FRIENDSHIP HOMOPHILY AND IMMIGRANT YOUTHS' MENTAL HEALTH

Tamara van der Does^{1,*†} and Muna Adem^{2,†}

¹ Santa Fe Institute, Santa Fe NM

² Indiana University, Bloomington IN

* Corresponding author: 1399 Hyde Park Rd, Santa Fe, NM 87501

tamara.vdd@gmail.com

[†] Equal authorship

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ABSTRACT (250 WORDS)

What types of friendship ties are important for adolescent children of immigrants' mental health? Mental health is a critical indicator of incorporation processes as it reflects personal experiences with larger social structures. Historically, research on immigrant incorporation in Europe has focused on the positive effects of contacts with natives for structural outcomes. However, friendships with other children of immigrants, unlike natives, can be an important source of support due to shared experiences and similar cultural backgrounds. We move beyond previous empirical research on mental health and networks by comparing different types of friendship ties. Specifically, we explore if, and to what extent, different dimensions of friendship homophily (immigrant generation, ethnic identity, race, and religion) shape mental health outcomes. Using the Children of Immigrants Longitudinal Study in Four European Countries (N=7,328), we find that children of immigrants with a higher proportion of native friends tend to have significantly worse mental health than children of immigrants with fewer native friends. In contrast, an increase in the proportion of homophilous friends is associated with better mental health across dimensions, but not equally across groups of immigrants. The benefits of having co-ethnic friends for mental health are especially strong for those who have a strong ethnic identity. Moreover, only children of immigrants who are perceived as non-white or are Muslim benefit from friendships with other classmates who share a similar racial or religious background. We discuss the implication of these findings for mental health outcomes, network analysis, and theories of immigrant incorporation.

Keywords: Immigration/Migration, Mental Health, Methodology

INTRODUCTION

With recent rise in immigration and ethno-racial diversity across European countries (Castles, de Haas, and Miller 2014), public debates have centered on the socio, cultural, and economic incorporation of immigrants and their children (Drouhot and Nee 2019). Increasingly, however, mental health is recognized as another significant but understudied indicator for immigrant adaptation processes – reflecting how micro-level experiences are embedded in larger social structures (Vega and Rumbaut 1991). In particular, immigrant youth are more likely to live between two “worlds,” where experiences related to social exclusion and perceived discrimination play an important role for their psychological well-being and development (Berry et al. 2006; Erikson 1968; J. Phinney and Alipuria 1990). While scholars agree that social relationships are essential for health behaviors (Umberson, Crosnoe, and Reczek 2010), there is a disagreement about how and which type of friendship ties matter for mental health. On the one hand, friendships with natives (defined as non-recent immigrants, with parents and grandparents born in the host country) could be essential for socio-cultural incorporation. On the other hand, friendships with other children immigrants could provide specific support and understanding.

In this paper, we investigate what types of friendship ties are beneficial for adolescent children of immigrants’ mental health (defined here as the internalizing of psychological problems). We have three driving research questions: **(1)** are friendships with native Europeans associated with better mental health, **(2)** are friendships with similar others associated with better mental health, and **(3)** for whom and on what dimension does friendship homophily matter for mental health? To answer these questions, we use the Children of Immigrants Longitudinal Survey in Four European Countries (CILS4EU) funded by the Norface Era Net Plus Migration in Europe program (Kalter et al. 2016) which followed adolescents over three school years between 2010 and 2013 in Germany, Sweden, the Netherlands, and England.

We extend the literature on children of immigrants' mental health and friendship networks in two ways. First, we advance the literature on children of immigrants' mental health by proposing social networks as an important predictor across reception contexts. As with other adolescents, family background – such as SES, cohesion, and support – is a strong predictor of mental health among children of immigrants in Europe (Mood, Jonsson, and Låftman 2017; Belhadj Kouider, Koglin, and Petermann 2014). However, as young adolescents start to increasingly rely on their peers at school for support instead of their parents, peer networks nested within the larger social context become important agents for positive mental health (Steinberg and Morris 2001; Kawachi and Berkman 2001; Thoits 2011). There is some disparate evidence that peer friendship networks could be important for European children of immigrants' mental health. McMillan (2019) finds that social ties are an important predictor for positive mental health outcomes among children of immigrants in the United States. In Europe, there is evidence that peer victimization (Låftman and Modin 2017) and feelings of peer support (Delaruelle et al. 2021) are both strong predictors of mental health outcomes. We propose to examine friendship networks as a possible predictor of children of immigrants' mental health outcomes in four European countries and investigate the type of social ties that matter the most.

Second, we advance research on social networks by examining various dimensions of friendship homophily in their relationship to mental health outcomes. In network studies of children of immigrants, measures of homophily tend to focus either on a shared immigrant generational status (McMillan 2019; Chen and Jiang 2020), ethnic (Kroneberg, Kruse, and Wimmer 2021; Leszczensky and Pink 2019; Smith et al. 2014), racial (Doyle and Kao 2007; Joyner and Kao 2000), or religious background (Leszczensky, Jugert, and Pink 2019). The focus on one dimension, however, fails to capture crucial variations. For instance, adolescents with the

same generational status have similar hardships due to comparable acculturation-related challenges (especially for first-generation immigrant youths) while friendship homophily based on ethnic identity is more likely to be formed due cultural similarities, group history, and ethnic discrimination (Leszczensky, Jugert, and Pink 2019). Friendships created around a shared race or religion might be particularly valuable for children of immigrants experiencing discrimination based on these dimensions, and thus their relationship with mental health might be more context dependent (Alba and Foner 2014; Foner 2015; Ponce 2019). We advance the social networks literature by comparing the role and salience of four dimensions of friendship homophily: immigrant generation, ethnic identity, racial status, and religion.

We find that children of immigrants with a higher proportion of native friends tend to have significantly worse mental health compared to children of immigrants with fewer native friends. In contrast, an increase in the proportion of homophilous friends is associated with better mental health across dimensions, but the extent to which homophilous friendships matter differs across groups. Specifically, same generation friendships are beneficial to all children of immigrants while the benefits of having co-ethnic friends for mental health is especially important for those who have a strong ethnic identity. Moreover, only children of immigrants who are perceived as non-white or identify as Muslim benefit from friendships with other classmates who share a similar racial or religious background. These findings advance theoretical debates surrounding contact with natives, the immigration paradox, and the incorporation process of children of immigrants in Europe, as discussed next.

BACKGROUND

Contacts with Natives

Traditional and new assimilation models long predicted a gradual integration of children of immigrants into the host-society, defined as the process that allows immigrants and their

children to attain the same opportunities as native groups, as well as gaining societal acceptances and institutional inclusion (Berry 1997; Alba and Foner 2015). Accordingly, integration is conceptualized as a multidimensional process occurring at a relational (e.g., intergroup contact and friendship networks), structural (e.g., labor market) and cultural (e.g., feelings of belongings and national identification) level (Alba and Nee 2003). The first process, contact with majority groups, is still considered fundamental for the overall incorporation of immigrants. A long body of research suggests that contact with natives can provide greater job opportunities, improve occupational status, and increase income chances (Lancee 2010; Kanas et al. 2012) while also enhancing cultural integration in terms of national identification and host-country language proficiency (Agirdag et al. 2011; Schulz and Leszczensky 2016; Berry et al. 2006; Ali and Fokkema 2015).

Against this theoretical background, recent empirical work explores the consequences of the *integration paradox*, which describes the phenomenon of how increased contact with native groups may not always be beneficial for immigrants—or at the very least does not always produce the intended effect (Verkuyten 2016). Challenging classical integration and assimilation theories, studies find that immigrants who are more structurally integrated report higher level of perceived discrimination (de Vroome, Martinovic, and Verkuyten 2014; Tolsma, Lubbers, and Gijsberts 2012), lower level of perceived acceptance (Teije, Coenders, and Verkuyten 2013) and even stronger ethnic identification (Tolsma, Lubbers, and Gijsberts 2012), all of which often associated with worse mental health outcomes (Yip, Gee, and Takeuchi 2008; Mossakowski et al. 2019; Jasinskaja-Lahti, Liebkind, and Solheim 2009). Contact with natives might therefore be critical for some dimensions (e.g., structural outcomes), but they might not be as beneficial in providing support and resources necessary for overall psychological wellbeing, especially during

adolescence when children of immigrants start to explore questions related to their identity and belonging. In line with the integration paradox, we have the following hypothesis:

H1. Children of immigrants with more contacts with natives will have worse mental health outcomes compare to children of immigrants with fewer contacts with natives.

Friendship Homophily

Theories of segmented assimilation and pan-ethnic mobilization argue that friendship ties with groups who share a similar background (e.g., race or ethnicity) can create a sense of belonging (Okamoto and Mora 2014; Portes and Zhou 1993), and thus could be more essential for mental health outcomes. This is particularly the case for ethno-racial groups who are often at a higher risk of peer-victimization (Jansen, Mieloo, and Berkel 2016). School-based peer friendship ties are often considered key sources for buffering the effects of school victimization, helping to reduce the risk for mental health problems (Fleischmann et al. 2012; Gieling, Vollebergh, and van Dorsselaer 2010; Becares, Nazroo, and Stafford 2009; J. S. Phinney, Horenczyk, and Vedder 2001; Rich et al. 2016).

Theories of friendship homophily provide additional grounding for the potential beneficial effects of friendships with similar others. According to the homophily principle, adolescents are more likely to prefer similar peers as friends compared to dissimilar peers (McPherson, Smith-Lovin, and Cook 2001). The core premise of this argument is that people sharing at least one characteristic might be a better match along the lines of attitudes, interest, and beliefs (Lewis et al. 2008; McPherson et al. 2001; Wimmer and Lewis 2010). This in turn helps to increase mutual understanding and experiences, allowing the formation and maintenance of close social relations (Joyner and Kao 2000). Thus, friendships based on similar characteristics can be critical to provide

targeted mental health support among children of immigrants. In line with theories of segmented assimilation, pan-ethnic mobilization, and friendship homophily, we expect that:

H2a. Children of immigrants with more homophilous friends will have better mental health outcomes compared to children of immigrants with fewer homophilous friends.

Friendship homophily is the consequence of two processes: friendship context and choice (Mouw and Entwisle 2006; McPherson, Smith-Lovin, and Cook 2001; Smith et al. 2014; Byrne et al. 1971; Quillian and Campbell 2003). Friendship homophily due to context refers to the higher probability of befriending similar peers only because of the opportunities for such friendships in one environment (Moody 2001). Previous studies have found that children of immigrants have better mental health outcomes in ethnically dense neighborhoods (Becares, Nazroo, and Stafford 2009), in schools with more co-ethnic or co-racial students (Georgiades, Boyle, and Fife 2013), and in classrooms with either many immigrants across ethnic groups (Gieling, Vollebergh, and van Dorsselaer 2010; Granvik Saminathen, Löfstedt, and Låftman 2021) or many co-ethnics specifically (Rich et al. 2016). In contrast, friendship homophily due to choice, or homophily bias, refers to a personal preference to befriend similar peers given a particular context (Joyner and Kao 2000). Choosing homophilous friendships could be especially crucial for mental health as these friendships are created both because of shared characteristics but also because of other factors such as personality, cultural taste, hobbies, etc. (Lewis et al. 2008; Moody 2001; Smith et al. 2014; Stark and Flache 2012). Integrating theories on friendship formation, we hypothesize that:

H2b. The positive effect of homophilous friendships for mental health among children of immigrants will hold for both friendships due to the classroom context and for those due to personal choice.

Homophilous Friendships across Immigrant experiences

As different processes of friendship homophily are nested within each other (e.g., race and national origins), recent work suggests a more precise conceptualization of homophily is warranted to disentangle effects from broader categories (Wimmer and Lewis 2010). For example, racial homophily not only overlaps but is often a consequence of other group categories nested in racial categories, in particular same ethnic background. Moreover, not all dimensions of homophily will be equally beneficial for mental health outcomes across immigrant groups. As incorporation processes are strongly determined by the context of reception (Zolberg and Woon 1999; Verkuyten and Yildiz 2007; Alba 2005), friendships according to different dimensions of homophily might be beneficial depending on specific experiences of children of immigrants. We explore these variations below by focusing on four different dimensions of homophily that could be valuable for children of immigrants' mental health: immigrant generation, ethnic identity, racial status, and religion.

There are competing hypotheses for how friendships with children of immigrants from the same generation might relate to mental health outcomes across generations. In other words, if friendships with peers who share the same immigrant generation matters equally for first, second, and third generation immigrants. On the one hand, if we assume a linear process of incorporation as proposed by classic assimilation theories, we should expect that having friends who are also children of immigrants might be less important to adolescents' mental health as they incorporate to the host country. On the other hand, if we assume a segmented assimilation process (Portes and Zhou 1993; Rumbaut 1994), second and third generation immigrants might have specific challenges which only other children of immigrants in the same generation might be able to understand and support. Looking at children of immigrants in the US, McMillan (2019) argues that homophily based on immigrant generational status might be particularly beneficial for

immigrant youth as these friendship ties provide unique support related to cultural values and adaptation patterns. Therefore, we explore two competing hypotheses:

H3a. The positive relationship between same-generation friendships and mental health will decrease over generations.

H3b. The positive relationship between same-generation friendships and mental health will be as important for first, second, and third generation children of immigrants.

While ethnic origins are a strong component of all children of immigrants' identity processes in adolescence, we know substantively less about the relationship between co-ethnic friendships and mental health. When looking at classroom or school composition, studies find a positive relationship between ethnic density and wellbeing for children of immigrants (Hjern et al. 2013) but the evidence is mixed for co-ethnic presence in school (Georgiades, Boyle, and Fife 2013; Benner and Crosnoe 2011). We have reasons to believe that friends who share the same ethnic background might be important to children of immigrants. First, co-ethnic friendships have been found to be more intimate, last longer, and are more likely to engage in shared activities compared to inter-ethnic friendships (Schneider, Dixon, and Udvari 2007). Therefore, these friendships might have more potential to provide emotional resources to children of immigrants. Second, co-ethnic friendships might be especially valuable for mental health through the strengthening of ethnic identities, which have been found to be associated with easier assimilation processes and better mental health (Rumbaut 1994; J. S. Phinney, Horenczyk, and Vedder 2001; Syed and Juan 2012; Mossakowski 2003). However, given that there is some evidence that friendship choice is itself driven by strength of identity (Leszczensky and Pink 2019; Leszczensky, Jugert, and Pink 2019), we investigate if there is a difference between the role of co-ethnic friendships for children of immigrants with less or more ties to their ethnic identity.

H4. The positive relationship between co-ethnic friendships and mental health will be greater among children of immigrants with a strong ethnic identity.

In the US, race remains one of the most salient categories for both adult and youth networks (Mouw and Entwisle 2006; Currarini, Jackson, and Pin 2010; McPherson, Smith-Lovin, and Cook 2001), a finding that persists even after controlling for school racial composition (Moody 2001; Joyner and Kao 2000; Quillian and Campbell 2003). Racial homophily not only provides a sense of belonging – or feeling of “we-ness” – and understanding of common experiences, but offers protection against social isolation as well as risky health behaviors (Ibarra 1993; Ingram and Morris 2007; Ueno 2009). In Europe much of the focus has been on ethnic background, which tends to overlap with racial background (Wimmer and Lewis 2010; Leszczensky, Jugert, and Pink 2019). However, we argue here that children of immigrants who will be perceived as non-white, regardless of their ethnic origin, will have a different experience than those considered as white. Indeed, Europe’s history is marked by racism towards non-white colonies (Goldberg 2006), which still has consequences today for the relationship between natives and certain immigrant groups. And thus, friendships based on racial status could have beneficial outcomes for non-white children of immigrants’ mental health as they navigate veiled racism throughout Europe. In line with this, we expect:

H5. Non-white children of immigrants with more non-white friends will have better mental health compared to non-white children of immigrants with fewer non-white friends.

Instead of race, many argue that the strongest divide which shapes experiences of segregation and discrimination in Europe surrounds religious differences (Alba 2005; Zolberg and Woon 1999). These divisions, or boundaries, are found to separate specifically Muslims from natives and is well documented (Ponce 2019; Phalet et al. 2013; Drouhot and Nee 2019; Drouhot

2021). Given these shared experiences with salient religious boundaries, and the positive role religious communities can play for incorporation and mental health (Warner 1997; Lim and Putnam 2010), we would expect friendships based on shared religious background to be associated with better mental health outcomes among Muslim children of immigrants.

H6. Muslim children of immigrants with more Muslim friends will have better mental health compared to Muslim children of immigrants with fewer Muslim friends.

In the analysis described below, we compare the role of friendships with native classmates with friendships based on immigrant generation, ethnic identity, racial status, and religion for children of immigrants' mental health outcome. We explore if the effect these friendships varies by generation (first immigrant generation compared to second and third), ethnic identification (none, weak, or very strong), racial status (white vs. non-white) and experiences with religious boundaries (Muslim vs. Christians vs. non-religious) to gain a better understanding of how these categories operate in a similar or distinct way for children of immigrants.

METHOD

Sample

We use the Children of Immigrants Longitudinal Survey in Four European Countries (CILS4EU) funded by the Norface Era Net Plus Migration in Europe program (Kalter et al. 2016). This study followed adolescents over three school years between 2010 and 2013 in Germany, Sweden, the Netherlands, and England. These four countries are ideal cases to investigate friendship networks and children of immigrants' mental health. First, Germany, Sweden, the Netherlands, and England are among the largest immigrant-receiving countries in Europe. All four countries had several big waves of immigration in the fifty years following World War II, providing variation in national origins and reception context. Second, these four countries provide comparable context of incorporations in 2010, with a GDP per capita between \$39,079 and

\$52,132 and unemployment rates between 4.45 and 8.6% (World Bank 2019b, 2019a). Last but not least, Western Europe is in the midst of a multiculturalism debate, where researchers, politicians, and the public at large are questioning the benefits of children of immigrants retaining and valuing their cultural heritage and ethnic identities (Joppke 2004; Koopmans 2013; Modood 2013). The study of the potential benefits of co-generational, co-ethnic, co-racial, and co-religious friendships is therefore especially relevant to this discussion.

In 2010, the research team selected schools with a probability proportional to their size while over-sampling schools with a higher proportion of children of immigrants. Then, the team randomly selected classes within the schools in grades where most children were already fourteen years old and interviewed all students enrolled in these classes. The initial survey covered 480 schools and 958 classrooms comprising of 18,902 students, 18,716 of whom participated in the first wave (for which we have the full mental health questionnaire). We include all children or grandchildren of immigrants (1st generation, 2nd generation and 3rd generation), a total of 9,784 students. We use the CILS4EU's own coding for generational status, where natives are defined as children with parents and grandparents all born in the survey country (Dollmann, Jacob, and Kalter 2014). Among these children, 74.9% or 7,333 students have all non-missing information on the variables of interest (we impute time insensitive variables missing in the first wave with values in the following waves). In order to conduct multilevel analyses, we drop schools with only one student left (5 schools), yielding a final N of 7,328 students across 469 schools.

Our study focuses on friendships developed within classrooms. In contrast to the US, adolescents in European schools stay with the same group of students as they go from one course to another and often spend over 20 hours per week together (Gieling, Vollebergh, and van Dorsselaer 2010). This group of students can therefore have a strong impact on children of

immigrants' day-to-day lives. We use ego-network data from the first year of the study. Across the four countries, the network data is only available in the first two school years and therefore prevents longitudinal analyses of friendship ties. Our sample includes 906 classrooms, almost all of them representing the group each student would take all classes with. However, in a few cases two classrooms received the networks questionnaire when taking a class together and were able to choose friendships across the two groups (16 actual classrooms were interviewed in pairs). In one case, a classroom was split into two groups during the questionnaire. In order to use network measure, we consider the groups from which friendships could be nominated as "classrooms", representing the classroom when the survey was conducted.

Measures

We include one measure of *mental health*, a composite of six questions measuring the internalization of psychological problems. This scale is common in other studies of mental health (Mood, Jonsson, and Laftman 2016; Haugland and Wold 2001) and is valid across countries (Ravens-Sieberer et al. 2008). The scale combines two types of questions. The first asks students "how often are each of these statements true about you? 1) I feel very worried, 2) I feel depressed, 3) I feel anxious" and has answer options from 0-never true to 3-often true. The second asks "In the last six months, how often have you had 1) a headache, 2) a stomachache, 3) difficulties falling asleep?" and has options from 0-never to 4-every day. These six questions are reverse coded and standardized before being added together. Among adolescents in our sample, these questions have an alpha of 0.74 and load on a single factor with eigenvalue 1.96. Higher scores represent better mental health, or fewer internalizing symptoms. To note, in this sample, children of immigrants on average do not have significantly different levels of mental health compared to native Europeans.

Native friends. We measure if children of immigrants are surrounded by many native European close friends. Using the ego network measures of the questionnaire, for each child of immigrants we count the number of native European students chosen as his or her best friends and divide it by the total number of best friends the student nominated from the classroom (maximum of five).

Friendship homophily. We measure if children of immigrants have friends who share the same immigrant generation, ethnic identity, racial status, and religion. For each student, we calculate the proportion of best friends who shares each of these characteristics. Our first measure of friendship homophily matches students who are part of the same immigrant generation, separating first generation, second generation, and third generation students. The final measure of same generation friendship is the proportion of friends sharing the same immigrant generation. We then compare how these homophilous friendships on the generation dimension differ for students of each generation status.

Second, to measure if students share the same ethnic identity, we match students' chosen identities rather than imposing the nationality of one foreign born parent (Bubritzki et al. 2018; Smith et al. 2014) or even one foreign born grandparent (Kruse et al. 2016). After asking how strongly they feel German, Dutch, British or Swede, children are asked "do you belong to any of the following groups" with a list of countries, continents, and ethnic groups present in each country of survey (e.g., Albania, South America, Berber, etc.). We consider two students to share their ethnic identity if they choose the same first group as their identity. Any student who does not choose an additional group and thus only identifies with the host country is matched with students who identify in the same way. We compare the effects of co-ethnic friendships for students who only identify with the survey country, students who identify with an ethnic identity but say they

do not feel like they belong to this group very strongly, and those who do feel like they belong to this group very strongly.

For our third dimension of friendships homophily, we separate children of immigrants from Europe, North America, and Australia from children of immigrants from Africa, Middle East, Asia, Latin America, and the Caribbean. This separates adolescents who might be considered as white by native Europeans to those who would be racialized by the majority based on their skin color. This homophily measure is thus the proportion of friends who share the same racial status, either white or non-white. We investigate if these somewhat racially homophilous friendships matter equally for white and non-white students.

Finally, we match students based on their reported religious group. Students are asked “What is your religion?” and probed to give details if they selected “other”. The options are: No religion, Christian (in England and Sweden), Catholic or Protestant (in Germany and the Netherlands), Islam, Hinduism, Judaism, Sikhism, and other. For this friendship homophily measure, we match each student with other students sharing the same exact religion to calculate the proportion of co-religious friends. For subsequent analyses, we combine all Christians into one group, representing a religion familiar and often held by older members of the majority and combine Hinduism, Judaism, Sikhism and other into one group to represent non-Christians groups but who are not experiencing as strong as a boundary as Muslims, the third religious group in our models.

Figure 1 shows the example of one classroom with friendship nominations and each homophily dimension. In this classroom in England (Figure 1a), two students are native (with parents and grandparents born in England), three students are third generation immigrants (with grandparents born outside of England), one student is first generation (moved to England as a

child) and most students are second generation immigrants (born in England with parents born outside of England). As expected, the native British students identify as just British, but so do four children of immigrants (Figure 1b). Second generation immigrants tend to identify as Pakistani, the most common ethnic group, and Bangladeshi. One student identifies as Indian and one as Italian. All but three students could be viewed as non-white because their origins are outside of Europe, North America, or Australia (Figure 1c). Finally, we see in Figure 1d that most students selected Islam as their religion, a couple selected a Christian tradition or no religion, and one selected Hinduism. Overall, in this classroom, friendships seem mostly segregated by ethnic identity and immigrant generation. Nonetheless, there are many different types of friendships across groups. As we can see from this figure, many friendships are restricted to the classroom composition.

Friendships homophily can develop due to context or choice. We investigate the *classroom context* by looking at the classroom composition and its relationship with mental health outcomes. Specifically, we look at the proportion of students with the same immigrant generation, ethnic identity, racial status, and religion in the classroom. For *friendship choice*, we compare the proportion of each type of friend to the proportion present in the classroom. This is the unscaled version Laumann et al. (2000) measure of homophily bias or preference. Specifically, we subtract the proportion of one group in the classroom from the proportion of best friends from that group. In other words, we create a measure of the proportion of best friends from a group beyond this group's representation in the classroom. A score above 0 for choosing same generation friends means the student has more same generation friends compared to what would have been predicted

from the proportion of same generation students in their classroom. A value below zero means the student has fewer same generation friends than predicted. If this measure is equal zero, the adolescent has as many same generation best friends than predicted from the classroom composition. For example, given that the classroom in Figure 1 has seven out of seventeen students who identify as Pakistani (or 41.2%) a student with one Pakistani friend out of five best friends would have a score below zero for same ethnic identity friendship choice while a student with three or more Pakistani friends out of five would have a score above zero.

Controls. As having many friends might be associated with better mental health outcomes, we control for the *number of best friends* nominated by the student, or out-degrees, using the ego network measure of the questionnaire. We control for other measures that affect all adolescents' mental health. Gender, age, parents' employment and education, and household composition all influence adolescent's overall well-being and mental health in particular. We do not include dimensions of homophily (generation, ethnic identity strength, racial status, and religion) as controls as they have high correlations with each other and with the country of survey but instead investigate them separately interacting with friendship measures. Descriptives for all our measures are in Table 1.

Table 1. Descriptive Statistics (N=7,328)

	Mean/Prop.	SD	Min.	Max.
Better mental health score (standardized)	.02	.67	-2.49	1.54
<u>Proportion of friends:</u>				
Native	.33	.35	.00	1.00
Same ethnic identity	.43	.37	.00	1.00
Same immigrant generation	.40	.40	.00	1.00
Same racial status	.65	.36	.00	1.00
Same religion	.49	.37	.00	1.00
<u>Proportion in classroom:</u>				
Native	.34	.24	.00	.96
Same ethnic identity	.41	.25	.02	1.00

Same immigration generation	.40	.32	.02	1.00
Same racial status	.62	.27	.03	1.00
Same religion	.44	.25	.02	1.00
<u>Network controls</u>				
Number of friends	3.75	1.31	.00	5.00
<u>Demographics</u>				
Girl	.51			
Age	14.59	.68	13.00	18.00
Neither parent university education	.68			
Unemployed household	.18			
Single parent or recomposed family	.29			
<u>Generation</u>				
First generation	.12			
Second generation	.69			
Third generation	.18			
<u>Ethnic identity</u>				
Only identifies with host country	.44			
Fairly weak ethnic identification	.33			
Very strong ethnic identification	.24			
<u>Racial status</u>				
White	.40			
Non-white	.60			
<u>Religion</u>				
No religion	.20			
Christian (Catholic or Protestant)	.38			
Muslim	.36			
Other	.07			

Methods

To investigate the role of friendships on mental health, we present the results from a multilevel linear regression for children of immigrants nested in schools and with fixed effects by country. A Breusch-Pagan Lagrange Multiplier Test shows that the random intercept is significantly different than zero for classrooms, schools, and country. The results are the same using random intercept by class or school, but we decided to only keep the school level given that only one or two classrooms were selected by schools and some of the classrooms were defined differently in England and Germany (Bubritzki et al. 2018). There are only four countries

represented in this sample which precludes random intercepts by countries and thus we include countries as fixed effects. Tables 1, 3 and 4 in the Appendix present all the models used for the results described below. There is evidence of heteroskedasticity due to residuals being predicted by the gender of the students. However, results from models without gender and separately by gender are not substantively different than from models presented below, with one exception discussed in the text (Appendix Figure A1).

RESULTS

Contacts with Natives

In line with our first hypothesis, children of immigrants who have relatively more native friends have worse mental health outcomes. Figure 2a presents the relationship between changes in the proportion of each type of friendships and mean predicted mental health scores, with the total number of friends and other individual-level characteristics described above at their sample values. Higher mental health scores represent better mental health. Children of immigrants with a higher proportion of native friends have significantly worse mental health than children of immigrants with fewer native friends (Figure 2a grey line). There is a significant decline in mental health outcomes as children of immigrants have more native friends ($\beta_{nat} = -0.117$, 95% $CI = [-0.161; -0.072]$). In line with that finding, children of immigrants with all native friends have a predicted mental health score of -0.065 , (95% $CI = [-0.098; -0.031]$), significantly below average.

Extending this finding to all contacts with natives, the negative association between native friendships and mental health holds both for the classroom context and chosen friendships. Figure 2b presents the average marginal effect of classroom composition and friendship choice on mental health scores. Each effect of context and choice is estimated in a separate model. Classroom composition and friendship choice reflect the relationship between native friendships and mental

health (Figure 2b grey lines): more natives in the classroom is associated with worse mental health ($AME_{nat,class} = -0.162, 95\% CI = [-0.230: -0.094]$) and choosing to have more native friends is associated with worse mental health ($AME_{nat,class} = -0.083, 95\% CI = [-0.142: -0.025]$). While not significantly different, the negative effect of the proportion of natives is stronger in the classroom compared to chosen friendships. In sum, having many native friends, either because of classroom composition or personal choice, is associated with worse mental health outcomes compare to having no native friends. In additional analysis in Appendix Table 2, we ran the same models for native European students in the same classes and found no effect of friendships with other native students on their mental health. This confirms our hypothesis that contact with natives are particularly detrimental for children of immigrants' mental health outcomes.

Friendship Homophily and Mental Health

In line with hypothesis 2a, friendship homophily is associated with better mental health among children of immigrants, but mostly along the generational dimension (Figure 2a). Having friends who all share the same immigrant generation, ethnic identity, racial status, or same religion friends is significantly better than having all native friends. There are no significant differences between these dimensions of homophily in the effect of having all similar friends. However, there is a greater change in mental health outcomes between children of immigrants with few and all same generation friends. In other words, an increase in this dimension of homophily is associated with a positive and significant increase in positive mental health outcomes ($\beta_{gen} = 0.080, 95\% CI = [0.040: 0.121]$). Children of immigrants with no same generation friends have the lowest predicted mental health score while children of immigrants with all generation friends have the best recorded mental health outcomes. An increase in the proportion of same identity

friends, same racial status friends, and same religion friends is not significantly different than zero, though they are all positive and significantly better than an increase in native friends.

The positive relationship between mental health and same generation friendships is reflected both for friendships due to the classroom context and due to personal choice, in line with hypothesis 2b (Figure 2b). An increase in the proportion of classmates who share the same generation (top orange line) is associated with better mental health ($AME_{gen,class} = 0.105, 95\% CI = [0.043:0.167]$) and choosing to be friends with same generation students beyond the classroom context is also associated with better mental health ($AME_{gen,choice} = 0.070, 95\% CI = [0.013:0.128]$). Having a classroom with many same generation students or choosing to be friends with same generation students are both associated with better mental health than having fewer same generation schoolmates or friends.

Figure 2. (a) Predicted mental health score over different friendship compositions. Estimates based on models in Table 1 of the Appendix (each line is estimated from a different model). (b) Average marginal effect of classroom composition and friendship choice on mental health. Estimates based on models in Table 3 of the Appendix (each point is estimated from a different model). Shaded areas (a) and bars (b) represent 95% confidence intervals. Higher mental health scores represent better mental health. Children of immigrants in four European countries, N=7,328.

Having all co-ethnic, co-racial or co-religious students in the classroom is not associated with significant changes in mental health outcomes, though it is still significantly better than the effect of having all natives in one's school. Similarly, the effect of co-racial and co-religious chosen friendships is also significantly better than the effect of native chosen friendships on mental health but not associated with an overall significant increase in mental health outcomes. However,

choosing to be friends with co-ethnic classmates is positively associated with better mental health outcomes ($AME_{gen,choice} = 0.062, 95\% CI = [0.001:0.124]$). While having more co-ethnic students in the classroom context is not associated with any significant changes in mental health, friendships with co-ethnics are quite important (Figure 2b pink lines). This might be due to the overall smaller likelihood of having co-ethnic classmates compared to co-ethnic friends.

Dimensions of Homophily across Immigrant groups

In Figure 3 we explore how different dimensions of friendship homophily, regardless of context or choice, are associated with better mental health across different groups of children of immigrants. Reflecting findings in Figure 2, all children of immigrants benefit from same generation friendships. Somewhat in line with hypothesis 3b, there are no significant differences across generations. However, only the effect for second generation immigrants is significantly greater than zero ($AME = 0.074, 95\% CI = [0.024:0.124]$) due to large variations in the estimates for first and third generation students. To note, the magnitude of the relationship between all same generation friends and mental health seem to decrease as generations increase. However, small sample size and variations within groups preclude a conclusion on the differences in effect across generation.

Figure 3. Average marginal effect of having all same (a) generation, (b) ethnic identity (c), same racial status, and (d) religion friends compared to having none. Estimates based on models in Table 4 of the Appendix. Bars represent 95% confidence intervals. To note, effect of native friendships was the same across immigrant characteristics. Higher mental health scores represent better mental health. Children of immigrants in four European countries, $N=7,328$.

In line with our fourth hypothesis, children of immigrants only benefit from having co-ethnic friends if they feel like they belong to that group very strongly (Figure 3b). As expected, those who do not identify with any ethnic group do not benefit from having all co-ethnic friends (comprised of either natives or other children of immigrants who only identify with the host country). Children of immigrants who identify with an ethnic group but do not feel like they belong very strongly (weak identity) have slightly better than average mental health scores with an

increase in the proportion of co-ethnic friends, but not significantly different than zero. Those who identify with an ethnic group and have all co-ethnic friends have significantly better mental health outcomes than average ($AME = 0.109, 95\% CI = [0.018:0.198]$). More generally, as the strength of one's ethnic identity increases, so does the positive relationship between co-ethnic friendships and mental health outcomes.

Children of immigrants who can be perceived as racial minority have more benefits from racially homophilous friendships than those who could be perceived as white, confirming our fifth hypothesis (Figure 3c). An increase in the proportion of same racial status classmates is associated with an increase in better mental health outcomes for non-white students ($AME = 0.132, 95\% CI = [0.080:0.183]$). These positive effects do not hold for white students, whose parents come from North America, Europe, or Australia and might be perceived as more similar to natives.

In line with our last hypothesis, children of immigrants who experience a stronger boundary in the host country around religion, such as Muslims, might benefit from having many co-religious friends. In Figure 3d, children of immigrants who do not have a religion, who are Christian or neither Muslim nor Christian do not have better mental health outcomes if all their best friends shared their religion. However, Muslim children of immigrants benefit from having all co-religious friends ($AME = 0.078, 95\% CI = [0.012:0.145]$). Compared to Muslim children of immigrants with no Muslim friends, Muslim children of immigrants with all Muslim friends have better mental health outcomes. To note, we found that this positive effect of co-religious friendships holds for girls but not for boys (Appendix Figure 1) which might reflect the unique experience of Muslim women and the visibility of their religious denomination through the wearing of the veil.

In additional analyses, we ran the main model by country (Appendix Figure 2) and found no significant differences in the effects by country except for a larger negative effect on mental health of native friendships in Sweden compared to Germany. There are small variations in the magnitude of effects for each country which might be due to the variety of the context and immigrant experiences in Europe, but no conclusions can be drawn due to small per country sample sizes and large confidence intervals.

DISCUSSION

Immigration has fundamentally changed the ethno-racial composition of Western societies, and this continues to have strong implications for integration processes and intergroup relations. This paper is the first to use nationality representative data to examine how different types of friendships influence mental health among children of immigrants in Europe. We compare friendships with natives to friendships with other children of immigrants sharing at least one homophilous dimension, such as with classmates sharing an immigrant generation, ethnic identity, racial status, or religion. We investigate further if these homophilous friendships have different relationships with mental health across different immigrant groups.

We find that children of immigrants with a higher proportion of native friends have significantly worse mental health compared children of immigrants with fewer native friends. In contrast, across all friendship homophily measures, having only similar friends is associated with better mental health compared to having only native friends. While friendships with co-generational students are associated with better mental health for all children of immigrants, mirroring findings in the United States (McMillan 2019), this is not the case for friendships along ethnic, racial, or religious lines. Co-ethnic friendships must be combined with a strong ethnic identity to have a positive association with mental health. Both co-racial and co-religious

friendships are associated with better mental health only for students in the minority (non-white students) or for those experiencing strong religious boundaries (Muslim students).

Our study sheds light on important mechanisms that lead to positive mental health outcomes for children of immigrants. We find that if children of immigrants surround themselves with similar others, they report better mental health. When we combine these findings with the importance of family cohesion for mental health outcomes (Mood, Jonsson, and Låftman 2017; Belhadj Kouider, Koglin, and Petermann 2014; Delaruelle et al. 2021), we develop a clearer picture of the importance of community, both at home and in schools, for children of immigrants. A supportive and understanding community is critical for children of immigrants' mental health. These findings might help us understand differences found between the mental health of natives and children of immigrants and the variation in these differences across countries (Mood, Jonsson, and Låftman 2016; Stevens et al. 2015; Harker 2001; Stevens and Vollebergh 2008; Belhadj Kouider, Koglin, and Petermann 2014). Future work should explore how variations in the potential for homogenous friendships between European countries explain the differences in mental health outcomes among children of immigrants.

Our empirical findings enhance our theoretical understanding of friendship networks, for children of immigrants in particular and ethno-racial minorities more broadly. We find that not all measures of similarity are equally important. Past research tends to focus on specific homophily measures (e.g., ethnic versus racial homophily). Yet there is evidence to suggest that not only does different dimensions of homophily have an impact on health outcomes, but that the development and maintenance of specific friendship homophily might change over time. In our study, friendships that were the most similar on a coarse grain level— sharing the same immigrant generational status—seem to have the greatest impact on adolescents' mental health across groups.

However, more specific friendships interact with identity development and potential experiences of exclusion. As they move through their education, children of immigrants with a strong ethnic identity, who are perceived as non-white, or identify as Muslims might choose to prioritize friendships based on these dimensions which are beneficial to their mental health. Future research should explore the relationship between beneficial friendships and friendship choice over time.

Finally, this work has important implications for theoretical debates surrounding immigrant incorporation and specifically regarding the implicit assumption of the importance of contacts with natives. Previous work consistently demonstrates the beneficial role of contact and relations with native groups for socioeconomic outcomes and incorporation of immigrants. However, recent studies suggest social integration and bridging ties with native groups can have unintended consequences, where immigrants who are more integrated—both socially and economically—report less positive attitude towards host society (Verkuyten 2016). These findings directly challenge classical integration theories that assume that the boundaries between majority and ethno-racial minorities would gradually blur with increasing level of socio-economic integration. In line with the integration paradox literature, we find having many native friends is associated with negative mental health outcomes and these results holds between country. As mental health can indicate unresolved issues related to the incorporation process, this paper presents one instance where there might be certain risk associated with having only native friends. One possibility is that having native friends could exacerbate perceived incompatibilities between cultures instead of bridging differences. It might also be the case having only native friends reflect better integration of immigrant youths, which in turn reflect greater exposure to majority group and more possibilities for discrimination (Tuppat and Gerhards 2021). Future research should

disentangle how friendships with natives can both help and disadvantage children of immigrants' integration processes.

Following theories of segmented assimilation and pan-ethnic engagement (Okamoto and Mora 2014; Portes and Zhou 1993), we argue friendship homophily is particularly relevant for the incorporation and wellbeing of children of immigrants. Children of immigrants who share similar experiences due to the incorporation process might be able to provide specific support to each other. We find that same generation friendships are as valuable across generations, pointing to the unique challenges that each generation of immigrants face as they incorporate into the host society. In addition, friendships with co-ethnic students might provide a common understanding of not only of the hardships from the incorporation process but also of one's ethnic origin and culture. Moreover, children of immigrants who might be experiencing more hardships due to their racial status or religion benefit even more strongly from homophilous friendships on these dimensions. Other non-white or Muslim students might be able to provide targeted support and resources as a result of common experiences of segregation and discrimination.

Although our study has important implications for studies of mental health, friendship networks, and immigrant incorporation, it is not without limitations. This paper focuses on close friendships within classrooms without considering friendships or looser contacts at schools, clubs, religious organizations, or in the neighborhood. Children of immigrants navigate many contexts where they might draw support during their incorporation process. Moreover, these models do not account for family situations, especially regarding the importance of cultural practices and pride in national origins. Children of immigrants from families with a strong focus on their national origins might have more homophilous friendships (Leszczensky and Pink 2019), and thus better mental health. Beyond these additional contexts and determinants for friendships, much is still

unknown about the mechanisms linking friendship homophily and mental health for children of immigrants. We encourage future research to investigate what types of resources these friendships can provide for adolescents.

Despite these limitations, this study extends current research by providing important insights into the relationship between immigration incorporation, friendship network and mental health outcomes among children of immigrants. As schools are increasingly diversified, it becomes necessary to understand the sociopsychological implications of these trends, both in Europe and the U.S. The results from this study suggest peer networks have a significant impact on overall wellbeing for young immigrant adolescents, albeit in various ways. Future research should continue to investigate how different types of friendships influence children of immigrants' lives throughout adolescence and adulthood.

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APPENDIX

SOURCE: Children of Immigrants Longitudinal Study in Four European Countries (CILS4EU).

NOTES: Estimates based on full models with controls, each effect is estimated from a different model.

Figure A 1. Friendships and mental health outcomes among children of immigrants by gender, N=7,328

SOURCE: Children of Immigrants Longitudinal Study in Four European Countries (CILS4EU).

NOTES: Estimates based on full models with controls, each effect is estimated from a different model.

Figure A 2. Friendships and mental health outcomes among children of immigrants by country, N=7,328

Table A 1. Friendships and mental health among children of immigrants, N=7,328

<i>Friendships with:</i>	Native	Same generation	Same ethnic identity	Same racial status	Same religion
Proportion of friends	-0.117*** (-5.168)	0.080*** (3.876)	0.005 (0.279)	0.040 (1.924)	0.028 (1.386)
Number of friends (centered on mean)	0.007 (1.239)	0.008 (1.330)	0.007 (1.172)	0.007 (1.214)	0.007 (1.199)
Girl	-0.435*** (-29.489)	-0.436*** (-29.495)	-0.435*** (-29.378)	-0.436*** (-29.440)	-0.435*** (-29.406)
Age (centered on 14)	-0.043*** (-3.697)	-0.040*** (-3.402)	-0.039*** (-3.315)	-0.039*** (-3.293)	-0.039*** (-3.299)
Neither parent university education	-0.007 (-0.409)	-0.006 (-0.340)	-0.002 (-0.109)	-0.003 (-0.174)	-0.003 (-0.179)
Unemployed household	-0.022 (-1.041)	-0.015 (-0.720)	-0.010 (-0.501)	-0.011 (-0.552)	-0.012 (-0.575)
Single parent or recomposed family	-0.116*** (-6.558)	-0.119*** (-6.733)	-0.126*** (-7.172)	-0.125*** (-7.101)	-0.124*** (-7.074)
Country of survey (ref=Germany)					
England	-0.041 (-1.713)	-0.034 (-1.421)	-0.040 (-1.611)	-0.040 (-1.629)	-0.042 (-1.697)
Netherlands	0.170*** (7.014)	0.160*** (6.617)	0.153*** (6.219)	0.156*** (6.372)	0.151*** (6.178)
Sweden	0.288*** (13.129)	0.291*** (13.170)	0.288*** (12.838)	0.286*** (12.788)	0.286*** (12.729)
Constant	0.212*** (9.273)	0.137*** (5.860)	0.169*** (7.314)	0.147*** (5.844)	0.160*** (6.906)
Random intercept by classroom	0.007*** (-17.341)	0.007*** (-17.786)	0.008*** (-18.497)	0.008*** (-18.231)	0.008*** (-18.437)
Random error by classroom	0.373*** (-58.091)	0.374*** (-58.020)	0.374*** (-57.939)	0.374*** (-57.949)	0.374*** (-57.954)

SOURCE: Children of Immigrants Longitudinal Study in Four European Countries (CILS4EU).**NOTES:** *t*-statistics in parentheses, *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Table A 2. Mental health for native adolescents, N= 7,811

	(1)	(2)	(3)
Proportion of native friends	0.035 (1.528)		
Proportion of natives in classroom		0.033 (0.848)	
Proportion of chosen native friends			0.033 (1.227)
Number of friends (centered on mean)	0.010 (1.909)	0.010 (1.868)	0.011 (1.935)
<i><u>Demographics</u></i>			
Girl	-0.465*** (-33.885)	-0.465*** (-33.901)	-0.465*** (-33.866)
Age (centered on 14)	-0.009 (-0.786)	-0.010 (-0.819)	-0.010 (-0.841)
Neither parent university education	0.005 (0.300)	0.005 (0.324)	0.005 (0.324)
Unemployed household	-0.095*** (-3.829)	-0.096*** (-3.843)	-0.096*** (-3.840)
Single parent or recomposed family	-0.088*** (-5.205)	-0.088*** (-5.205)	-0.088*** (-5.264)
Country (ref=Germany)			
England	-0.104*** (-4.641)	-0.103*** (-4.576)	-0.100*** (-4.506)
Netherlands	0.051* (2.474)	0.051* (2.392)	0.056** (2.738)
Sweden	0.224*** (10.304)	0.224*** (10.302)	0.225*** (10.330)
Constant	0.196*** (7.932)	0.198*** (6.657)	0.215*** (10.189)
Random intercept by classroom	0.003*** (-12.206)	0.003*** (-12.249)	0.003*** (-12.493)
Random error by classroom	0.352*** (-63.608)	0.352*** (-63.597)	0.352*** (-63.623)

SOURCE: Children of Immigrants Longitudinal Study in Four European Countries (CILS4EU).**NOTES:** *t*-statistics in parentheses, *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table A 3. Mental health given context and choice for similar friendships among children of immigrants, N=7,328

<i>Proportion of:</i>	Native		Same generation		Same ethnic identity		Same racial status		Same religion	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Classroom context	-0.162*** (-4.699)		0.105*** (3.332)		-0.026 (-1.120)		0.029 (1.025)		-0.001 (-0.024)	
Friendship choice		-0.083** (-2.778)		0.070* (2.393)		0.062* (1.977)		0.046 (1.623)		0.052 (1.908)
<i>Controls</i>	<i>Included</i>									

SOURCE: Children of Immigrants Longitudinal Study in Four European Countries (CILS4EU).

NOTES: *t*-statistics in parentheses, *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Table A 4. Mental health and friendships by immigrant group, N=7,328

<i>Friendships with:</i>	Same gen- eration	Same ethnic identity	Same racial status	Same religion
Proportion of friends	0.074** (2.897)	-0.085* (-2.523)	-0.097** (-2.595)	-0.057 (-1.187)
First generation (ref=second)	0.035 (1.141)			
Third plus generation (ref=second)	-0.040 (-1.506)			
First gen # proportion friends same generation	0.017 (0.229)			
Third gen # proportion friends same generation	-0.061 (-0.710)			
Fairly weak ethnic identity		-0.068* (-2.481)		
Very strong ethnic identity		-0.007 (-0.231)		
Fairly weak identity # proportion of friends same identity		0.148* (2.500)		
Very strong identity # proportion of friends same identity		0.193*** (3.380)		
Racial status: non-white vs. white			-0.106** (-3.046)	
Non-white # proportion friends same racial status			0.229*** (4.932)	
Christian (ref=no religion)				0.012 (0.338)
Muslim (ref=no religion)				0.031 (0.849)
Other religion (ref=no religion)				0.066 (1.508)
Christian # proportion friends same religion				0.094 (1.590)
Muslim # proportion friends same religion				0.135* (2.299)
Other # proportion friends same religion				-0.041 (-0.397)

SOURCE: Children of Immigrants Longitudinal Study in Four European Countries (CILS4EU).

NOTES: *t*-statistics in parentheses, *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Models include controls for gender, age, family and country context.