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## Increasing Ethnic Diversity Moderates Longitudinal Effects of Individual Differences on Friendship Homophily

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Manuscript ID	CASP-16-155.R1
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Keywords:	Same-ethnic friendship preference, children, social-emotional adjustment, national and ethnic identity, school ethnic composition
Abstract:	<p>This study examined direct and interactive effects of social-emotional adjustment, national and ethnic identification and school ethnic composition on friendship homophily among 214 ethnic minority and 183 ethnic majority English children, aged between 5 and 11 years. The data came from a longitudinal study, which included three time points, spanning a twelve-month period. Results of multi-level latent growth curve models showed that among ethnic minority English children (teacher-rated) peer problems and ethnic identity were associated with more friendship homophily whereas a bicultural identity was not related to more friendship homophily. Among ethnic majority English children the effects of peer problems and English identity were moderated by school ethnic composition, such that these factors were not associated with more friendship homophily in more ethnically diverse schools. The findings are discussed based on theories of intergroup contact and intergroup threat.</p>

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Increasing Ethnic Diversity Moderates Longitudinal Effects of Individual Differences on  
Friendship Homophily

Keywords: Same-ethnic friendship preference, children, social-emotional adjustment, national  
and ethnic identity, school ethnic composition

For Peer Review

## Abstract

This study examined direct and interactive effects of social-emotional adjustment, national and ethnic identification and school ethnic composition on friendship homophily among 214 ethnic minority and 183 ethnic majority English children, aged between 5 and 11 years. The data came from a longitudinal study, which included three time points, spanning a twelve-month period. Results of multi-level latent growth curve models showed that among ethnic minority English children (teacher-rated) peer problems and ethnic identity were associated with more friendship homophily whereas a bicultural identity was not related to more friendship homophily. Among ethnic majority English children the effects of peer problems and English identity were moderated by school ethnic composition, such that these factors were not associated with more friendship homophily in more ethnically diverse schools. The findings are discussed based on theories of intergroup contact and intergroup threat.

Increasing Ethnic Diversity Moderates Longitudinal Effects of Individual Differences on  
Friendship Homophily

Children in many European countries go to increasingly ethnically diverse schools. This opens the opportunity for children to form friendships with children from diverse ethnic groups, which could then reduce prejudice and improve intergroup relations (Allport, 1954; Pettigrew & Tropp, 2006). Cross-ethnic friendships are also beneficial for ethnic minority children as they buffer against the negative effects of discrimination (e.g., Bagci, Rutland, Kumashiro, Smith, & Blumberg, 2014). However, a host of studies shows that when taking the opportunity structure into account (i.e., the availability of same- and cross-ethnic peers), the number of cross-ethnic friendships in schools is lower than would be expected by chance (Moody, 2001). This suggests that students exhibit a preference for same-ethnic friendships, commonly referred to as friendship homophily (McPherson, Smith-Lovin, & Cook, 2001). In this paper, we are interested in explaining changes in friendship homophily as a function of (1) individual differences and intra-individual change in social-emotional adjustment and ethnic and national identity (individual-level variables), and (2) school ethnic composition (school-level variable). We are particularly interested in differences in the association of individual-level variables and friendship homophily depending on school ethnic composition.

It is important to note that it is difficult to measure friendship homophily directly and there is no perfect fit between friendship homophily in theory and the proxies most commonly used to operationalize it (Smith, McFarland, van Tubergen, & Maas, 2016). For the purpose of this study, and consistent with prior work, we define friendship homophily as the percentage of same-ethnic friends in school held by a child out of all their nominated friends (Titzmann & Silbereisen, 2009), controlling for the availability of same- and cross-ethnic peers in school (i.e., the opportunity structure).

Prior research has established a relationship between friendship homophily and individual-level variables like social-emotional adjustment (e.g., Kawabata & Crick, 2008)

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Other research shows that friendship homophily is influenced by school-level variables like school ethnic composition (e.g., Smith et al., 2016). However, these individual-level and school-level relationships were studied in isolation and how school ethnic composition may alter the influence of individual-level variables has not been examined. Given that school ethnic diversity by itself is not sufficient to promote interethnic friendships (Smith et al., 2016), it is important to examine diversity in relation to other aspects that may influence how students respond to ethnic diversity in school (Thijs & Verkuyten, 2014). This study set out to fill this lacuna by examining how school ethnic composition may alter the influence of social-emotional adjustment on friendship homophily.

Individual *social-emotional adjustment* is associated with friendship homophily. For example, children high in prosociality and with high leadership skills have been found to have relatively more cross-ethnic friendships (Kawabata & Crick, 2008; Lease & Blake, 2005) while children who are relationally aggressive or scoring high on externalizing behaviours (e.g., fighting, name-calling) have been found to have relatively fewer cross-ethnic friendships (Kawabata & Crick, 2011). While prosocial behaviour is predictive of having successful peer relations in general (Aboud & Mendelson, 1996), research suggests that it may be uniquely related to having cross-ethnic friendships (e.g., Kawabata & Crick, 2008). These findings are in line with social-cognitive theory, which suggests that children with higher social-emotional skills and lower behavioural problems are more able to form and maintain friendships across groups (Aboud & Levy, 2000). This may be because socially competent children (e.g., who are high in empathy, leadership skills, and sociability) are more likely to form diverse friendship networks and to be relationally inclusive. On the other hand, aggressive and withdrawn children find it harder to make friends and are more likely to have limited and exclusive friendship networks (Crick et al., 1999). Thus, these children may find it difficult to reach out across ethnic boundaries and form friendships with cross-ethnic peers. Other indicators of positive social-emotional adjustment are likely to be negatively associated

with friendship homophily. The current research examined the relationship between friendship homophily and two additional indicators of social-emotional adjustment, namely self-esteem and peer problems. We predicted that children’s self-esteem would be negatively associated with friendship homophily (Hypothesis 1). On the other hand, children who experience problems getting along with peers are at risk of negative social-emotional adjustment (Parker & Asher, 1987). Thus, we expected that children’s peer problems would be positively associated with friendship homophily (Hypothesis 2).

*Intergroup factors* also play a role in children’s decision-making about same- and cross-ethnic friendships. Children’s sense of group identity (e.g., identification with their ethnic or national group) should be relevant in this regard. Accordingly, Rutland and colleagues (2012) showed that, among ethnic minority status English children, bicultural identity (identification with both their ethnic group and the host society) was associated with less friendship homophily. However, their research did not look at children from the majority status group. We can assume that group identity will also play a role for majority status children’s friendship homophily. Thus, majority status children’s national identification or minority status children’s ethnic identification should be positively associated with friendship homophily (Hypothesis 3). This higher preference for same-ethnic friendships can be explained in terms of social identity theory (Tajfel & Turner, 1979), which posits that people have a need for a positive social identity. When ethnicity is an important aspect of people’s social identity, they will think and act in terms of this collective identity and will thus favour their ingroup. Previous research has also shown that bicultural identity is associated with less friendship homophily among minority group children (Rutland et al., 2012). Thus, we expect bicultural identity to be associated with less friendship homophily (Hypothesis 4).

*School ethnic composition* (i.e., the share of ethnic minority members in a school ranging from low to high ethnic density) reflects different opportunities to form cross-ethnic friendships for majority and minority group members. Thus, for minority group children an

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1  
2 increasing share of co-ethnic pupils should lead to more homophily as for them this means  
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4 fewer opportunities for cross-ethnic ties and more opportunities for same-ethnic ties, and vice  
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6 versa for majority group children (for supporting evidence see Geven, Kalmijn, & van  
7  
8 Tubergen, 2016).  
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11 How school ethnic composition moderates the influence of individual child  
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13 characteristics on having interethnic relations has not to our knowledge been thoroughly  
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15 investigated yet (cf. Thijs & Verkuyten, 2014). Greater presence of ethnic minority children  
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17 in a school may increase the salience of an intergroup category division (Brenick, Titzmann,  
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19 Michel, & Silbereisen, 2012). Thus, individual social-emotional adjustment may become less  
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21 predictive for friendship homophily in situations where the intergroup context is salient.  
22  
23 There, intergroup factors such as intergroup attitudes, perceptions of the intergroup climate,  
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25 and the perception of group norms may instead become more relevant (Jugert, Noack, &  
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27 Rutland, 2011). Therefore, we expected that the positive association between peer problems  
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29 and friendship homophily would be *less* pronounced in school contexts with a higher share of  
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31 ethnic minority status pupils (Hypothesis 5). Similarly, we expected that the negative  
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33 relationship between self-esteem and friendship homophily would be *less* pronounced in high-  
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35 ethnic density schools (Hypothesis 6). This should apply to both ethnic majority and ethnic  
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37 minority status children.  
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41  
42 With regard to the interaction of ethnic and national identity with school ethnic  
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44 composition, two opposing predictions can be made for ethnic majority group children. On  
45  
46 one hand, ethnic majority group children who identify strongly with their national group may  
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48 feel threatened by being in a more diverse context (Smith et al., 2016; Vervoort, Scholte, &  
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50 Scheepers, 2011) and may thus show even greater friendship homophily (Hypothesis 7a). On  
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52 the other hand, a higher share of ethnic minority children increases contact opportunities and  
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54 actual contact between members of both groups. Thus, national identity may also become less  
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56 relevant for making choices about intergroup friendships in contexts with a higher share of  
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ethnic minority members where there are many opportunities for intergroup contact (Hypothesis 7b). With regard to ethnic minority children, we expected the positive association of ethnic identity with friendship homophily would be more pronounced as the share of ethnic minority members increases (Hypothesis 8). This is because a higher share of ethnic minority members should allow ethnic minority children with a strong ethnic identity to make friends among the same ethnic group.

With one exception, all the above hypotheses refer both to associations among predictors at Time 1 and the intercept and slope of friendship homophily, as well as the correlated changes (changes in the predictor and the slope of friendship homophily), as we had no theoretical assumptions for intercept- or slope-specific associations. The exception was Hypothesis 4, for which we did not look at changes in bicultural identity affecting changes in friendship homophily. While theoretically interesting, our operationalization of bicultural identity involved the interaction of the continuous measures of ethnic and national identification. The only way to look at change in bicultural identity would thus be to first create change scores for ethnic and national identification, respectively and then to look at the interaction of these change scores and how this might relate to homophily. However, it is not clear what an interaction effect deriving from change scores would indicate.

**Method**

**Participants and procedure**

Participants consisted of 398 (203 boys, 195 girls; *M* age = 7.56 years, *SD* = 1.51) White English ethnic majority (*n* = 183) and South Asian English ethnic minority (*n* = 215) children. The children were recruited from 20 schools in ethnically heterogeneous, semi-urban, and lower-middle income areas in South-East England. The ethnic breakdown of these children was as follows: 45.2 % White, 41 % Indian, 4% Pakistani, 2.3% Sri Lankan, 1.5% Bengali, 1.3% Nepalese and 0.3% Tamil. The ethnic composition of these schools varied from 2% to 62% ethnic minority status children (median 20%), and the classroom

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compositions were similar to these school figures. Children were assessed individually by a researcher, with all measures contained within a booklet, to ensure good comprehension of all items across the age range. The measures were piloted and were pictorially based, in order to aid understanding particularly among young children. The study was longitudinal with three equidistant assessments, spanning one year. The study also contained other measures on acculturation and multiculturalism not used in the present analyses.

**Individual-Level Measures**

**Friendship homophily.** We asked children to name their five best friends, asked about their ethnicity, and scored homophily as the percentage of same-ethnic friendships among these five friendship nominations (c. Titzmann & Silbereisen, 2009). Friendship homophily was calculated by dividing the number of same-ethnic friends by the total number of same-ethnic and cross-ethnic friends multiplied by 100. Please note that this measure does not control for opportunities to form same- and cross-ethnic friendships. This is why in the analyses we included school ethnic composition to control for the opportunity structure.

**Self-esteem.** We used an adapted version of the Self Perception Profile for Children (Harter, 1985) to measure children's global self-esteem with six items. Every item consists of two connected but opposing statements (e.g., 'Some kids are often unhappy with themselves BUT other kids are pretty pleased with themselves'). Children were asked to select the statement that best described them (e.g., either 'some kids are often unhappy with themselves' or 'other kids are pretty pleased with themselves'). They then indicated the extent to which that statement applied to them ('very true' or a 'a little true'). Ratings were later combined to make up a 4-point scale (e.g., reflecting happiness with oneself from very little to very much). Cronbach's alphas ranged from .63 to .65 for ethnic majority and .64 to .69 for ethnic minority children.

**Peer problems.** Teachers completed the Strengths and Difficulties questionnaire (SDQ; Goodman, 1997) for each participating child. The questionnaire assesses emotional

symptoms, conduct problems, hyperactivity/inattention, peer problems, and pro-sociality with five items each. Items were scored on a 3-point scale from 1 ‘not true’ to 3 ‘certainly true’. Cronbach’s alphas for peer problems ranged from .65 to .71 for ethnic majority and from .66 to .70 for ethnic minority children.

**Ethnic and English identification.** Children were presented with four questions regarding their identification with the ethnic group that they had rated as most important to them (e.g., ‘How proud are you about being [ethnic group]?’). Children responded on a scale from 1 ‘not at all’ to 4 ‘very’. The English identification measure was identical to the ethnic identification measure, but the items referred to ‘English’ rather than the child’s ethnic group. Cronbach’s alphas for ethnic identification ranged from .62 to .79 for ethnic majority and from .71 to .73 for ethnic minority children. Cronbach’s alphas for English identification ranged from .69 to .76 for ethnic majority and from .82 to .84 for ethnic minority children. It was not possible to differentiate between ethnic and English identification among ethnic majority children and we therefore concentrated only on the English identification measure in this group.

**School-Level Measures**

**School ethnic composition.** We used the percentage of ethnic minority status children in the school as a continuous measure of school-level ethnic composition (Range = 1.73 – 63,  $M = 25.64$ ,  $SD = 14.56$ ). Data on Ethnic composition were provided by schools principals only once during data collection.

**Socio-economic status (SES).** We used publicly available data at the level of local authority in which schools were situated to gauge the socio-economic background of students (school-level variable). We used the Income Domain Affecting Children Index (IDACI; APHO, 2011), which assesses the percentage of children aged 0-15 living in income-deprived households across local authorities. In this sample, the IDACI ranged from .06 to .55 across schools ( $M = 0.22$ ,  $SD = 0.10$ ).

## Results

We used multilevel latent growth curve modelling (Curran, McGinley, Serrano, & Burfeind, 2012) to examine changes in friendship homophily. Models were run in Mplus 7.4 (Muthén & Muthén, 2012-2015), using full information maximum likelihood estimation (FIML) with robust standard errors (MLR estimator). Residual covariances of exogenous variables were estimated so that all cases could be included in data analyses through missing data estimation. Multilevel modeling was important because our data were hierarchically structured (ie., there are three levels: time points, individuals, schools) and our hypotheses concerned group level variables (school ethnic composition). Correlations among all measures are presented in the Appendix. The analyses proceeded in three steps. First, we estimated unconditional latent growth curve models to examine changes in friendship homophily descriptively. Second, we estimated conditional latent growth curve models where we added predictors of intercept and slope. Third, we tested our hypothesized cross-level interactions, one by one. The conditional models first included gender, age, and SES as predictors. There were no main or interactive effects of gender, age, or SES. Therefore, gender, age, and SES were excluded from subsequent analyses.

First, we modelled friendship homophily as linear growth with an estimate of the intercept (centered at Time 3) and a slope. The linearity assumption in the growth curves was based on the fact that the three measurement occasions do not allow higher order functions to be estimated (Singer & Willet, 2003). The intraclass correlations suggested that only between 1-2 % of the variance in friendship homophily at the different time points was attributable to differences across schools. However, when we tested the unconditional models separately for majority and minority group children, results suggested that 16-27 % of the variance for majority group children and 27-33 % of the variance for minority group children was attributable to schools. We thus decided to continue with separate analyses of majority and minority group children.

Model fit for the unconditional models was good;  $\chi^2(4) = 6.14, p = .189$ , RMSEA = .054, CFI = .994, TLI = .992, SRMR<sub>within</sub> = .001, SRMR<sub>between</sub> = .010 for ethnic majority group children;  $\chi^2(4) = 4.42, p = .352$ , RMSEA = .022, CFI = .999, TLI = .998, SRMR<sub>within</sub> = .005, SRMR<sub>between</sub> = .017 for ethnic minority group children. Among both ethnic majority and ethnic minority group children, results showed a significant intercept at the school level (*Intercept*<sub>ethnic majority</sub> = 80.61, *SE* = 3.35, *p* < .001; *Intercept*<sub>ethnic minority</sub> = 32.85, *SE* = 4.93, *p* < .001) but no significant slope (*Slope*<sub>ethnic majority</sub> = 1.36, *SE* = 1.23, *p* = .270; *Slope*<sub>ethnic minority</sub> = 1.29, *SE* = 0.87, *p* = .138). Thus, children in both groups showed friendship homophily at the school level but there was no significant overall time trend across schools. There was, however, significant variability in intercept and slope of friendship homophily among ethnic majority and ethnic minority group children at the individual level, suggesting interindividual differences in levels of friendship homophily and in intraindividual change.

To explain these interindividual differences we added predictor variables to intercept and slope in the next step. All continuous variables were grand-mean centred. We included T1 school ethnic composition as a covariate on the school level. We added the T1 social-emotional adjustment variables (self-esteem, and peer problems). We also included T1 English identification for majority group children and T1 English and T1 ethnic identification as well as their interaction for minority group children. These T1 predictors were direct predictors of the intercept and slope in friendship homophily. The T3 measures of social-emotional adjustment and ethnic and English identification were used to estimate difference scores<sup>1</sup>. These were regressed on the slope in friendship homophily, allowing us to estimate correlated change. The model fit was acceptable and the results are summarized in Table 1 for majority group and in Table 2 for minority group children.

<sup>1</sup> Due to convergence problems we were not able to use latent change differences scores as suggested by Ferrer and McArdle (2003). The inclusion of many latent variables in models with random slopes (necessary to examine cross-level interactions) becomes computationally very demanding and likely requires larger samples.

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The results for majority group children showed that only school ethnic composition ( $b = -.66, p < .001$ ), was significantly associated with the intercept (but not the slope) at the school level<sup>2</sup>. Thus, school ethnic composition (i.e., a higher share of ethnic minority members in school) was associated with relatively lower levels of friendship homophily among ethnic majority group children at Time 3. None of the other predictor variables at the individual level was significant (suggesting no support for Hypotheses 1 through 4). As predicted, the cross-level interactions peer problems at Time 1  $\times$  school ethnic composition on the slope<sup>3</sup> ( $b = -.25, p = .035$ ) and English identification at Time 1  $\times$  school ethnic composition on the intercept ( $b = -.43, p < .001$ ) of friendship homophily were significant (suggesting support for Hypotheses 5 and 7b). No other cross-level interactions were significant (no support for Hypothesis 6). To examine these interactions, simple slopes were calculated to indicate the relationship between these variables and friendship homophily at 1 standard deviation above and below the mean school ethnic composition for the sample (Aiken & West, 1991).

The simple slopes between peer problems at Time 1 and the slope in friendship homophily were not significant for children in low,  $b = 3.71, p = .627$ , or in high ethnic composition schools,  $b = -4.46, p = .366$  (see Figure 1), although it is noteworthy that they were differently signed. This cross-level interaction suggests that majority group children with more peer problems show a stronger increase in friendship homophily over time but only in low not in high ethnic density schools. The simple slopes between English identification and the intercept in friendship homophily were marginally significant and positive for

<sup>2</sup> Please note that because school ethnic composition is interacted with other predictors in the model, this coefficient captures the effect of ethnic composition when all the interactive terms are at their mean value.

<sup>3</sup> Due to convergence problems, residual covariances of exogeneous covariates could not be estimated for this cross-level interaction. This means that results for this interaction effect are based on 88 cases with complete data.

children in low,  $b = 6.49, p = .061$ , and significant and negative for children in high ethnic composition schools,  $b = -7.49, p = .003$  (see Figure 2). This cross-level interaction suggests that majority group children with stronger English identification showed *more* friendship homophily at the end of the study only in low but not in high ethnic density schools. Put another way, school composition attenuated the effects of social-adjustment and national identity on friendship homophily for majority group children.

The results for the minority group children showed that peer problems ( $b = 16.75, p < .05$ ), ethnic identification ( $b = 17.00, p < .001$ ), and school ethnic composition ( $b = 1.03, p < .001$ ) were associated with higher levels of friendship homophily at Time 3 (partial support for Hypotheses 2 and 3). In support of Hypothesis 4, the main effect of ethnic identification was qualified by a significant English  $\times$  ethnic identification interaction ( $b = -11.18, p < .001$ ). We calculated simple slopes to clarify the nature of this interaction (see Figure 3). The simple slopes between ethnic identification and friendship homophily were significant for children with low English identification,  $b = 27.25, p < .001$ , and also for children high in English identification,  $b = 6.83, p = .026$ . Thus, ethnic identification increased friendship homophily more strongly when English identification was low but not as strongly when it was high. In other words, a bicultural identification did not increase friendship homophily as much as a purely ethnic identification did. None of the cross-level interactions was significant (no support for Hypotheses 5 through 8). We also tested whether ethnic or English identification interacted with school ethnic composition but none of these interactions was significant.

**Discussion**

In this study, we examined for the first time the longitudinal effect of individual differences in social-emotional adjustment, national and ethnic identity on friendship homophily among English ethnic minority and majority group children. Moreover, we considered whether these effects are moderated by school ethnic composition. Significantly, the findings of this longitudinal study showed that school ethnic composition moderated the



influence of individual social-adjustment and national identity on friendship homophily for White English but not for ethnic minority English children. Thus, for one indicator of social-emotional adjustment (peer problems) and for English identity we found that that a higher share of ethnic minority children at the school level attenuated the effect of social-emotional adjustment and national identity on friendship homophily.

Why did these interactive effects occur only among majority group children? We had argued that a higher proportion of minority group children at the school level increases salience of an intergroup context (cf. Brenick et al., 2012). However, one may also argue that ethnic boundaries and ethnicity are chronically accessible for ethnic minority children by virtue of being a minority member in society (McGuire, McGuire, Child, & Fujioka, 1978) . In contrast, for ethnic majority children their ethnic group membership is usually less salient. Thus, it may be that varying proportions of ethnic minority members at school have more of an impact in terms of intergroup salience for majority than for minority group children. This may explain then why individual differences in peer problems become less relevant as a predictor of friendship homophily among ethnic majority group children in schools with a higher proportion of ethnic minority pupils.

At the individual level, we found effects of social-emotional adjustment, national and ethnic identity only for ethnic minority group children. As expected, minority group children who were rated by their teachers to have peer problems and who identified strongly with their ethnic group showed more friendship homophily. The effect of ethnic identity was qualified by an interaction effect, such that ethnic minority children with a bicultural identity (high in ethnic and English identity) did not show more friendship homophily (cf. Rutland et al., 2012). The latter finding also fits with other research showing that cross-ethnic friendships are more likely to occur if ethnic minority students identify strongly with the host country (Leszczensky, Stark, Flache, & Munniksma, 2016).



The interaction of national identity and school ethnic composition for ethnic majority group children runs counter to the argument that ethnic majority group members feel threatened by a higher presence of ethnic minority members and thus strongly identified individuals should feel particularly threatened and react by showing even greater ingroup preference (Thijs & Verkuyten, 2014; Vervoort et al., 2011). Our finding is more in line with intergroup contact theory, which suggests that more contact opportunities should help to break down ethnic boundaries. This is also in line with findings showing that *actual* proportion of immigrants is associated with contact effects while *perceived* proportion of immigrants is associated with threat effects (Pettigrew, Wagner, & Christ, 2010; Semyonov, Raijman, Tov, & Schmidt, 2004).

The effect of contact opportunity, however, was greater for children with a strong English identity. One can assume that highly identified children will also have more favourable attitudes towards their own compared to ethnic outgroups (Nesdale, Durkin, Maass, & Griffiths, 2005). Previous research has shown that cross-ethnic contact only improved ethnic attitudes for students with initially unfavourable attitudes (Munniksmas, Stark, Verkuyten, Flache, & Veenstra, 2013). In addition, studies have shown that intergroup attitudes are predictive of having cross-ethnic friends (Jugert et al., 2011). Thus, strongly identified White English children may have had more room for improvement in their intergroup attitudes and this was reflected in their less homophilous friendship choices.

Our finding that school ethnic composition moderates the impact of national identity for White English children but not for ethnic minority English children may be explained in light of findings showing that intergroup contact is less effective for improving intergroup attitudes among ethnic minority group children (Feddes, Noack, & Rutland, 2009). Another reason for this group difference may be that English identity may be more malleable than ethnic identity (Condor, 2006). Thus, what it means to be English may differ depending on contextual factors such as whether one is in a more mono-ethnic or multi-ethnic school. In a

more diverse setting White English children's English identity may also encompass children from other ethnic groups. Thus, their concept of Englishness may be more inclusive than that of White English children attending ethnically homogeneous schools (see Barrett, 2005; Rutland, 1999). This fits with the findings of Knifsend and Juvonen (2014) which suggest that school level diversity can promote social identity complexity. In contrast, ethnic identity is less ambiguous as to who is included in this category (only ethnic minority members) and is often subjectively defined dichotomously by skin colour.

### Limitations and Practical Implications

Our measure of friendship was limited to within-school friendships and based on one-sided rather than reciprocal nominations. Another limitation was our measure of school ethnic composition, which was based on the percentage of ethnic minority children in a school. It would have been preferable to have a measure of ethnic diversity, such as the Simpson index (Simpson, 1949) that takes into account the number of different cultural groups in the school and the relative representation of each group. It would also have been desirable to test for ethnic group differences within one joint analysis. However, variance between schools existed mainly within ethnic and not between ethnic groups and joint analysis would have required testing three-way interactions terms (e.g., ethnicity  $\times$  peer problems  $\times$  composition), which was not feasible given the limited power of our sample.

Care should also be taken when extrapolating our findings to other ethnic minority groups. South Asian ethnic minority members are a very settled group in the UK and may not be comparable to other ethnic minority groups who may be perceived as more threatening (e.g., Syrian refugees). It is also important to note that the schools under study are not representative of the ethnic makeup of schools in the UK in general. A native majority and one particular ethnic minority group (South Asians) dominated all the sampled schools. Thus, the relatively high levels of friendship homophily exhibited by White English children may in part be explained by this particular constellation of ethnic groups as previous research

suggests that ethnic majority students feel threatened in such moderately diverse contexts (Moody, 2001; Smith et al., 2016). Finally, although we used a longitudinal design, we cannot make any strong claims about the causal direction of the established relationships. It is likely that most relationships are rather dynamic and bidirectional.

The results of this study suggest that at least for ethnic majority children a higher share of ethnic minority members in school may be beneficial for intergroup relations. This is because individual factors that may inhibit cross-ethnic friendships, such as problematic social behaviour and strong national identity seem to become less relevant in more ethnically dense school contexts. As ethnic minority children still exhibited much lower friendship homophily than ethnic majority children even in high ethnic density schools, the beneficial effects of ethnic density to intergroup relations may not be limited to ethnic majority children but may benefit all children.

**Conclusion**

This study showed that individual differences in social adjustment and group identification are related longitudinally with changes in friendship homophily. Importantly, however, for ethnic majority children these longitudinal relationships were moderated by school ethnic composition while they were not for ethnic minority children.

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For Peer Review

## ETHNIC DIVERSITY MODERATES FRIENDSHIP HOMOPHILY

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Table 1

*Unstandardized Coefficients (Standard Errors) of a Multilevel Latent Growth Curve Model  
Predicting Intercept and Slope in Ethnic Friendship Homophily for Ethnic Majority Group  
Children (N = 182)*

Predictors	Intercept	Slope
Level 1 – individual level		
Self-esteem		
T1	1.41 (2.48)	-1.51 (1.83)
T1-T3 Change		1.59 (1.10)
Peer problems		
T1	-3.09 (4.03)	-3.65 (4.91)
T1-T3 Change		1.73 (9.03)
English Identification		
T1	-0.11 (4.65)	2.61 (3.43)
T1-T3 Change		4.08 (2.45)
Level 2 – school level		
School Ethnic Composition	-0.66*** (0.16)	-0.13 (0.17)
R <sup>2</sup> Level 1	.01	.12
R <sup>2</sup> Level 2	.75	.50

Note.  $\chi^2(14) = 15.09$ ,  $p = .372$ , RMSEA = .021, CFI = .998, TLI = .993, SRMR<sub>within</sub> = .031,

SRMR<sub>between</sub> = .014.

\*\*\*  $p < .001$ .

Table 2

*Unstandardized Coefficients (Standard Errors) of a Multilevel Latent Growth Curve Model Predicting Intercept and Slope in Friendship Homophily for Ethnic Minority Group Children (N = 214)*

Predictors	Intercept	Slope
Level 1 – individual level		
Self-esteem		
T1	1.04 (3.57)	-0.57 (1.87)
T1-T3 Change		0.53 (1.70)
Peer problems		
T1	16.75* (7.08)	4.19 (3.72)
T1-T3 Change		-7.80 (4.83)
English Identification		
T1	1.27 (1.66)	0.34 (1.16)
T1-T3 Change		-0.36 (1.64)
Ethnic Identification		
T1	17.00*** (3.94)	5.58 (3.36)
T1-T3 Change		3.96 (2.50)
English × Ethnic Identification T1	-11.18***	-2.00 (1.86)
Level 2 – school level		
School Ethnic Composition	1.03 (0.11)***	0.17 (.02)***
R <sup>2</sup> Level 1	.15	.17
R <sup>2</sup> Level 2	.69	.99

Note.  $\chi^2(18) = 25.80, p = .105$ , RMSEA = .045, CFI = .987, TLI = .947, SRMR<sub>within</sub> = .024, SRMR<sub>between</sub> = .023.

\*  $p < .05$ . \*\*\*  $p < .001$ .

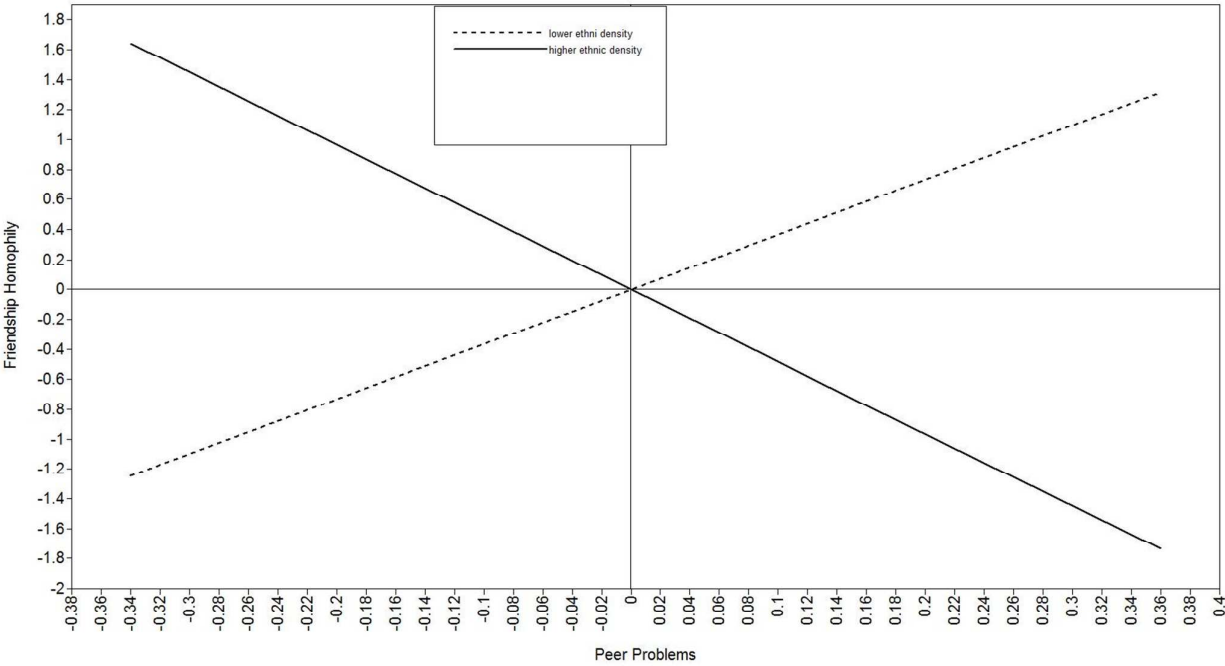
## Figure captions

*Figure 1.* Cross-level interaction: Peer problems and friendship homophily moderated by school ethnic composition among White English children.

*Figure 2.* Cross-level interaction: English identification and friendship homophily moderated by school ethnic composition among White English children.

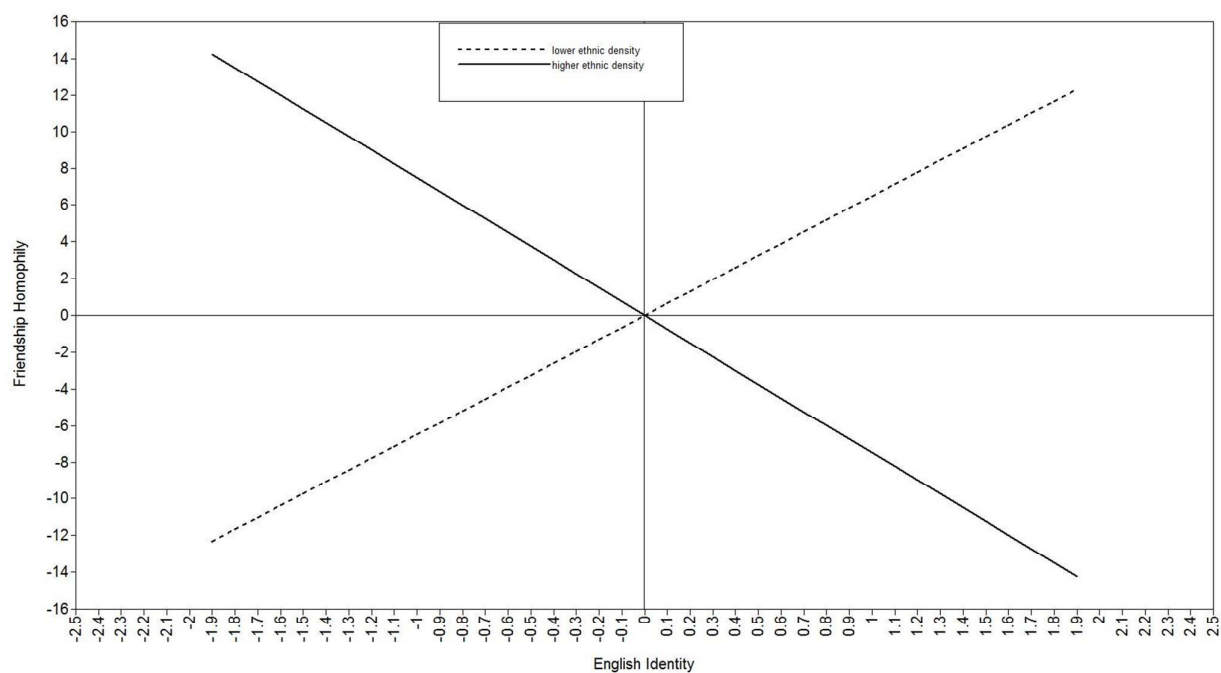
*Figure 3.* Student-level interaction: Ethnic identification and friendship homophily moderated by English identification among ethnic minority children.

ETHNIC DIVERSITY MODERATES FRIENDSHIP HOMOPHILY

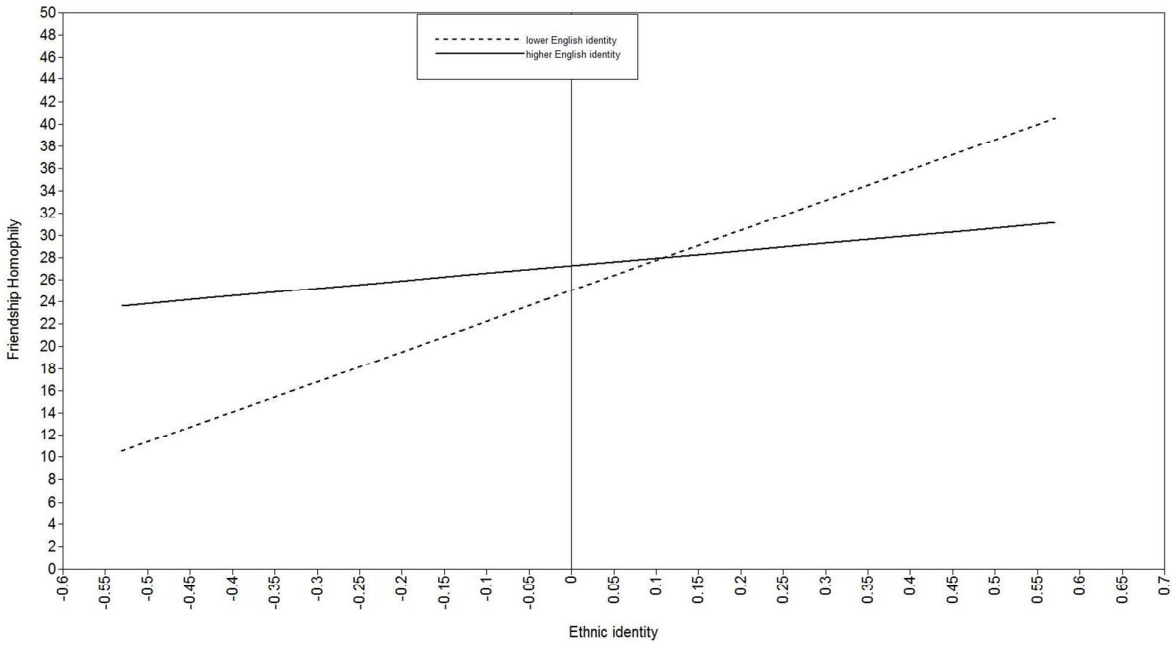


## ETHNIC DIVERSITY MODERATES FRIENDSHIP HOMOPHILY

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ETHNIC DIVERSITY MODERATES FRIENDSHIP HOMOPHILY



## ETHNIC DIVERSITY MODERATES FRIENDSHIP HOMOPHILY

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## Appendix

*Correlations, means, and standard deviations of all variables for majority group (N = 182) and minority group (N = 215) children*

	1	2	3	4	5	6	7	8	9	10	11	12
1. Homophily T1	-	.62**	.58**	.26**	.02	-.04	-.03	.15	-.07	.00	.18**	.08
2. Homophily T2	.54**	-	.67**	.26**	.05	-.06	.03	.01	-.08	-.05	.15*	.10
3. Homophily T3	.46**	.63**	-	.37**	.05	-.01	.07	.13	-.01	-.02	.25**	.21**
4. School Ethnic Composition	-.28**	-.40**	-.49**	-	.08	-.00	-.18*	.10	.01	-.08	.09	.14
5. Self-esteem T1	.17*	.07	.06	.07	-	.33**	-.19*	-.33**	.09	.06	.10	.12
6. Self-esteem T3	-.01	.05	.10	-.04	.25**	-	-.04	-.10	-.08	.01	.16*	.31**
7. Peer problems T1	.04	-.03	-.05	-.01	-.20**	-.18*	-	.41**	.11	-.03	-.01	-.06
8. Peer problems T3	-.08	-.12	-.09	.13	-.22**	-.07	.58**	-	-.06	-.04	.02	-.04
9. English identification T1	.03	.05	.01	.05	.07	-.02	-.07	-.07	-	.47**	-.23**	-.10
10. English identification T3	-.08	-.09	.02	.01	.23**	.26**	-.09	-.20*	.20*	-	-.13	-.14
11. Ethnic identification T1 <sup>a</sup>	-	-	-	-	-	-	-	-	-	-	-	.37**
12. Ethnic identification T3	-	-	-	-	-	-	-	-	-	-	-	-
Mean	78.31	77.12	80.78	25.45	3.28	3.32	1.26	1.22	3.77	3.79	-	-
	44.20	44.37	46.09	25.80	3.24	3.32	1.29	1.23	3.05	3.13	3.88	4.01
SD	25.53	25.55	23.53	14.44	0.57	0.56	0.33	0.32	0.63	0.52	-	-
	32.74	32.74	31.96	14.69	0.61	0.59	0.36	0.30	0.93	0.83	0.53	0.42

*Note.* Correlations for majority group children below and correlations for minority group children above the diagonal. Means and SDs for majority group children in top row, and means and SDs for minority group children in bottom row. <sup>a</sup> Ethnic identification not assessed among ethnic majority children.

\*  $p < .05$ . \*\*  $p < .01$ .