effects. In the present research, we address this by exploring the potential of intergroup contact longitudinally on social cohesion-related outcomes amongst youth (aged 14–19) in Belfast (Study 1, $N = 231$) and Bradford (Study 2, $N = 159$). Measures included intergroup contact, outgroup attitudes, intergroup anxiety, outgroup empathy and outgroup prosocial behaviour across three time points. Using random-intercept cross-lagged panel models, results demonstrate between-person associations of contact with our outcomes, but limited within-person changes. Our findings demonstrate the potential and limitations of intergroup contact for social cohesion-related outcomes for youth growing up in divided societies, pointing to the need for developmental-focused future research.

1 | Introduction

High levels of ethnic, religious and racial prejudice are a prevailing feature in many societies across the globe, especially those with a long history of political violence and ethnic tensions. One approach to reducing such prejudice is to implement strategies that promote positive and meaningful interactions between the groups in conflict, known as intergroup contact (Allport 1954). Substantial evidence shows that intergroup contact entails positive outcomes in different forms and amongst different groups (e.g., Paluck, Green, and Green 2019; Pettigrew and Tropp 2006). Perhaps unsurprisingly, therefore, intergroup contact principles are often applied to promote social cohesion-related outcomes in divided societies, including through education and other

community-focused interventions (Al Ramiah and Hewstone 2013; McKeown and Cairns 2012).

A large proportion of the evidence for the benefits of intergroup contact, however, comes either from cross-sectional studies that cannot establish causality or from longitudinal studies that do not clearly separate between-person variance (differences between individuals over time) from within-person variance (changes in individual values over time). Recent analyses using statistical techniques have found limited evidence of within-person reduction of prejudice following within-person increases in intergroup contact (Friehs et al. 2024; Hodson and Meleady 2024). Commentators have posited several reasons as to why this might be the case. One suggestion is that there

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could be ‘third variable’ explanations such that those who are more likely to hold negative attitudes due to individual difference factors are less likely to engage in contact (Hodson and Meleady 2024). Another is the idea that the impact of contact experiences on prejudice diminishes as they become more common for an individual over time (Friehs et al. 2024; Wölfer et al. 2016). There may, however, be a related developmental explanation whereby contact is most influential in reducing prejudice in early-to-mid childhood, with a continued reduced effect through adolescence and into adulthood due to the stabilisation of intergroup attitudes. Evidence for this assertion is supported by Merrilees et al. (2023) who found that the strength of the intergroup contact quality–prejudice relationship drops through adolescence, and by Wölfer et al. (2016) who found that intergroup contact as measured via friendship was a stronger predictor of adolescent compared to adult intergroup attitudes. Few studies, however, have differentiated between-person and within-person effects of contact on prejudice amongst youth. An exception is Friehs et al. (2024) who examined contact effects on attitudes over time with a sample of school children in England ($M_{\text{age}} = 12.11$ years) and found evidence for between-person but not within-person effects of contact on prejudice. It remains unclear, however, whether the lack of observed effects applies to mid-late adolescence, and further, to outcomes beyond prejudice reduction. We know, for example, that contact has proven to be associated with lower levels of intergroup anxiety (Pettigrew and Tropp 2008), higher levels of empathy (Pettigrew and Tropp 2008) and to encourage prosocial actions targeted towards outgroup members (Koschate et al. 2012; McKeown and Taylor 2018), but whether this can be observed when tested for within-person changes remains untested to date.

The present research, therefore, aims to examine the between- and within-person potential of the quantity and quality of intergroup contact experiences in adolescence on outcomes that relate to social cohesion, including outgroup attitudes, outgroup empathy, intergroup anxiety and outgroup prosocial behaviour. We assess these relationships amongst youth (aged 14–19) growing up in Belfast and Bradford through a three-time-point survey study. Youth in both settings are experiencing the effects of past and present ethno-religious tensions, which highlights the importance of further exploring the potential of intergroup contact to promote social cohesion agendas.

1.1 | Intergroup Contact Theory

For decades, intergroup contact has been considered one of psychology’s most effective strategies for improving intergroup relations. Inspired by early observations of the benefits of desegregation on racial attitudes, Allport’s (1954) ‘contact hypothesis’ holds that encouraging interactions across group lines is key to reducing hostilities and improving intergroup relations. According to the original formulation of the contact hypothesis, contact works best under four conditions: cooperation, common goals, equal status and social/institutional support. Reflecting its intuitive appeal and applied potential, this hypothesis has become one of the most extensively tested ideas in psychology. Multiple meta-analytic integrations attest to the robust, positive impact of intergroup contact on prejudice (e.g., Davies et al. 2011;

Lemmer and Wagner 2015; Pettigrew and Tropp 2006). Across different implementations, participant populations and bases for group membership, more contact is generally associated with less prejudice, even when not all Allport’s contact conditions are met. This is the case for both intergroup contact quantity (how often interactions occur) and intergroup contact quality (how positive interactions are).

The contact hypothesis has now evolved into a sophisticated theoretical framework, more complex and complete than Allport’s (1954) original formulation, specifying how, when and why contact is associated with reduced prejudice (Hodson and Hewstone 2013; Pettigrew and Tropp 2011). Intergroup contact has been found, for example, to play an important role in reducing intergroup anxiety, promoting empathy (Pettigrew and Tropp 2008) and, in turn, reducing prejudice. These emotive factors can also have knock-on effects on indicators of social cohesion. Reducing intergroup anxiety through imagined contact can, for example, lead to more contact motivation and a lower tendency to avoid outgroup members (Turner, West, and Christie 2013). There is also evidence that empathy can lead to more positive attitudes and, in turn, to actions that have benefits for outgroup members and society at large (see the empathy-attitudes-action model; Batson et al. 1997; 2002). A study conducted amongst children and young people in Northern Ireland, for example, found that empathy can impact outgroup attitudes, and, in turn, not only individual-helping actions, but also actions that are indicative of structural and cultural change (Taylor and McKeown 2021) that are arguably linked to social cohesion. Evidence can also be found for the direct effects of contact on prosocial actions, including those intended to benefit outgroup members (Koschate et al. 2012; McKeown and Taylor 2018). Outcomes such as these are arguably crucial for building more cohesive societies. Taken together, there is significant evidence that contact can reduce prejudice and can have wider outcomes beyond prejudice reduction that have potential to impact individuals, groups and society at large. There are, however, several methodological critiques of contact research that must be acknowledged, which we discuss now.

1.2 | Methodological Critiques of Contact Research

A significant challenge to the apparent effects of intergroup contact arises through the cross-sectional nature of many of the studies on which the evidence base is constructed, as they cannot establish causality. Around 71% of the studies included in the seminal meta-analysis of Pettigrew and Tropp (2006) were cross-sectional (Christ and Wagner 2013), and only 5% of the studies were experimental, varying widely in methodology and outgroups (Paluck, Green, and Green 2019). Whilst experimental evidence is an ideal way to test the causal effects of contact and has shown reductions in prejudice, experiments are less frequently conducted, with most studies being short term and involving limited and infrequent contact (Paluck, Green, and Green 2019). These observations point to a need to consider alternative designs and approaches if we are to better understand contact effects over time—whether they exist and whether they persist. Longitudinal research holds considerable promise to measure such naturally occurring psychological processes as they unfold.

Longitudinal research on intergroup contact is growing. A challenge, however, is that the majority of studies that have used longitudinal designs to explore contact effects have relied on traditional methods of analysis such as the cross-lagged panel model (CLPM) (e.g., Binder, Zagefka, and Brown 2009; Dhont, Van Hiel, and Hewstone 2014; Swart et al. 2011), which whilst valuable are unable to clearly separate between-person variance from within-person variance. This has implications for the conclusions that can be drawn because, whilst we would expect to find that in general people who engage in more contact report lower levels of prejudice (between-person effects), we should also expect to see individual variation such that someone who reports having higher levels of contact also reports lower levels of prejudice later (within-person effects). Here, the proportion of variance that is stable across time can be understood as between-person variance, whilst the proportion of variance that reflects individual variability can be understood as within-person variance. While between-person differences in the independent variable are not necessarily problematic for causal inferences, between-person differences reflected in the dependent variable can result in inaccurate conclusions when using analytical methods such as CLPMs. This is due to the influence of unobserved third variables on the independent and the dependent variables. In such cases, significant cross-lagged paths are assumed to represent evidence that contact induces change that subsequently reduces prejudice, but they may instead reflect stable differences (between people) of third variables. Alternative statistical approaches are therefore essential to differentiate within-effects from between-effects more unequivocally, to move closer to a causal analysis in contact research and to better understand the nature and effects of intergroup contact on prejudice reduction and beyond.

1.3 | Examining Within-Person Changes and Between-Person Differences

Recent analyses using a new statistical technique capable of separating within-person variance from between-person variance—the ‘random intercept cross-lagged panel model’ (RI-CLPM)—have yielded significant between-person negative associations between contact and prejudice, but no evidence of within-person change of prejudice following within-person change of contact (Friehs et al. 2024; Hodson and Meleady 2024). These findings are incongruent with mainstream thinking about contact as a process capable of producing changes within people over time in the form of lower prejudice. Indeed, between-person associations without within-person changes would be consistent with third-variable explanations, according to which the relation between contact and prejudice results from differences in personality (i.e., the type of people that are involved in contact also report lower prejudice) and not from a process in which contact changes attitudes. Therefore, it is necessary to ask why no associations of within-person changes are being observed.

It is argued here that one reason evidence has not been found that within-person change in intergroup contact predicts within-person change in prejudice in these analyses is because we need to consider if and how intergroup effects vary over time and for different age groups. Evidence shows, for example, using a five-wave study amongst youth in Northern Ireland that the

strength of the relationship between intergroup contact quality and prejudice grows through adolescence, but then drops from age 16 onwards (Merrilees et al. 2023). There is also evidence that the relationship between contact, measured as friendship through social networks, and prejudice reduction is stronger in adolescence (aged 13–19) than in adulthood (aged 20–26, Wölfer et al. 2016). It could be that these effects are due to the stabilisation of attitudes during adolescence (Wölfer et al. 2016) and as such, that contact may exert most of its within-person influence in early-to-mid childhood, but then declines through adolescence and into adulthood (leaving between-person differences to drive more of the effects). That is, contact may exert meaningful within-person effects mainly at a specific developmental stage.

To our knowledge, few studies have considered whether there is evidence for between- and within-person effects of contact during adolescence as a critical period of development. An exception is Friehs et al. (2024), who analysed social network data from a five-wave social network sample of 11–12 year olds in England to explore this and found no evidence of within-person change in the contact–prejudice relationship. The authors note that this finding may be due to a reduction of contact effects on prejudice over time, i.e., the first series of intergroup interactions could be particularly potent in reducing prejudice, but this effect could reduce and stabilise with later repeated interactions. A connected possibility, however, is that there are age-related effects. In other words, it could be that between–within person dynamics play out differently across stages of adolescence as indicated by previous research exploring the contact–prejudice relationship over time (Merrilees et al. 2023; Wölfer et al. 2016). It is the nature of contact experiences in adolescence that we focus on here.

2 | The Present Research

The present research pushes forward current knowledge by exploring the potential impact of contact quantity and quality on outcomes relevant to social cohesion for young people growing up in socially divided societies. Previous research adopting an RI-CLPM approach has explored the effects of contact measured by quantity or friendship in the domain of harmony (i.e., liking; Friehs et al. 2024; Hodson and Meleady 2024), and the domain of equality (i.e., collective action, solidarity; Górska and Tausch 2023; Sengupta et al. 2023), using data mostly from adult samples. Here, we expand on these contributions in two ways by considering the longitudinal effects of both intergroup contact quantity and intergroup contact quality: (1) amongst youth growing up in divided contexts and (2) on outcomes related to social cohesion that include outgroup attitudes, intergroup anxiety (measured as comfort), outgroup empathy and outgroup prosocial behaviour. Whilst we do not test developmental processes specifically, we focus on exploring between- and within-person contact effects during adolescence, as this may be one of the critical stages in which to explore the nature of contact and its consequences, as well as a time in which to intervene in promoting contact. If, for example, we find that within-person effects of contact exist at a specific developmental stage, then this suggests that contact is a relevant intervention, but one that needs to be introduced earlier than has been the focus in the field.

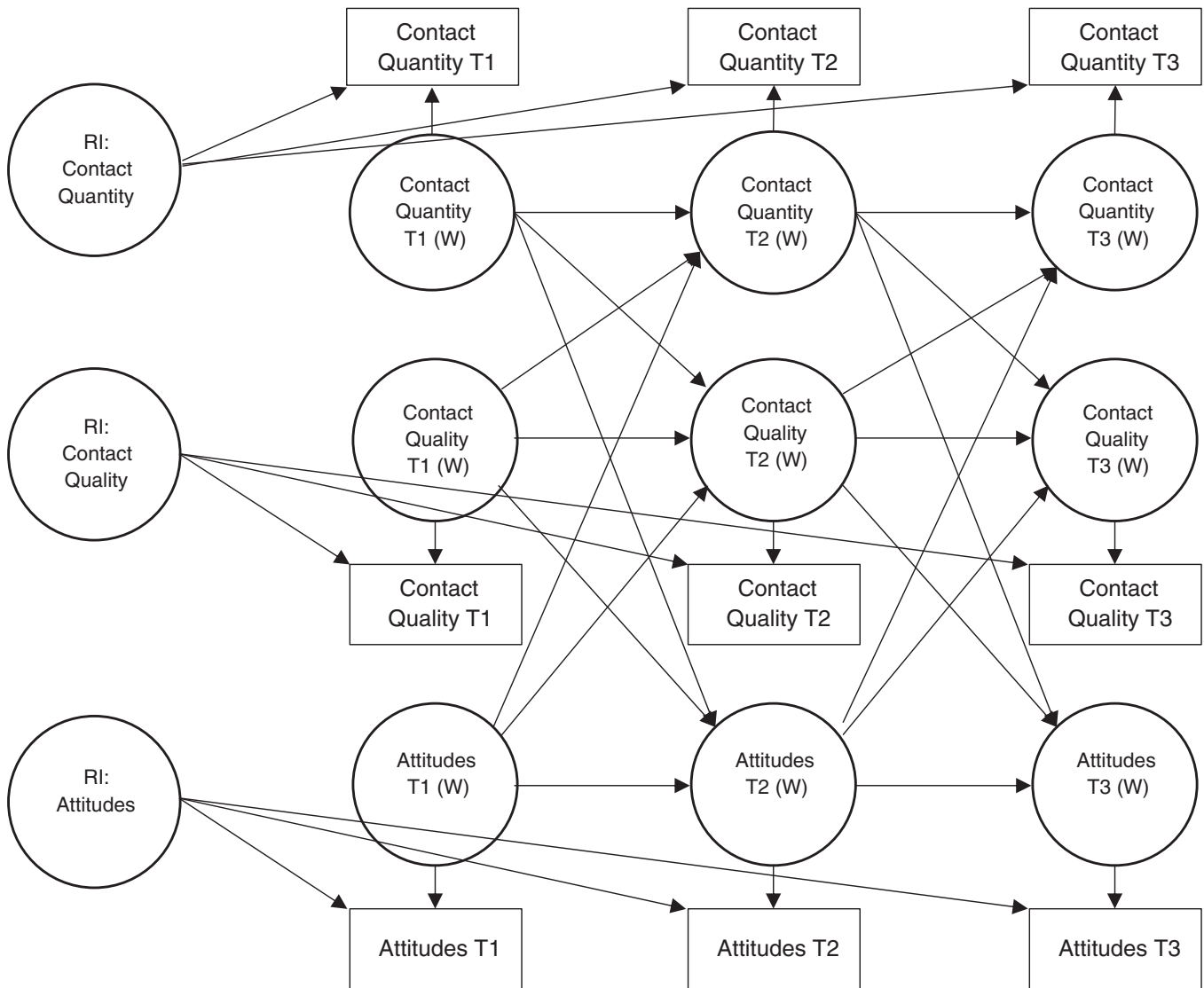


FIGURE 1 | Representation of our conceptual model used in our RI-CLPM analyses. The figure depicts the model with the outcome variable ‘outgroup attitudes’ as an example. In our statistical analyses, one model is specified for each of the outcome variables, which were: outgroup attitudes, outgroup empathy, intergroup anxiety and outgroup prosocial behaviour. The latent variables (i.e., random intercepts and centred variables) are derived from the measured variables. The random intercepts are marked with ‘RI’. The centred variables (marked with ‘W’) reflect fluctuations around individual average values (within-person variance). Of central interest in the RI-CLPM are the cross-lagged paths between the centred variables. (Not shown in the figure are the errors of the centred variables at T2 and T3; neither shown are the permitted correlations between the random intercepts, between the centred variables at T1 and between the errors of the centred variables within T2 and within T3.)

A simplified version of our conceptual and RI-CLPM model is presented in Figure 1. Here, we include only one outcome variable as an example, to ease readability.

To achieve our aims, we draw on three-time-point survey data collected as part of a larger study on youth intergroup contact in two settings: Belfast, Northern Ireland (Study 1), and Bradford, England (Study 2). This multicontext analysis enables us to examine contact effects in one historical and ongoing conflict between ethno-religious groups and in another context of more contemporary division between ethnic groups. Whilst previous RI-CLPM studies have been conducted in societies with ethnic tensions such as England (Friehs et al. 2024), Germany (Friehs et al. 2024) and New Zealand (Sengupta et al. 2023), to our knowledge, few have explored within-person effects of contact

in what might be best described as conflict or post-conflict settings where contact tends to be less frequent and perhaps even less positive due to the nature of segregated communities and inequalities that continue to permeate society. We explain more about each of these contexts below.

2.1 | Research Context

Youth growing up in Belfast and Bradford are experiencing the effects of past and present ethnic tensions. The Northern Ireland context can be understood as a setting marked by protracted ethno-religious conflict between those who wish Northern Ireland to remain part of the UK (Protestant) and those who wish for reunification with Ireland (Catholic). Despite the 1998 Peace Agreement, violence remains (Taylor et al. 2016) and community

relations are a government priority. For example, the Together: Building a United Community Strategy (The Executive Office [Northern Ireland] 2013) is a key focus of the Belfast City Council's Good Relations Programme.

Whilst Bradford does not have the same historical legacy of conflict as Belfast, it is an ethnically, religiously and culturally diverse context and thus a pertinent case of intergroup dynamics to explore the effects of youth intergroup contact. According to the 2021 census, most individuals living in Bradford belong to the White/White British (56.7%) or Asian/Asian British (32.1%) communities. Bradford is a site of integration focus in the Government's Integrated Communities Strategy Green Paper (HM Government 2018) due to historical and continued ethnic tensions. For example, in 2001, the Bradford riots, which occurred due to increased tensions between the Asian and White British communities following an antifascist rally in the city, resulted in significant damage to property and to individuals, leading to a large number of arrests (Waddington 2010). Due to instances like this, promoting social cohesion is a priority in the Bradford context, and policies such as 'getting along' (promoting greater interaction) are a key pillar in the Bradford for Everyone Strategy (Stronger Communities Partnership 2019). Given the socially divided nature of both Belfast and Bradford, understanding the potential effects of intergroup contact for prejudice reduction and beyond is vital to inform policy and practice in both settings. In the present research, we focus specifically on contact with and attitudes towards the dominant ethno-religious groups in each of the two contexts: Protestant and Catholic youth growing up in Belfast (Study 1) and White/White British and Asian/Asian British youth growing up in Bradford (Study 2).

3 | Study 1

Study 1 explores the within- and between-person effects of contact quantity and quality on outgroup attitudes, outgroup empathy, intergroup anxiety and outgroup prosocial behaviour amongst youth in Belfast, Northern Ireland.

3.1 | Sample

A total of 488 participants, recruited from three participating secondary schools in Belfast, filled in the survey at Time 1, 419 participants at Time 2 and 460 at Time 3. Of those participants, we were able to match data for 282 across all the three time points. As we were interested specifically in Catholic-Protestant relations, we removed 51 participants who could not be assigned to either the Catholic or Protestant community and/or who were not born in Northern Ireland, Ireland or the wider UK context. This resulted in a final sample of 231 participants ($M_{age, Time1} = 14.7$ years, $SD_{age, Time1} = 0.71$; 36% female, 58% male, 6% other gender or not stated; 34% Catholic, 66% Protestants). Of the total sample, 30% reported receiving free school meals (an indicator of low socio-economic status), 2% described the financial situation of their family as not very well off or as not at all very well off, 55% as average and 35% as well off or very well off (7% missing values).

3.2 | Recruitment

Due to our interest in exploring interactions between Catholic and Protestant youth, we initially aimed to recruit ethno-religiously mixed schools in Belfast to take part in the research. Schools were selected using publicly available demographic school data on the Northern Ireland Department of Education website. All secondary-level schools in Belfast where the composition of the Catholic or Protestant community was no more than 60% of the pupil population ($n = 7$) were contacted in July 2021, and two agreed to take part in the research: one grammar school (1438 enrolled, 44% Protestant) and one integrated school (628 enrolled, 44% Protestant). A second school recruitment round was carried out in September 2021 with a further 11 schools with no more than 85% of youth from either the Catholic or Protestant community contacted to take part. This resulted in one additional school agreeing to participate (controlled boys' school, 1093 enrolled, 85% Protestant).

Of the participants in the final, matched, sample used for the data analysis ($n = 231$), 52% were from the grammar school ($n = 120$), of which 33% reported having a Catholic background and 67% reported having a Protestant background. In the integrated school ($n = 99$), which accounted for 32% of the final sample, 48% of participants reported having a Catholic background and 52% reported having a Protestant background. In the controlled school ($n = 38$, 16% of the final sample), 100% of participants reported having a Protestant background.

3.3 | Measures

In addition to a series of demographic questions (i.e., age, gender, community background and free school meal as a proxy for socio-economic status), youth participants completed the following survey measures:

3.3.1 | Contact Quantity

Adapted from Tam et al. (2009), contact quantity was measured by asking participants to rate on a four-item scale ranging from 0 (*none*) to 3 (*a lot*) how much contact they have with each of the Protestant and Catholic communities 'at school', 'in your neighbourhood', 'across all social situations' and 'online/on social media'. Responses to this question for the outgroup community only were considered (e.g., if Protestant, responses about Catholics were selected). A higher score implied higher frequency of outgroup contact (Time 1: $\alpha = 0.76$; Time 2: $\alpha = 0.74$; Time 3: $\alpha = 0.75$). To assess measurement invariance of contact quantity across the three measurement waves for this sample, we specified confirmatory factor analysis models. All four contact quantity items were used as indicators for one latent variable per time point while allowing the residual variances of the same items to correlate across waves. The configural models yielded acceptable fits (CFI = 0.971; TLI = 0.951; RMSEA = 0.062; SRMR = 0.043). The constraints testing for metric invariance did not lead to a significant deterioration of the fit ($p = 0.359$). The additional constraints testing for scalar invariance neither led to a significant deterioration of the fit compared to the previous model ($p = 0.072$).

3.3.2 | Contact Quality

To measure contact quality, youth responded to a series of bipolar adjectives regarding how they find it when they meet people from the Protestant and Catholic communities in general, adapted from Tam et al. (2009). This included: *do you find the contact 'pleasant or unpleasant?'* (0 = *very unpleasant*; 5 = *very pleasant*), *'competitive (trying to "win" or "beat" each other) or cooperative (where you work together)?'* (0 = *very competitive*; 5 = *very cooperative*), *'casual (e.g., conversations that don't really matter) or meaningful (e.g., having deep or personal conversations)?'* (0 = *very casual*; 5 = *very meaningful*). An additional item was developed to measure online contact quality: *'When you interact with people online from the following communities, do you find the contact pleasant or unpleasant'* (0 = *very unpleasant*; 5 = *very pleasant*). To examine outgroup contact specifically, we used only the items that refer to the outgroup (e.g., for Catholic participants we chose their responses about interactions with Protestants).

To assess measurement invariance of outgroup contact quality across the three measurement waves, we specified confirmatory factor analysis models, using the four contact quality items as indicators for a latent variable per time point and allowing the residual variances of the same items to correlate across time points. Since the configural models did not lead to an acceptable fit, we omitted the third item above from the scale, which had the lowest factor loadings (Time 1: $\alpha = 0.72$; Time 2: $\alpha = 0.75$; Time 3: $\alpha = 0.77$). The resulting three-item measure resulted in good fits in the configural models (CFI = 0.995; TLI = 0.988; RMSEA = 0.034; SRMR = 0.033). The constraints testing for metric invariance did not lead to a significant deterioration of the fit ($p = 0.566$). The additional constraints testing for scalar invariance neither led to a significant deterioration of the fit compared to the previous model ($p = 0.076$).

3.3.3 | Outgroup Attitudes

To assess outgroup attitudes, youth completed a feeling thermometer (Cairns et al. 2006) asking them to rate how favourable they feel towards the outgroup (Protestant or Catholic) community (0 = unfavourable, 100 = favourable). Before entering this variable into the statistical models, it was divided by a constant, in this case by 20. This procedure is recommended by Muthén and Muthén (1998–2017: 524) who specify observed variables with variances greater than 10 should be divided by a constant.

3.3.4 | Outgroup Empathy

To measure outgroup empathy, two items were adapted from Hughes et al. (2013). Youth were asked to rate the following statements: *'I care about the problems faced by the [respective outgroup]'* and *'I find it easy to see things from the point of view of the [respective outgroup]'*. The scales ranged from 0 (*strongly disagree*) to 5 (*strongly agree*). The Spearman–Brown coefficient was $\rho = 0.69$ for Time 1, $\rho = 0.80$ for Time 2 and $\rho = 0.82$ for Time 3 (Eisinga, Grotenhuis, and Pelzer 2013, demonstrating that the Spearman–Brown coefficient is the most suitable reliability measure for two-item scales).

3.3.5 | Intergroup Anxiety

Youth were asked to respond to a single item statement on their levels of comfort when interacting with members of the outgroup as an indicator of intergroup anxiety, specifically: *'How comfortable do you feel talking to people from the following communities (more than just saying hello)?'*. The scale ranged from 0 (*very uncomfortable*) to 5 (*very comfortable*) and participants reported feelings towards interacting with both the Catholic and Protestant communities. Here, we focus on responses for outgroup contact only. Responses to this item were reverse coded, so that a high score indicates high levels of intergroup anxiety.

3.3.6 | Outgroup Prosocial Behaviour

Youth were first asked to indicate how often they engaged in concrete acts of prosocial behaviour (such as helping, cooperation and concern) (adapted from Taylor et al. 2014). They were then asked to use this list to report how often they implemented these acts towards the Protestant or Catholic communities on a scale ranging from 0 (*never*) to 5 (*often*). It is responses to this single item that we used to measure outgroup prosocial behaviour in the present research. Again, we focus only on responses to the item referring to the outgroup community specifically.

3.4 | Procedure

Prior to data collection in the three participating schools, ethical approval was obtained from the University of Bristol and information sheets were sent out to all potential participant's parents providing them with the opportunity to opt out their young person as well as to participate in the research themselves. Survey data were collected in each of the three Belfast secondary schools during November 2021–January 2022 (Time 1), March 2022 (Time 2) and May 2022 (Time 3). Surveys took place during school hours and in the presence of classroom teachers and researchers. In two of the schools, surveys were completed in computer rooms via Qualtrics whilst in the third school, they were completed using paper and pen versions. Each classroom teacher was provided with a survey information pack prior to data collection and following this, all pupils were informed about the purpose of the research, asked to read the information sheet provided and if they wished to take part, to confirm written consent. The classroom teachers and researchers were available to answer any questions during the 30–40-minute data-collection period. All participants who completed a survey were given a £10 Amazon voucher as remuneration. Each school was also given a £500 payment at the end of the project.

3.5 | Data Analysis Plan

In our statistical analyses, we examined the effects of both contact quality and contact quantity on our outcome variables using RI-CLPMs in Mplus (version 8.5, Muthén and Muthén 1998–2017). The RI-CLPMs were specified as proposed by Hamaker (2015) as well as Mulder and Hamaker (2021), separating between-person variances from within-person variances of both the independent and the dependent variables. This was implemented by specifying

random intercepts as latent variables for all independent and dependent variables. There is one random intercept as a latent variable for each independent variable (contact quantity and contact quality) and each dependent variable (outgroup attitudes, outgroup empathy, intergroup anxiety and outgroup prosocial behaviour), while each random intercept latent variable has the respective measured variable of all waves as an indicator. For example, there is one latent variable reflecting the random intercept of contact quality which has the measured contact quality variables of Time 1, Time 2 and Time 3 as its three indicators. The factor loadings are set as 1. These latent variables are allowed to correlate, representing correlation of between-person differences (similar to cross-sectional correlations). Group membership, Catholic or Protestant, was used as a predictor for the random intercepts.

Additionally, each measured variable is an indicator for another latent variable which captures the deviation of the measured variable from the personal average value (of each individual) at each time point. These time-specific latent variables thus reflect within-person variations of the respective construct. Structural relations were specified between the within components analogously to the traditional cross-lagged panel models, specifying auto-regressive and cross-lagged effects. The difference to the traditional cross-lagged panel model is that within RI CLPMs, within-person deviations from the respective individual average are used when looking at cross-lagged and autoregressive effects. For example, within-person deviations of attitudes at Time 2 are regressed on within-person deviations of attitudes at Time 1 and on within-person deviations of contact quality at Time 1.

We specified separate models for each outcome variable to prevent estimation problems resulting from a high number of parameters. While there is no universal direct relationship between the number of parameters and the required sample size, models with more parameters tend to require larger sample sizes (Jackson 2003; Kline 2016). This approach led to four models, one for each of the outcome variables: outgroup attitudes, outgroup empathy, intergroup anxiety and outgroup prosocial behaviour. Cross-lagged effects of independent variables on the respective dependent variable were specified. In addition, cross-lagged effects of the dependent variable on the independent variables were specified. Autoregressive effects were also specified for all variables. Full information maximum likelihood estimation was used to deal with missing values in our dataset.

3.6 | Results

Descriptive statistics and bivariate correlations between all variables at each time point are presented in Table 1. Each of the four RI-CLPM models, one associated with each outcome variable, yielded a good fit to the data (see Table 2 for fit indices) using the criteria specified by Hu and Bentler (1999) whereby cut-off values close to 0.95 of the CFI and the TLI, values close to 0.08 of the SRMR and values close to 0.06 of the RMSEA are indications of a good fit.

At the between-person level, we found that contact quantity was positively correlated with outgroup attitudes ($B = 0.30, SE = 0.05, p < 0.001$), outgroup empathy ($B = 0.30, SE = 0.05, p < 0.001$) and

outgroup prosocial behaviour ($B = 0.22, SE = 0.03, p < 0.001$), and negatively correlated with intergroup anxiety ($B = -0.25, SE = 0.04, p < 0.001$). Similarly, we found that contact quality was positively correlated with outgroup attitudes ($B = 0.38, SE = 0.09, p < 0.001$), outgroup empathy ($B = 0.38, SE = 0.07, p < 0.001$) and outgroup prosocial behaviour ($B = 0.25, SE = 0.05, p < 0.001$), and negatively correlated with intergroup anxiety ($B = -0.37, SE = 0.07, p < 0.001$). These between-person correlations indicate the degree to which the participants' average levels of contact (across time points) are associated with participants' average levels of the respective dependent variable (across time points). The correlations are thus similar to traditional cross-sectional correlations and the findings align with what would be expected based on the contact literature, that is, the positive effects of high quality and frequent contact on outcomes being associated with stronger social cohesion.

The statistical within-person cross-lagged effects on the dependent variables in the four models are reported in Table 2. A within-person variable reflects, for each time point and person, the deviation from an individual's average value. Between these within-person variables, cross-lagged and autoregressive paths were specified, analogously to the paths in traditional cross-lagged panel models. These paths thus represent associations between deviations from individual average values, which are separate from between-person differences. Of special interest in the present context are the cross-lagged paths which are linking the individual's deviation from the individual's average contact score with the individual's deviation from its average attitude score at the following wave (see Hamaker, Kuiper, and Grasman 2015). Significant effects were observed for contact quantity at Time 1 on more positive attitudes at Time 2 and contact quality at Time 2 on all four dependent variables at Time 3. These statistical within-person cross-lagged effects reflect associations between time-shifted deviations from individual average values. These within-person effects thus indicate that individual deviations (from the individual average values) in contact predicted changes in the dependent variable at the following time point (in the form of individual deviations of the dependent variable when controlling for the deviations of the previous time point). These findings demonstrate some, but at the same time, limited evidence for within-person change of contact on social cohesion outcomes.

3.7 | Discussion

The aim of Study 1 was to explore the between- and within-person variances of contact quantity and quality in relation to outgroup attitudes, outgroup empathy, intergroup anxiety and outgroup prosocial behaviour amongst youth in Belfast. Similar to previous RI-CLPM studies (Friehs et al. 2024; Hodson and Meleady 2024), we demonstrate evidence for between-person differences of contact quality and quantity in relation to all the measured outcomes with more frequent and better-quality contact being associated with more positive outgroup attitudes, higher levels of outgroup empathy, lower levels of intergroup anxiety and more outgroup prosocial behaviour coupled with limited evidence for within-person effects. Specifically, we find that contact quantity at Time 1 entailed more positive outgroup attitudes at Time 2 and that contact quality at Time 2 entailed more positive outgroup attitudes, higher outgroup empathy, higher engagement

TABLE 1 | Means, standard deviations and intercorrelations for the main variables of the Belfast sample.

Measure	M	SD	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Contact Quantity T1	1.67	0.70	0.62	0.66	0.48	0.44	0.40	0.48	0.46	0.46	0.48	0.39	0.40	-0.34	-0.37	-0.41	0.55	0.40	0.43
2. Contact Quantity T2	1.69	0.66		0.55	0.38	0.50	0.28	0.42	0.50	0.43	0.39	0.49	0.31	-0.30	-0.42	-0.34	0.44	0.45	0.35
3. Contact Quantity T3	1.65	0.65			0.44	0.39	0.47	0.42	0.35	0.45	0.41	0.34	0.40	-0.27	-0.33	-0.43	0.43	0.43	0.46
4. Contact Quality T1	3.47	0.87				0.53	0.54	0.61	0.43	0.43	0.47	0.43	0.43	-0.45	-0.39	-0.45	0.48	0.30	0.36
5. Contact Quality T2	3.37	0.98					0.63	0.53	0.63	0.57	0.42	0.61	0.44	-0.26	-0.67	-0.48	0.54	0.47	0.45
6. Contact Quality T3	3.49	0.92						0.43	0.40	0.51	0.34	0.31	0.41	-0.30	-0.41	-0.63	0.43	0.32	0.44
7. Intergroup Attitudes T1	3.56	1.20							0.62	0.62	0.51	0.51	0.51	-0.39	-0.46	-0.45	0.55	0.38	0.44
8. Intergroup Attitudes T2	3.45	1.25								0.70	0.37	0.51	0.38	-0.30	-0.52	-0.49	0.47	0.47	0.37
9. Intergroup Attitudes T3	3.55	1.21									0.40	0.38	0.42	-0.30	-0.48	-0.51	0.40	0.37	0.44
10. Outgroup Empathy T1	2.90	1.17										0.58	0.61	-0.33	-0.37	-0.34	0.49	0.39	0.42
11. Outgroup Empathy T2	2.95	1.20											0.60	-0.25	-0.43	-0.29	0.44	0.38	0.29
12. Outgroup Empathy T3	3.03	1.18												-0.17	-0.40	-0.35	0.42	0.30	0.44
13. Intergroup Anxiety T1	1.03	1.08													0.32	0.40	-0.34	-0.30	-0.23
14. Intergroup Anxiety T2	1.18	1.21														0.42	-0.47	-0.40	-0.46
15. Intergroup Anxiety T3	1.15	1.07															-0.37	-0.38	-0.41
16. Outgr. Prosoc. Beh. T1	2.06	0.92																0.47	0.53
17. Outgr. Prosoc. Beh. T2	2.18	0.82																	0.47
18. Outgr. Prosoc. Beh. T3	2.05	0.82																	0.47

Note: For all variables, a higher score indicates a higher level of the construct in question. For the intercorrelations, *rs* varied between 191 and 229, owing to missing values. All correlation coefficients (in bold) are significant (*ps* < 0.05, two-tailed).

TABLE 2 | Statistical within-person cross-lagged effects of contact quantity and contact quality, with fit indicators of the respective model. There was one model for each dependent model (i.e., four models in total).

Measures		Model Fit				Coefficients		
DV	IV	CFI	TLI	RMSEA	SRMR	B	SE	p
Outgroup Attitudes T2	Contact Quantity T1	1.00	0.99	0.03	0.02	0.52	0.24	0.034
	Contact Quality T1					0.14	0.20	0.471
Outgroup Empathy T2	Contact Quantity T1	1.00	1.00	0.01	0.02	0.22	0.23	0.336
	Contact Quality T1					0.26	0.19	0.176
Intergroup Anxiety T2	Contact Quantity T1	1.00	1.00	0.00	0.02	-0.35	0.27	0.190
	Contact Quality T1					-0.17	0.22	0.449
Outgroup Prosocial Behaviour T2	Contact Quantity T1	1.00	1.00	0.00	0.02	0.09	0.19	0.634
	Contact Quality T1					-0.04	0.15	0.780
Outgroup Attitudes T3	Contact Quantity T2					-0.18	0.21	0.385
	Contact Quality T2					0.36	0.12	0.004
Outgroup Empathy T3	Contact Quantity T2					-0.34	0.27	0.213
	Contact Quality T2					0.36	0.17	0.038
Intergroup Anxiety T3	Contact Quantity T2					0.21	0.24	0.391
	Contact Quality T2					-0.40	0.16	0.011
Outgroup Prosocial Behaviour T3	Contact Quantity T2					-0.24	0.19	0.217
	Contact Quality T2					0.31	0.10	0.003

Note: For all variables, a higher score indicates a higher level of the construct in question. Outgroup attitudes had been divided by 20 to avoid large differences between variances. (Autoregressive effects and cross-lagged effects of the respective dependent variable on the independent variables were also specified within all models.) Full information maximum likelihood was used.

in prosocial outgroup behaviour and lower levels of intergroup anxiety at Time 3. No effects of contact quantity were observed on any of our outcomes from Time 2 to Time 3. Although these findings suggest that there is some potential for within-person change of contact, we are cautious about this due to the lack of consistency across time and for our two contact measures. It is worth noting here, however, that our findings may have been impacted by the specific time lags in this study whereby the Time 1–2 interval varied between 1.5 and 3.5 months (due to school availability), while the Time 2–3 interval was constant at 2 months and 1 week. This matters because the RI-CLPM can only detect time-delayed associations between fluctuations around personal average value, and so is sensitive towards the choice of the examined time intervals (Hamaker, Kuiper, and Grasman 2015). Nevertheless, our findings demonstrate the need to continue to investigate the potential for intergroup contact to evince within-person change on social cohesion outcomes amongst adolescents.

4 | Study 2

Study 2 followed the design of Study 1 to replicate and explore the within-person changes and between-person differences of contact quantity and quality in relation to outgroup attitudes, outgroup empathy, intergroup anxiety and outgroup prosocial behaviour amongst youth growing up in a different divided context: Bradford, England.

4.1 | Sample

A total of 530 participants completed the survey at Time 1, 334 participants completed the survey at Time 2 and 221 completed the survey at Time 3. Of those participants, we were able to match data for 167 across the three time points. We focused specifically on youth who identified as one of the two largest ethnic groups in Bradford: White/White British and Asian/Asian British. Of those participants, 102 specified their ethnicity as Pakistani, 18 as Bangladeshi, 7 as Indian, 1 as Punjabi and 2 as ‘other Asian’; 20 participants specified their ethnic group as White British and 2 as White European; 9 participants did not specify their ethnicity beyond White/White British or Asian/Asian British. Eight participants who did not identify as either White/White British or Asian/Asian British were removed, resulting in a final sample of 159 participants ($M_{age,Time1} = 16.5$ years, $SD_{age,Time1} = 0.75$; 64% female, 31% male, 4% other or no stated gender; 84% Asian, 16% White; 23% reported receiving free school meals, 72% stated that they do not receive free school meals; 24% described the financial situation of their family as not very well off or as not at all very well off, 58% as average and 11% as well of or very well off). Participants were recruited through local youth groups, several grassroots organisations and a local college.¹

4.2 | Measures

Youth participants completed the same demographic and survey measures as that of Study 1 with adaptations made

for the Bradford context. The main variables of interest were analogous to the items which have been used in the Belfast study. Specifically, participants were asked to rate contact quantity, contact quality, outgroup attitudes, outgroup empathy and intergroup anxiety in relation to three ethnic groups: White, Black and Asian. In the analysis that follows, we focus on intergroup relations between White/White British and Asian Asian/British participants, as the two largest ethnic groups in Bradford. Tests for the scale characteristics of the multi-item measured constructs are as follows (while intergroup anxiety and outgroup prosocial behaviour were single item measures and not tested for reliability but were still included in the survey):

4.2.1 | Contact Quantity

The same four items used in Study 1 in Belfast were used for the Bradford sample in Study 2, with the target groups White/White British and Asian/Asian British (Time 1: $\alpha = 0.68$; Time 2: $\alpha = 0.62$; Time 3: $\alpha = 0.72$). The residual variances of the same items were again allowed to correlate across waves. The configural models which were used as a basis to assess measurement invariance across the three waves yielded acceptable fits (CFI = 0.988; TLI = 0.980; RMSEA = 0.032; SRMR = 0.046). The constraints testing for metric invariance did not lead to a significant deterioration of the fit ($p = 0.108$). The additional constraints testing for scalar invariance neither led to a significant deterioration of the fit compared to the previous model ($p = 0.639$).

4.2.2 | Contact Quality

The three items which had been used in Study 1 were also used for Study 2 (with adapted target groups) to measure contact quality (Time 1: $\alpha = 0.70$; Time 2: $\alpha = 0.64$; Time 3: $\alpha = 0.72$). Allowing the residual variances of the same items to correlate across waves, the three-item measure resulted in good fits in the configural models used to assess measurement invariance across the three waves (CFI = 0.986; TLI = 0.967; RMSEA = 0.048; SRMR = 0.034). The constraints testing for metric invariance did not lead to a significant deterioration of the fit ($p = 0.260$). The additional constraints testing for scalar invariance neither led to a significant deterioration of the fit compared to the previous model ($p = 0.322$).

4.2.3 | Outgroup Empathy

The same two items which had been used in Study 1 were used for the Bradford sample in Study 2 (with adapted target groups). The Spearman–Brown coefficient was $\rho = 0.70$ for Time 1, $\rho = 0.59$ for Time 2, and $\rho = 0.51$ for Time 3.

4.3 | Procedure

Ethical approval was obtained from the University of Bristol prior to data collection. To develop the Bradford sample, a 12-month period of recruitment was undertaken, supported by local organisations. Emails were sent to ethnically diverse secondary schools, colleges, and grassroots organisations to invite them to take part in the research. The recruitment search resulted in a

number of youth groups and grassroots organisations as well as a college agreeing to take part. No school participation was secured, and although several expressed interest, they were already part of other projects and were unable to find the time to participate. Survey data were collected at three time points between 5.10.22 and 30.11.22 (Time 1), 20.02.22–24.04.22 (Time 2) and 05.06.23–26.08.23 (Time 3) amongst youth participants across a range of settings. In all cases, youth were asked to complete the survey online in Qualtrics either in the presence of the researcher or a youth leader (for those under 16) or on their own (if over 16). Where relevant, the researchers provided a summary video about the research (using the same information given via the information sheet to participants) that was shown to participants in advance, and the researchers held video calls with youth groups and grassroots organisations before sharing the survey link with those interested in taking part. All youth participants were asked to give informed consent prior to completing the survey. The survey took approximately 30–40 minutes to complete, and participants were sent a £10 Amazon voucher. At later data collection points, all youth were contacted directly and invited to take part. For those under 16 and recruited through youth groups, youth leaders were asked to facilitate discussions with the participants in advance of sending the survey link. Following completion of the project, supporting organisations were thanked for their time and facilitation with a £500 payment.

4.4 | Data Analysis Plan

Descriptive statistics and bivariate correlations between all variables at each time point are presented in Table 3. We specified RI-CLPMs with random intercepts as latent variables, representing individual average values to ensure the modelling was analogous to Study 1. These latent variables were allowed to correlate, indicating between-person associations. Group membership, White/White British or Asian/Asian British, was used as a predictor for the random intercepts. Additionally, for each construct and for each time point, a latent variable was specified that reflected within-person differences. For all of these within-person latent variables, autoregressive and cross-lagged effects were specified. Full information maximum likelihood estimation was used to deal with missing values.

4.5 | Results

The four RI-CLPM models yielded good fit to the data. For between-person associations, we found that contact quantity was positively correlated with outgroup attitudes ($B = 0.15$, $SE = 0.04$, $p = 0.001$), with outgroup empathy ($B = 0.13$, $SE = 0.04$, $p = 0.001$) and with outgroup prosocial behaviour ($B = 0.19$, $SE = 0.04$, $p < 0.001$), while it was negatively correlated with intergroup anxiety ($B = -0.10$, $SE = 0.04$, $p = 0.015$). We also found that contact quality was positively correlated with outgroup attitudes ($B = 0.32$, $SE = 0.08$, $p < 0.001$) and with outgroup empathy ($B = 0.29$, $SE = 0.06$, $p < 0.001$), while it was negatively correlated with intergroup anxiety ($B = -0.29$, $SE = 0.07$, $p < 0.001$), but not with outgroup prosocial behaviour ($B = 0.08$, $SE = 0.06$, $p = 0.210$). These between-person correlations indicate the degree to which the individual average level of contact is associated with the individual average level of the respective dependent variable. The

TABLE 3 | Means, standard deviations, and intercorrelations for the main variables of the Bradford sample.

Measure	M	SD	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1. Contact Quantity T1	1.49	0.63	0.59	0.56	0.26	0.09	0.14	0.28	0.22	0.16	0.39	0.31	0.25	-0.23	-0.14	-0.18	0.38	0.26	0.34	
2. Contact Quantity T2	1.55	0.58		0.59	0.18	0.07	0.17	0.14	0.20	0.11	0.27	0.30	0.22	-0.13	-0.21	-0.26	0.28	0.24	0.24	
3. Contact Quantity T3	1.56	0.62			0.27	0.20	0.28	0.27	0.24	0.18	0.28	0.31	0.32	-0.14	-0.23	-0.29	0.42	0.30	0.40	
4. Contact Quality T1	3.42	0.85				0.49	0.48	0.51	0.39	0.37	0.47	0.33	0.41	-0.58	-0.23	-0.38	0.29	0.30	0.18	
5. Contact Quality T2	3.39	0.80					0.64	0.42	0.51	0.52	0.28	0.31	0.25	-0.33	-0.46	-0.44	0.20	0.30	0.26	
6. Contact Quality T3	3.40	0.83						0.36	0.39	0.60	0.29	0.35	0.49	-0.26	-0.35	-0.59	0.19	0.30	0.30	
7. Intergroup Attitudes T1	3.55	1.15						0.53	0.47	0.49	0.46	0.28	0.27	-0.38	-0.37	-0.29	0.33	0.23	0.28	
8. Intergroup Attitudes T2	3.41	1.06							0.49	0.37	0.25	0.25	0.28	-0.23	-0.41	-0.32	0.27	0.40	0.25	
9. Intergroup Attitudes T3	3.38	1.11								0.25	0.25	0.22	0.38	-0.20	-0.46	-0.45	0.22	0.23	0.41	
10. Outgroup Empathy T1	3.15	1.11									0.53	0.56	0.54	-0.45	-0.14	-0.23	0.30	0.25	0.19	
11. Outgroup Empathy T2	3.09	1.13												-0.28	-0.27	-0.20	0.36	0.20	0.23	
12. Outgroup Empathy T3	3.14	1.01													-0.27	-0.23	-0.38	0.27	0.35	0.38
13. Intergroup Anxiety T1	1.37	1.05													0.19	0.24	-0.25	-0.28	-0.26	
14. Intergroup Anxiety T2	1.45	1.14														0.39	-0.15	-0.29	-0.29	
15. Intergroup Anxiety T3	1.31	1.02															-0.18	-0.20	-0.20	
16. Outgr. Prosoc. Beh. T1	2.11	0.83																0.46	0.43	
17. Outgr. Prosoc. Beh. T2	2.06	0.81																		0.46
18. Outgr. Prosoc. Beh. T3	2.05	0.82																		0.46

Note: For all variables, a higher score indicates a higher level of the construct in question. For the intercorrelations, *rs* varied between 153 and 159, owing to missing values. Correlation coefficients in bold are significant ($p < 0.05$, two-tailed).

TABLE 4 | Statistical within-person cross-lagged effects of contact quantity and contact quality, with fit indicator of the respective model. There was one model for each dependent model (i.e., four models in total).

Measures		Model Fit				Coefficients		
DV	IV	CFI	TLI	RM SEA	SRMR	B	SE	p
Outgroup Attitudes T2	Contact Quantity T1	0.99	0.97	0.05	0.03	-0.04	0.27	0.878
	Contact Quality T1					0.03	0.19	0.860
Outgroup Empathy T2	Contact Quantity T1	1.00	1.00	0.00	0.03	0.32	0.26	0.222
	Contact Quality T1					-0.05	0.17	0.777
Intergroup Anxiety T2	Contact Quantity T1	1.00	0.99	0.02	0.03	0.07	0.34	0.834
	Contact Quality T1					0.25	0.27	0.358
Outgroup Prosocial Behaviour T2	Contact Quantity T1	1.00	1.00	0.01	0.03	-0.34	0.19	0.070
	Contact Quality T1					0.30	0.13	0.025
Outgroup Attitudes T3	Contact Quantity T2					-0.40	0.34	0.241
	Contact Quality T2					0.36	0.23	0.113
Outgroup Empathy T3	Contact Quantity T2					-0.30	0.40	0.449
	Contact Quality T2					-0.40	0.27	0.136
Outgroup Anxiety T3	Contact Quantity T2					-0.29	0.31	0.344
	Contact Quality T2					-0.19	0.21	0.360
Outgroup Prosocial Behaviour T3	Contact Quantity T2					-0.45	0.29	0.122
	Contact Quality T2					0.15	0.19	0.426

Note: For all variables, a higher score indicates a higher level of the construct in question. Outgroup attitudes had been divided by 20 to avoid large differences between variances. (Autoregressive effects and cross-lagged effects of the respective dependent variable on the independent variables were specified with the same models.) Full information maximum likelihood was used.

statistical within-person cross-lagged effects on the dependent variables in the four models are displayed in Table 4. There were no significant within-person cross-lagged effects, except for contact quality at Time 1 on outgroup prosocial behaviour at Time 2. Thus, there was only one instance in which individual deviations (from the individuals' average values) in contact statistically predicted deviations in the dependent variable at the respective later time point. This contrasts with the Belfast sample, as in the Belfast sample, contact quality at Time 2 was consistently associated with all outcome variables at Time 3; this is considered further in the general discussion.

4.6 | Discussion

Study 2 aimed to provide a second test of the within- and between-person effects of contact quantity and quality on outgroup attitudes, outgroup empathy, intergroup anxiety and prosocial behaviour amongst youth in a different context, Bradford. Findings demonstrate evidence for between-person associations of contact quality and quantity with most of the measured outcomes, with more frequent and better-quality contact being associated with more positive intergroup attitudes, higher levels of outgroup empathy and lower levels of intergroup anxiety. However, only contact quantity was associated with greater outgroup prosocial behaviour. Unlike in Study 1, we did not observe any effects of within-person changes of contact quality and quantity at Time 1 on within-person changes of the out-

come measures at Time 2 or effects of within-person changes of contact quality and quantity at Time 2 on within-person changes of outcome measures at Time 3. This aligns with previous research using the RI-CLPM which has failed to find associations of within-person changes between contact and attitudes and further related outcomes (e.g., Friehs et al. 2024; Hodson and Meleady 2024). In the general discussion, we bring together the findings of our two studies and consider implications for research and practice in socially divided contexts.

5 | General Discussion

The present research explored the potential between- and within-person impact of intergroup contact on social cohesion-related outcomes amongst youth in two socially divided contexts, drawing on three-time-point survey data amongst youth in Belfast (Study 1) and Bradford (Study 2). Findings from across our two studies align with previous RI-CLPM studies which have demonstrated the presence of between-subjects effects of contact on outcomes such as prejudice coupled with an absence of within-person changes (e.g., Friehs et al. 2024; Hodson and Meleady 2024). We now discuss these collective findings in relation to the wider literature.

Our finding of consistent between-person differences across our two studies bolsters previous evidence that those who hold

outgroup friendships (Friehs et al. 2024) or have more frequent intergroup contact (Hodson and Meleady 2024) also report more positive outgroup attitudes, but pushes this forward by observing that those who report frequent quantity and better quality contact also report lower levels of intergroup anxiety (measured as levels of comfort), higher levels of outgroup empathy and higher likelihood of engaging in prosocial acts to support outgroup members (for contact quality only in Study 1) as indicators related to social cohesion. These between-person effects, however, were observed in the partial absence of within-person changes. And whilst we found that contact quantity at Time 1 entailed more positive outgroup attitudes at Time 2 and that contact quality at Time 2 entailed more positive outgroup attitudes, higher outgroup empathy, higher engagement in prosocial outgroup behaviour and lower levels of intergroup anxiety at Time 3 in Study 1, we are unable to claim consistent within-person effects over time or between our studies.

A possible explanation for the lack of within-person effects observed in our studies, in line with the arguments put forward by previous research (Friehs et al. 2024; Wölfer et al. 2016), is that initial engagement in contact may be more powerful than later engagement in contact in predicting our outcomes of interest. As such, our participants may have already experienced both frequent and good quality intergroup contact in the past which means that we have not captured the potentially transformative power of initial intergroup interactions. A further and related explanation is that perhaps our participants were at an age in which the strength of the relationship between contact and prejudice had already declined. Our Study 2 participants were older on average ($M_{\text{age}} = 16.5$ years at Time 1) than our Study 1 participants ($M_{\text{age}} = 14.7$ years at Time 1) but due to inconsistent findings across time points, we are unable to determine whether the observation of some within-person effects in Study 1 is due to developmental differences. Whilst Friehs et al. (2024), who analysed social network data from a five-wave social network sample of 11–12 year olds in England, found no evidence of within-person change in the contact–prejudice relationship, questions still remain about potential developmental pathways.

There may, however, be methodological reasons for our lack of observed within-person effects. First, it is worth considering the time lags that were used in the present research. Previous RI-CLPM studies on contact effects have tended to have time lags ranging from several months (Friehs et al. 2024: Study 1; Hodson and Meleady 2024) to several years (Sengupta et al. 2023). Given that longitudinal studies often have time lags that are too long to detect within-person change (Dormann and Griffin 2015) and that one of the few studies that has detected significant within-person contact effects on collective action (Górska and Tausch 2023) had time lags of 2 weeks, our aim was to employ relatively short time lags to increase the chances of observing within-person effects. It could be that an even shorter time frame than in our studies is required to find within-person effects. This is something that should be explored in future research.

Second, it is possible that our measurement of intergroup contact, using self-reported items of contact quality and contact quantity, does not fully capture the nature of participants' interaction experiences and consequently we were unable to

detect consistent within-person change. This is plausible given substantial empirical evidence that when primed, intergroup contact has been found to reduce prejudice amongst those in an experimental condition compared to a control condition (Paluck, Green, and Green 2019). Future research, therefore, may wish to explore intergroup contact experiences in more depth.

5.1 | Implications for Theory and Practice

Taken together, our two studies yield important theoretical implications for the research literature on intergroup contact as well as practical implications for social cohesion agendas. In relation to theory, we provide further evidence for a lack of consistent within-person changes in the relationship not only between intergroup contact and prejudice but also between intergroup contact and a wider range of social cohesion-related outcomes. Our observation of consistent between-person effects in the absence of within-person effects in line with previous studies (e.g., Hodson and Meleady 2024; Sengupta et al. 2023) highlights the need to theoretically determine the conditions under which and for whom within-person changes of contact might be observed and on which outcomes. This requires further theoretical development, building on the work of Merrilees et al. (2023) and Wölfer et al. (2016) on the temporal nature of intergroup contact, including, for example, if and when we might expect within-person changes to occur across the lifespan in relation to both prior contact experiences and developmental trajectories. Our findings also suggest that the field may need to consider how intergroup contact experiences are measured in survey research, to truly determine whether within-person changes are evinced following contact experiences.

Our findings also have practical implications for promoting social cohesion in divided societies. We show, for example, that youth who report having good quality and frequent contact with outgroup members also report high scores on a range of positive outcomes that can build stronger and more cohesive societies, such as more positive outgroup attitudes, higher levels of outgroup empathy, lower levels of outgroup anxiety and higher levels of self-reported engagement in outgroup prosocial behaviours. Whilst we are unable to provide evidence for within-person changes of contact on our outcomes across time points and samples, this does not, in our view, demonstrate that contact is not effective in promoting social cohesion, rather that we need to further explore how and when we might expect within-person changes to occur. Indeed, we know from experimental research that contact reduces prejudice (Paluck, Green, and Green 2019) and as such, it remains an important tool for promoting more positive group relations in divided societies. What we would suggest, however, is that contact should not be seen as a panacea and other approaches towards social cohesion are needed.

5.2 | Limitations and Future Directions

Whilst our research has strengths in exploring contact effects longitudinally amongst youth in two different contexts, there are some important limitations. First, our sample sizes are

relatively small and not fully representative of the ethnic groups present within each context, especially in Study 2. While previous research with larger samples (e.g., Hodson and Meleady 2024; Sengupta et al. 2023) has failed to observe within-person effects of contact, we cannot rule out that our failure to observe consistent results is due to our underpowered samples. Future work should, therefore, seek to recruit a higher number of participants to allow a more robust analysis of within-person effects across time amongst adolescents and for different ethnic groups. The need for larger sample sizes is underlined by the results of our post hoc power analyses. In the Monte Carlo simulations based on the Belfast data, a simulated sample size of 440 was required to ensure that all replications could be computed without any estimation problems (while entailing power values of over 80% for the significant within-person effects), as reported above. For two outcome variables in the Bradford sample, even a simulated sample size of 10,000 was not sufficient to yield replications that were consistently without estimation problems. This suggests that our empirical sample sizes should have ideally been larger to provide robust parameter estimates. Additionally, needing a simulated sample size of 600 to reach power estimates of over 80% in the Bradford sample suggests that the studies might have been underpowered.

Second, whilst our sample included youth participants across mid-late adolescence, we did not have a sample over a long enough period of time to be able to examine developmental trajectories. A crucial next step will be to conduct research that enables an analysis of the effects of contact on outcomes across different developmental ages to determine an understanding of whether, and if so, under which context conditions there is a point in which within contact effects weaken with age.

Third, several practical considerations meant that participants did not always complete the survey in the same format (online vs. on paper), not always across the same time intervals, and not always in the same setting (some in school, some in college, some in youth groups). A more controlled approach would enable stronger conclusions to be made regarding the relationship between intergroup contact and social cohesion-related outcomes across the two research contexts.

Fourth, we relied on single-item measures of intergroup anxiety and outgroup prosocial behaviour. This enabled us to have a more comprehensive survey with our young people by reducing item response burden, but there may be consequences for overall validity. For example, our measure of intergroup anxiety may be related more to feelings of comfort specifically, although it is worth noting that comfort is one of the most measured affective components of intergroup anxiety alongside others such as feeling anxious, at ease, etc. (Stephan 2014). Future research, however, should aim to measure outcomes using a wider range of items.

Finally, whilst our research expands the range of outcomes of intergroup contact that have been previously explored through RI-CLPM studies, it would be advantageous to assess tertiary-related outcomes. This is because within-person change might be observed for outcomes that transcend beyond prejudice reduction—such as cognitive flexibility or creativity.

6 | Conclusion

Intergroup contact has long been established as a prejudice-reduction tool in divided societies. A large proportion of the evidence for the benefits of intergroup contact, however, comes either from cross-sectional studies that cannot establish causality or from longitudinal studies, many of which do not clearly separate between-person variance from within-person variance. The present research aimed to address this limitation by exploring between-person associations and within-person changes regarding the relationship of intergroup contact with social cohesion outcomes amongst youth in two divided cities: Belfast and Bradford. Drawing on three-time-point survey data, our findings extend previous research demonstrating between-subject effects of contact quality and quantity on outcomes including outgroup attitudes, empathy, intergroup anxiety and prosocial behaviour, but limited evidence of within-person effects on these outcomes. By focusing on contact effects amongst youth in socially divided contexts and by exploring a wide range of social cohesion-related outcomes, our research offers a grounded assessment of the potential and limitations of intergroup contact to promote social cohesion. And, whilst failing to observe consistent within-person effects of contact in our research, we recognise the importance of continuing to recognise the potential of intergroup contact as a prejudice-reduction tool, as evidenced in experimental studies in the field, but point to the need to better understand potential within-person effects through robust longitudinal studies that consider the development of intergroup contact experiences over time and across the lifespan.

Author Contributions

McKeown, Taylor and Manley acquired funding for this research and led the research design. Data were collected by McKeown and Ali, input by Ali, analysed by Schaefer and supported by Meleady and Taylor. All authors contributed to the conceptualisation and write up of the manuscript.

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Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of the study will be made available on the UK Data Archive following the completion of the research project.

Endnotes

¹The original aim was to recruit participants aged 14–16 through schools as per Study 1, but the team was unable to secure access to local schools and so proceeded with alternative recruitment approaches, supported by local organisations and the project advisory group, and included a higher upper age boundary to enable a larger sample to be collected.

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