EMPIRICAL RESEARCH

Mental Health in Adolescents with a Migration Background in 29 European Countries: The Buffering Role of Social Capital

Katrijn Delaruelle [1,2] · Sophie D. Walsh[3] · Maxim Dierckens[1] · Benedicte Deforche[1,4] · Matthias Robert Kern[5] ·
Candace Currie[6] · Concepcion Moreno Maldonado[7] · Alina Cosma[8,9] · Gonneke W. J. M. Stevens[10]

Abstract
Previous research is inconclusive as to whether having an immigration background acts as a risk factor for poor mental health in adolescents, and furthermore, what contribution the social context in which adolescents grow up may make. To address these questions, the current study uses an integrative resilience framework to investigate the association between immigration background and adolescent mental health, and the moderating role of social capital at the individual, the school, and the national level. The study uses data gathered from nationally representative samples of adolescents aged 11, 13, and 15 years ($N_{girls} = 63,425$ (52.1%); $M_{age} = 13.57$, SD = 1.64) from 29 countries participating in the 2017/18 Health Behaviour in School-aged Children (HBSC) study. Data analysis reveals that first- and second-generation immigrants reported higher levels of life dissatisfaction and psychosomatic symptoms than their native peers, and that this association varied across schools and countries. In addition, social capital was found to moderate the association between immigration background and adolescent mental health. Individual-level social support from peers and family and national-level trust protected against poor mental health in adolescents with an immigration background, while the opposite was true for individual-level teacher support. Supportive teacher-student relationships were found to provide more protection against poor mental health for native adolescents than for immigrant adolescents. Our findings indicate the importance of taking an ecological approach to design interventions to reduce the negative effects of having an immigration background on adolescent mental health.

Introduction

Adolescents with an immigration background account for a considerable proportion of the current population in European societies. To illustrate, the most recent report of the

international Health Behaviour in School-aged Children (HBSC) study indicated that across all countries 5% of the adolescents were first-generation and 14% second-generation immigrants, although there was substantial cross-national variation (Inchley et al., 2020). Within this

✉ Katrijn Delaruelle
  Katrijn.Delaruelle@UGent.be

1 Health Promotion Unit, Department of Public Health and Primary Care, Ghent University, Corneel Heymanslaan 10, 9000 Ghent, Belgium

2 Hedera, Department of Sociology, Ghent University, Korte Meer 5, 9000 Ghent, Belgium

3 Department of Criminology, Bar Ilan University, Ramat Gan 5290002, Israel

4 Movement and Nutrition for Health and Performance Research Group, Faculty of Physical Education and Physiotherapy, Pleinlaan 2, 1050 Elsene, Belgium

5 Department of Social Sciences, University of Luxembourg, 4366 Esch-sur-Alzette, Luxembourg

6 GCU London, 40 Fashion Street, London, United Kingdom

7 Department of Developmental and Educational Psychology, Universidad de Sevilla, Sevilla, Spain

8 Sts Cyril and Methodius Faculty of Theology, Olomouc University Social Health Institute, Palacky University in Olomouc, Olomouc, Czech Republic

9 Faculty of Electrical Engineering and Computer Science, VSB – Technical University of Ostrava, Ostrava, Czech Republic

10 Department of Interdisciplinary Social Science, Faculty of Social and Behavioural Sciences, Utrecht University, Padualaan 14, 3584 CH Utrecht, the Netherlands

context, there has been a growing interest in the mental health of immigrant adolescents (Stevens & Walsh, 2019; Suárez-Orozco et al., 2018), as this is often considered a critical marker of successful adaptation (Motti-Stefanidi & Coll, 2018). Existing evidence on the association between immigration background and adolescent mental health is inconsistent. While most studies revealed that immigrant adolescents report more mental health problems as compared to their native peers (e.g., Dimitrova et al., 2016; Stevens & Vollebergh, 2008), others report the opposite (e.g., Harker, 2001; Mood et al., 2016). It has been suggested that these inconsistent results are due to the fact that researchers have paid insufficient attention to the social contexts within which adolescents are living, such as the school and the country context (Stevens & Walsh, 2019; Suárez-Orozco et al., 2018). However, few studies have empirically investigated to what extent and how the association between immigration background and adolescent mental health varies with respect to school and country, and particularly their social aspects. The current study seeks to add to this sparse literature. Within Motti-Stefanidi and colleagues' integrative framework (2012), and using nationally representative samples of adolescents from 29 countries, it examines social capital of the individual and his/her environment as a resilience resource which may moderate immigration-related mental health risks.

Risk and Resilience for Immigrant Adolescent Mental Health

Most European studies have found a higher prevalence of mental health problems in adolescents with an immigration background compared to their native peers (e.g., Dimitrova et al., 2016; Stevens & Vollebergh, 2008). This could be explained by a *risk perspective* whereby the multitude of stressors these young people face — including discrimination and social exclusion (Fangen, 2010), poor living conditions (Landale & Oropesa, 2001), and navigating between two or more sets of cultural norms and expectations (Berry et al., 2006)—put their mental health at risk. However, some studies have reported an "immigrant paradox", whereby immigrant adolescents show better mental health than native ones (Harker, 2001; Mood et al., 2016), and whereby first-generation immigrants fare better than later generation immigrants in terms of mental health (Garcia Coll & Marks, 2012). Although most of the evidence on this paradox comes from the United States and Canada (Suárez-Orozco et al., 2018), there are also European studies that provide support for the mental health advantage of adolescents with an immigration background. For instance, Mood et al. (2016) found that immigrant adolescents, especially those of non-European background, report better mental health than their native peers in the United Kingdom,

Germany, the Netherlands, and Sweden. Traditionally, the "immigrant paradox" is explained in two ways. The first explanation states that immigrants adolescents are positively selected on characteristics that are associated with better mental health, such as motivation, skills, and a higher socioeconomic background (Jasso et al., 2004). This explanation may especially be true for first-generation immigrants, although second-generation immigrants may inherit these health-promoting resources from their parents, genetically, or through socialization (Mood et al., 2016). The second explanation relates to the *resilience perspective* (Motti-Stefanidi & Masten, 2017), which postulates that some adolescents with an immigration background do well in spite of the challenges they face because of their access to resources that promote and/or protect their mental health. For instance, it explains the mental health advantage among first-generation immigrants by pointing to the higher sense of family cohesion, obligation, and educational aspiration within this group (Garcia Coll & Marks, 2012)—which are all characteristics that are positively related to mental health.

Resilience in Context

At a more general level, the resilience perspective aims to clarify why some adolescents with an immigration background report better mental health than expected from a risk perspective, and in some cases, fare better than their native peers. A key feature of this perspective is that it takes a multilevel approach to study the adaptation of immigrant adolescents (Motti-Stefanidi et al., 2012; Suárez-Orozco et al., 2018). It emphasizes that immigrant adolescents' experiences are shaped by the multiple contexts in which they grow up: the individual level, the proximal environments (such as schools), and the distal environments (such as the country of residence). Differences in these contexts may cause variation in resilience across adolescents with an immigration background. A similar point was made by Stevens and Walsh (2019), who suggested moving beyond an individual level approach and to study the association between immigration background and mental health from a multilevel perspective. They argued that the extent to which adolescents with an immigration background are at risk of poor mental health or show resilience may depend upon the school culture and the characteristics of the country of residence. However, despite the growing theoretical emphasis on the contextual nature of immigrant adolescents' mental health, empirical studies are scarce.

The Protective Role of Social Capital

Potential predictors of resilience in immigrant mental health are not only located at multiple contextual factors, they can also be grouped into two broad categories: promotive and

protective factors (Masten, 2015). While promotive factors refer to resources that improve the mental health of both immigrant adolescents and their native peers (a main effect in statistical models), protective factors include resources that buffer against adversity, and thus have particularly positive effects on the mental health of adolescents with an immigration background (a moderation effect in statistical models) (Motti-Stefanidi & Masten, 2017). The current study focuses on the protective role of social capital at the individual, the school, and the national level.

Social capital has been variously defined by scholars from different disciplines, but broadly refers to "the instrumental and moral resources that individuals can access through their social network connections" (Novak & Kawachi, 2015, p. 9). There have been two primary approaches to the study of social capital: one is based on social cohesion, and the other on social networks (Moore & Kawachi, 2017). Each approach captures aspects of social capital. While the *social cohesion approach* addresses social capital as a group attribute (e.g. trust, solidarity, norms)—conferring benefit from being part of a group—, the *social network approach* focuses on resources that are directly available to individuals from their social networks (e.g., information and social support)—conferring benefit from what is received from a group—(Alvarez et al., 2017). These two approaches are not mutually exclusive and both consider social capital as an ecological multilevel resource (Kawachi, 2006). As can be seen in Fig. 1, the current study therefore draws on both approaches to examine the moderating role of social capital for the mental health of immigrant adolescents. At the individual level, social capital is addressed through the social network approach by focusing on the impact of perceived levels of family, teacher, and student support. At the school and the national level, the social cohesion approach is applied by focusing on the impact of a cohesive school community and national levels of generalized trust, considered an important measure within the social cohesion conceptualization (Rodgers et al., 2019).

To date, previous studies have predominantly examined the protective effect of social capital on the mental health of adolescents with a lower socioeconomic background (e.g.,

De Clercq et al., 2012; Elgar et al., 2010). Yet, few studies have assessed its importance for resilience in adolescents with an immigration background (Runarsdottir & Vilhjalmsson, 2019; Tummala-Narra, 2015) or examined the role of social capital as a resilience factor at multiple contextual levels. However, there are theoretical grounds to expect that social capital protects immigrant adolescents from the risks that migration entails, and consequently buffers against poor mental health. At the individual level, high levels of perceived social support from teachers and students have been found to protect immigrant adolescents from the negative effects of perceived discrimination (Walsh et al., 2018) and counteract feelings of interpersonal rejection (Smart Richman & Leary, 2009), with obvious positive effects on their mental health. Also, perceived parental support might protect against the negative mental health effects of acculturative stress as a consequence of the process of migration (Sirin et al., 2013; Tummala-Narra, 2015). At the school level, high levels of social cohesion might help integrate adolescents with an immigration background into the dominant school culture, which has been found to improve their mental health (Schachner et al., 2018). At the country level, high levels of social capital may protect against the mental health risks that migration entails by alleviating anti-immigrant sentiments, and creating tolerance toward unknown others (van der Linden et al., 2017).

Current Study

The current study aims to contribute to the knowledge gaps in the literature by examining the relationship between immigration background and adolescent mental health, measured in this study by life dissatisfaction and psychosomatic complaints, and the extent to which this association is moderated by social capital at the individual, the school, and the national level. The literature is inconclusive about whether immigration background is a risk factor for poor mental health or whether the "immigration paradox" holds. The first aim of this study is therefore to investigate the impact of immigration background on adolescent mental

Fig. 1 Conceptual framework of this study
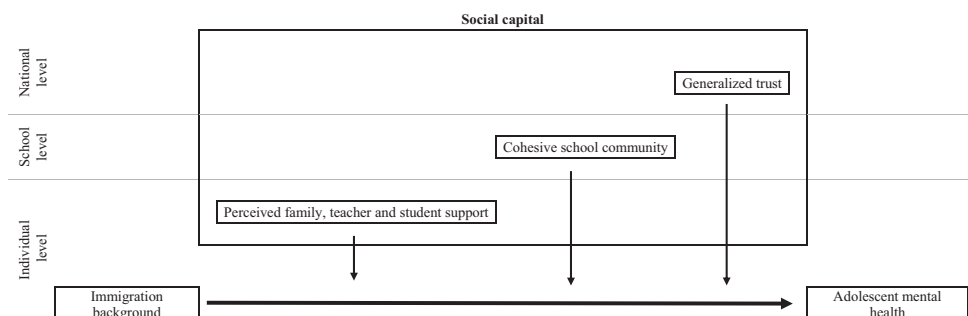
health across 29 European countries, thereby distinguishing between first-generation and second-generation immigrants. As most empirical evidence stemming from European countries points to a mental health disadvantage in adolescents with an immigration background, it can be expected that first-generation and second-generation immigrant adolescents generally are at a higher risk for poor mental health than their native peers (Hypothesis 1). The second aim of this study is to investigate contextual variation within the relationship between immigration background and adolescent mental health. As the adaptation of immigrant adolescents is shaped by the multiple contexts in which they grow up, it can be expected that the impact of immigration background on adolescent mental health varies across school and countries (Hypothesis 2). The third aim builds on the second one by examining whether social capital at the individual level (i.e., perceived family, teacher, and student support), at the school level (i.e., culture of teacher support and culture of student support), and at the national level (i.e., level of generalized trust) can moderate the association between immigration background and adolescent mental health. Based on the theoretical framework outlined above, it can be expected that social capital functions as a resilience factor that protects against the negative mental health consequences of having an immigration background (Hypothesis 3).

Methods

Data

The current study used data from the 2017/18 Health Behavior in School-aged Children (HBSC) survey. The HBSC survey is a cross-national research project conducted in collaboration with the WHO Regional Office for Europe, monitoring adolescents' health, health behaviours, and the social environments in which they grow up. The 2017/18 study included information from nationally representative samples of 11-, 13-, and 15-years old school children in 45 countries. In each country, cluster sampling was used in accordance with the international research protocol to select schools and classes to obtain representative samples (Inchley et al., 2018). Data were gathered through self-administered anonymous questionnaires in classroom settings. The questionnaires were translated into national languages and back-translated into English to ensure semantic equivalence. The study design was approved in each country by relevant ethical boards, participation was voluntary, and informed consent was obtained from all participating students and their parents or legal guardians in line with national ethical requirements.

From the initial sample, countries/regions for which no data on immigration background or generalized trust was available were omitted from the analyses ($N_{countries} = 15$). In addition, Denmark was removed from the sample because of differences in the way family support was measured. Furthermore, individuals with missing values on the variables of interest were excluded (the proportion of missing values per variable varied from 0% to 4.9%) ($N_{individuals} = 20,871$). Finally, schools in which less than five students had valid answers on all items were removed to safeguard the validity of contextual effects ($N_{schools} = 289$; $N_{individuals} = 722$). These restrictions resulted in a final sample of 121,751 adolescents spread across 5144 schools and 29 countries. Appendix A provides an overview of the number of respondents per country.

Measures

Adolescent mental health: Life dissatisfaction and psychosomatic complaints

Two indicators of adolescent mental health were used: life dissatisfaction and psychosomatic complaints. Life dissatisfaction was measured using the Cantril Ladder (Cantril, 1965), which asks adolescents to rate how satisfied they are with their life at present on a picture of a ladder, ranging from "the worst possible life" (0) to "the best possible life" (10). For the present study, responses were reverse coded with higher scores denoting more life dissatisfaction. This scale has been validated and used previously to assess adolescent mental health (Levin & Currie, 2014). Psychosomatic complaints were assessed by a seven-item symptom checklist (feeling nervous, feeling low, irritability or bad temper, headache, stomach-ache, backache, and feeling dizzy). Adolescents indicated how often they had experienced each complaint over the last six months. Response options ranged from "about every day" to "rarely or never". All items were reverse coded and summed, with higher scores representing more psychosomatic complaints. The reliability of this instrument has been previously established in adolescents (Haugland & Wold, 2001) and was confirmed in the present study (Cronbach's alpha = 0.80).

Immigration background

Immigration background was obtained by asking adolescents questions about their own and their parents' country of birth. Former research indicated that 11-year old adolescents provide valid answers to these questions (Nordahl et al., 2011). Three categories were discerned: natives, first-generation immigrants (i.e. adolescents who were born abroad, with at least one parent born abroad) and second-generation

immigrants (i.e. adolescents born in the survey country, with at least one parent born abroad). As in previous studies (Kern et al., 2020), adolescents born abroad, but with both parents born in the survey country were treated as natives. In addition, for historical reasons, adolescents in the Republic of Ireland were not treated as immigrants if they themselves or their parents were born in Northern Ireland and, similarly, adolescents in former Yugoslavian countries were not treated as immigrants if they or their parents were born in another former Yugoslavian country.

Social capital: individual level

The analysis included several forms of social capital at the individual level. Family support was measured using a subscale from the Multidimensional Scale of Perceived Social Support (Zimet et al., 1988) and consisted of the average score on four items "My family tries to help", "I get emotional help from my family", "I can talk about problems with my family" and "My family helps me with my decisions" (Cronbachs $\alpha = 0.93$). Teacher support and student support were assessed using adapted scales from Torsheim and colleagues (2000), which have been validated by the HBSC international network (Inchley et al., 2018). These scales were calculated as the average score on three items: "I feel that my teachers accept me as I am", "I feel that my teachers care about me as a person", "I feel a lot of trust in my teachers" (Cronbachs $\alpha = 0.83$) and "The students in my class enjoy being together", "Most of the students in my class are kind and helpful", "Other students accept me as I am" (Cronbachs $\alpha = 0.76$), respectively. While the items described for family support used a 7-point Likert scale, answers to the items regarding teacher and student support were recorded on a 5-point Likert scale. Scores were computed for adolescents who had no more than one missing value per instrument. Higher scores referred to more perceived support from parents, teachers, or students respectively.

Social capital: school level

Two different indicators of social capital were defined at the school level: culture of teacher support and culture of student support. These measures were obtained by aggregating the mean individual scores on teacher support and student support for each school in the sample. To ensure that the aggregation really represented something shared at the group level, the mean rater reliability was estimated (Shrout & Fleiss, 1979), which is based on the intra-class correlation (ICC) in a one-way analysis of variance. The ICC was defined as [(Between Mean Square − Within Mean Square)/ Between Mean Square]. For both measures, the ICC

exceeded the threshold of 0.60 (teacher support: 0.79, student support: 0.76).

Social capital: national level

Similar to other studies (e.g., Campos-Matos et al., 2016), national levels of social capital were assessed by using a contextual measure of generalized trust. To create this variable, individual-level data from the European Social Survey (ESS; 2016 and 2018) and the European Quality in Life Survey (EQLS; 2016) were extracted. Both surveys included the following question: "Generally speaking, would you say that most people can be trusted, or that you cannot be too careful in dealing with people?". Respondents had to give a score from 0 (you cannot be too careful) to 10 (most people can be trusted). Similar to previous studies (e.g., Poortinga, 2006), these scores were then averaged to create a country-specific characteristic with higher scores representing higher levels of generalized trust within a country. The ESS 2018 was used as the primary source of data. However, for countries that did not participate in this survey, information from the ESS 2016 (Iceland, Israel, Portugal, Russia, Spain, and Sweden) or the EQLS 2016 (Albania, Croatia, Greece, Luxembourg, Malta, and Romania) was used. To ensure that combining the information on generalized trust across the different surveys was appropriate, correlation coefficients for countries that participated in more than one survey were calculated. The correlations were very high ($r_{\text{ESS2018-ESS2016}} = 0.97$; $r_{\text{ESS2018-EQLS}} = 0.88$; $r_{\text{ESS2016-EQLS}} = 0.85$), which indicated that pooling the measurements may have little impact on the results.

Covariates: individual level

Individual-level control variables included the following demographics: gender (boy = reference category), age (measured continuously in years), family structure ("intact family" was selected as the reference category and was compared to "single-parent family", "stepfamily", and "non-parental family") and adolescents' socio-economic background (SES). The latter was measured by the Family Affluence Scale (FAS-III) (Torsheim et al., 2016), which captures families' material assets based on six questions: "Does your family own a car, van or truck?" (No = 0, Yes = 1, Yes, two or more = 2); "During the past 12 months, how many times did you travel abroad on holiday?" (Not at all = 0, Once = 1, Twice or more = 2); and, "How many computers does your family own?" (None = 0, One = 1, Two or more = 2); "Do you have your own bedroom for yourself?" (No = 0, Yes = 1); "Does your family own a dishwasher?" (No = 0, Yes = 1); "How many bathrooms are there in your house?" (None = 0, One = 1,

Two or more = 2). A sum score was calculated for respondents with no missing data for any of the items, which in turn was transformed to a cumulative rank probability (ridit score) to facilitate cross-country comparisons. Subsequently, ridit scores were categorized into three categories: lowest 20%, medium 60%, and highest 20%, with adolescents in the highest 20 percent constituting the reference group.

Covariates: national level

At the country level, the models were controlled for income inequality (measured by the GINI coefficient of 2017) and Gross Domestic Product (GDP) per capita at current prices (in US$) of 2018, using data from the World Bank.

Analysis

Three-level multilevel analysis was used with individuals nested in schools ($N = 5144$), which in turn were nested in countries ($N = 29$). The models were estimated in MLwiN version 3.04, and fitted with the Restricted Maximum Likelihood (REML) procedure. For each dependent variable, four models were estimated. All models were adjusted for potential individual-level confounders—gender, age, family structure, and SES—. The first model examined the relationship between immigration background and adolescent mental health (cf. Hypothesis 1). A random slope for immigration background was included to test whether the strength of the association varies across schools and countries (cf. Hypothesis 2). In the second model, the different indicators of social capital were added one by one. To facilitate the interpretation of the regression coefficients, all social capital variables—except for individual-level perceived teacher and student support—were grand-mean centered. Individual-level perceived teacher and student support were centered on the group-mean (i.e., school-mean) to separate their effects from those of the school-level variables that measure culture of teacher and student support (Suzuki et al., 2012). In the third model, the cross-level interaction effects between immigration background and the various indicators of social capital were included to scrutinize whether social capital moderates the association between immigrant background and adolescent mental health (cf. Hypothesis 3). Finally, country-level control variables were entered in Model 4. The main effects of the country-level control variables were included, as well as significant interaction effects between the country-level control variables (income inequality and GDP) and immigration background. The statistical significance was set at an alpha level of 0.05.

Results

Descriptive Results

Table 1 gives an overview of the descriptive statistics for native adolescents and adolescents with an immigration background separately, as well as for the total sample. Post-hoc Bonferroni tests indicated that first- and second-generation immigrants reported higher levels of life dissatisfaction ($\bar{x}_{1stGen} = 2.61$, $\bar{x}_{2ndGen} = 2.42$) and psychosomatic complaints ($\bar{x}_{1stGen} = 7.94$, $\bar{x}_{2ndGen} = 7.88$) than their native peers ($\bar{x} = 2.20$ and 7.32, respectively). Moreover, first-generation immigrants expressed more life dissatisfaction than second-generation immigrants, while no significant differences by generation were noted for psychosomatic complaints. Furthermore, first-generation immigrants were over-represented in the lower SES group, less likely to live in an intact family, and to perceive less support from their family and students compared to second-generation immigrant and native adolescents. In addition, first-generation immigrants reported less support from teachers than their native peers.

Multilevel Results

Table 2 and Table 3 report the results of the multilevel analysis for life dissatisfaction and psychosomatic complaints, respectively. Significant differences by immigration background were found for both outcomes (Model 1): immigrant adolescents generally reported greater life dissatisfaction and more psychosomatic complaints than their native peers. Additional analyses indicated that life dissatisfaction was more prevalent in first-generation immigrants as compared to second-generation immigrants, while no significant differences were found in psychosomatic complaints. Moreover, Model 1 showed that the relationship between immigration background and poor adolescent mental health generally varied across schools and countries. An exception was noted for the association between having a second-generation immigration background and psychosomatic complaints, for which the random slope at the school level was not significant.

Model 2 added the indicators for individual, school, and country social capital to the regression. All estimates at the individual and school level were significant and in the expected direction. Perceived support from family, teachers, and students at the individual level, and the culture of teacher and student support at the school level were negatively related to life dissatisfaction and psychosomatic complaints in adolescents. By contrast, at the country level, the overall relationship between generalized trust and life dissatisfaction was not in line with a priori expectations: adolescents

Table 1 Descriptive statistics ($N = 121{,}751$)

	Native		First generation		Second generation			Total	
	N	%	N	%	N	%		N	%
Migration background									
Native								96,878	79.6
First generation								6077	5.0
Second generation								18,796	15.4
Gender (boy)	46,485	48.0	3005	49.4	8836	47.0		58,326	47.9
SES									
Lowest 20 percent	17,090	17.6	1796	29.6	3968	21.1		22,854	18.8
Medium 60 percent	60,967	62.9	3266	53.7	11,243	59.8		75,476	62.0
Highest 20 percent	18,821	19.4	1015	16.7	3585	19.1		23,421	19.2
Family structure									
Intact family	74,308	76.7	3977	65.4	13,759	73.2		92,044	75.6
Single-parent family	14,754	15.2	1228	20.2	3409	18.1		19,391	15.9
Stepfamily	5585	5.8	514	8.5	1134	6.0		7233	5.9
Non-parental family	2231	2.3	358	5.9	494	2.6		3083	2.5

	Range	Mean	Sd	Mean	Sd	Mean	Sd	p^a	Mean	Sd
Life dissatisfaction	0–10	2.20	1.82	**2.61**	2.10	<u>**2.42**</u>	1.91	***	2.25	1.85
Psychosomatic complaints	0–28	7.32	5.77	**7.94**	6.11	**7.88**	5.88	***	7.44	5.81
Age	10–16.50	13.58	1.64	**13.68**	1.63	<u>13.48</u>	1.64	***	13.57	1.64
Family support	1–7	5.77	1.69	**5.48**	1.81	<u>5.76</u>	1.58	***	5.76	1.67
Teacher support	1–5	3.78	0.92	**3.75**	0.98	3.77	0.93	**	3.78	0.92
Student support	1–5	3.87	0.82	**3.77**	0.88	<u>3.87</u>	0.82	***	3.87	0.83
Culture of teacher support	1–5								3.78	0.37
Culture of student support	1–5								3.87	0.31
Trust	2.40–6.94								5.07	0.90
GINI	24.20–40.40								31.40	4.37
GDP (/1000)	5.27–116.64								39.13	25.67

Values given in bold differ significantly from those for the reference group (i.e. native adolescents)

Underlined values differ significantly from those for the group of first-generation migrants

[a]Based on the results of one-way ANOVA tests; $*p < 0.05$; $**p < 0.01$; $***p < 0.001$

tended to report more life dissatisfaction in countries with higher levels of generalized trust. For psychosomatic complaints, there was no significant relationship with generalized trust. On a side note, the results also revealed that after adding these social capital variables to the model, differences in both mental health outcomes between adolescents with an immigration background and their native counterparts became smaller or even insignificant. This suggests that the lower levels of perceived support among first and second-generation immigrants may partially explain the mental health inequalities observed in Model 1.

In Model 3, the interaction terms between immigration background and the variables referring to the various forms of social capital were introduced. Several findings were noted. First, family support moderated the association between immigration background and adolescent mental health: the negative effects of immigration background on life dissatisfaction and psychosomatic complaints were less pronounced among immigrant adolescents experiencing high levels of family support. Second, individual-level teacher support was found to reinforce the negative association between having an immigration background and adolescent mental health. An exception to this was noted when focusing on life dissatisfaction, where the interaction term between teacher support and being a first-generation immigrant was not statistically significant. Third, the results indicated that individual-level student support protects against the negative impact of immigration on life dissatisfaction for first-generation adolescents.

Table 2 Results of the multilevel analysis with regard to life dissatisfaction ($N_{countries} = 29$, $N_{schools} = 5144$, $N_{individuals} = 121{,}751$)

	Model 1		Model 2		Model 3		Model 4	
	b	(SE)	b	(SE)	b	(SE)	b	(SE)
Individual level								
Intercept	1.657***	(0.047)	1.810***	(0.050)	1.809***	(0.050)	1.812***	(0.051)
Gender (boy = ref.)	0.283***	(0.010)	0.221***	(0.010)	0.220***	(0.009)	0.220***	(0.010)
Age	0.200***	(0.003)	0.109***	(0.004)	0.109***	(0.004)	0.109***	(0.004)
SES (Highest 20 percent = ref.)								
Lowest 20 percent	0.604***	(0.017)	0.524***	(0.016)	0.523***	(0.016)	0.523***	(0.016)
Medium 60 percent	0.279***	(0.013)	0.251***	(0.012)	0.251***	(0.012)	0.251***	(0.012)
Family structure (intact family = ref.)								
Single-parent family	0.440***	(0.014)	0.306***	(0.013)	0.305***	(0.013)	0.305***	(0.013)
Stepfamily	0.511***	(0.022)	0.360***	(0.020)	0.357***	(0.020)	0.357***	(0.020)
Non-parental family	0.635***	(0.033)	0.427***	(0.030)	0.420***	(0.030)	0.420***	(0.030)
Migration background (natives = ref.)								
First generation	0.205***	(0.043)	0.073	(0.037)	0.028	(0.042)	0.016	(0.041)
Second generation	0.169***	(0.027)	0.085***	(0.023)	0.092***	(0.024)	0.085***	(0.020)
Family support (a)			−0.241***	(0.003)	−0.220***	(0.003)	−0.220***	(0.003)
Teacher support (a)			−0.292***	(0.006)	−0.300***	(0.007)	−0.300***	(0.007)
Student support			−0.379***	(0.007)	−0.372***	(0.007)	−0.372***	(0.007)
Migration background × Family support								
First generation					−0.119***	(0.013)	−0.118***	(0.013)
Second generation					−0.105***	(0.008)	−0.105***	(0.009)
Migration background × Teacher support								
First generation					0.026	(0.027)	0.025	(0.027)
Second generation					0.051**	(0.017)	0.051**	(0.017)
Migration background × Student support								
First generation					−0.064*	(0.030)	−0.065*	(0.030)
Second generation					−0.020	(0.018)	−0.020	(0.018)
School level								
Culture of teacher support			−0.397***	(0.022)	−0.404***	(0.023)	−0.405***	(0.023)
Culture of student support			−0.292***	(0.026)	−0.295***	(0.028)	−0.293***	(0.028)
Migration background × Culture of teacher support								
First generation					−0.039	(0.080)	−0.039	(0.081)
Second generation					0.062	(0.046)	0.067	(0.045)
Migration background × Culture of student support								
First generation					0.039	(0.103)	0.028	(0.104)
Second generation					−0.003	(0.058)	−0.017	(0.057)
Country level								
Trust			0.098*	(0.045)	0.105*	(0.048)	0.041	(0.081)

Table 2 (continued)

	Model 1 b	Model 1 (SE)	Model 2 b	Model 2 (SE)	Model 3 b	Model 3 (SE)	Model 4 b	Model 4 (SE)
Migration background × Trust								
First generation					0.024	(0.047)	−0.020	(0.073)
Second generation					−0.025	(0.029)	−0.074	(0.038)
GINI							−0.013	(0.013)
Migration background × GINI								
First generation							0.011	(0.011)
Second generation							0.011*	(0.005)
GDP (/1000)							0.002	(0.003)
Migration background × GDP (/1000)								
First generation							0.003	(0.002)
Second generation							0.003**	(0.001)
Variance								
Country level								
Intercept	0.058	(0.016)	0.068	(0.018)	0.066	(0.018)	0.069	(0.019)
First generation	0.034	(0.014)	0.022	(0.010)	0.023	(0.011)	0.018	(0.010)
Second generation	0.013	(0.005)	0.009	(0.004)	0.009	(0.004)	0.004	(0.003)
School level								
Intercept	0.070	(0.005)	0.050	(0.004)	0.050	(0.004)	0.050	(0.004)
First generation	0.421	(0.053)	0.273	(0.042)	0.254	(0.041)	0.255	(0.041)
Second generation	0.037	(0.016)	0.025	(0.013)	0.025	(0.013)	0.027	(0.013)
Individual level								
Intercept	3.037	(0.013)	2.633	(0.011)	2.629	(0.011)	2.628	(0.011)
−2 LogLikelihood	483833.3		465935.2		465709.5		465695.6	

All continuous variables are grand mean centered, with the exception of (a) which are group-mean centered

$*p < 0.05$; $**p < 0.01$; $***p < 0.001$ (two-tailed test)

Fourth, interaction terms between school-level indicators of social capital (i.e. culture of teacher and student support) and migration background were all insignificant. Fifth, a significant interaction term between national levels of generalized trust and being a first-generation immigrant was found, which is depicted in Fig. 2. It appeared that higher levels of generalized trust protect against psychosomatic complaints in adolescents with a first-generation immigration background. For life dissatisfaction, no significant interaction effect between immigration background and generalized trust was observed in Model 3.

Model 4 served as a robustness check to determine whether the moderation effect of generalized trust on the association between immigration background and psychosomatic complaints persisted after controlling for confounding country-level factors (i.e. income inequality and national income). The results revealed that the cross-level interaction term between generalized trust and being a first-generation immigrant remained significant at alpha level of 0.01. For life dissatisfaction, there was an interesting side finding: the mental health disadvantage of adolescents with a second-generation immigration background was less pronounced in countries with higher degrees of income inequality and in wealthier countries.

Sensitivity Analysis

To ensure that no other unobserved country-level characteristics (e.g. national attitudes towards migrants, migration policies) drove the findings, country-fixed effects analyses were conducted to account for heterogeneity between the countries included in the sample (e.g.,

Table 3 Results of the multilevel analysis with regard to psychosomatic complaints ($N_{countries} = 29$, $N_{schools} = 5144$, $N_{individuals} = 121,751$)

	Model 1		Model 2		Model 3		Model 4	
	b	(SE)	b	(SE)	b	(SE)	b	(SE)
Individual level								
Intercept	5.876***	(0.229)	6.254***	(0.242)	6.262***	(0.239)	6.233***	(0.244)
Gender (boy = ref.)	2.258***	(0.033)	2.097***	(0.030)	2.095***	(0.030)	2.095***	(0.030)
Age	0.607***	(0.011)	0.371***	(0.011)	0.370***	(0.011)	0.370***	(0.011)
SES (Highest 20 percent = ref.)								
Lowest 20 percent	0.234***	(0.052)	0.048	(0.050)	0.047	(0.050)	0.047	(0.050)
Medium 60 percent	−0.007	(0.041)	−0.073	(0.039)	−0.071	(0.039)	−0.071	(0.039)
Family structure (intact family = ref.)								
Single-parent family	0.986***	(0.044)	0.644***	(0.042)	0.644***	(0.042)	0.644***	(0.042)
Stepfamily	1.283***	(0.067)	0.899***	(0.064)	0.896***	(0.064)	0.896***	(0.064)
Non-parental family	1.640***	(0.100)	1.129***	(0.096)	1.120***	(0.096)	1.120***	(0.096)
Migration background (natives = ref.)								
First generation	0.581**	(0.200)	0.221	(0.187)	0.244	(0.166)	0.238	(0.167)
Second generation	0.500***	(0.102)	0.294**	(0.086)	0.283**	(0.084)	0.280***	(0.084)
Family support (a)			−0.525***	(0.009)	-0.487***	(0.011)	−0.487***	(0.011)
Teacher support (a)			−0.901***	(0.019)	−0.934***	(0.021)	−0.934***	(0.021)
Student support			−1.025***	(0.021)	−1.009***	(0.024)	−1.009***	(0.024)
Migration background × Family support								
First generation					−0.183***	(0.042)	−0.183***	(0.041)
Second generation					−0.201***	(0.027)	−0.201***	(0.027)
Migration background × Teacher support								
First generation					0.285***	(0.085)	0.284***	(0.085)
Second generation					0.131*	(0.052)	0.130*	(0.052)
Migration background × Student support								
First generation					−0.178	(0.092)	−0.178	(0.092)
Second generation					−0.032	(0.058)	−0.032	(0.058)
School level								
Culture of teacher support			−1.026***	(0.070)	−1.070***	(0.076)	−1.071***	(0.076)
Culture of student support			−0.883***	(0.084)	−0.918***	(0.092)	−0.917***	(0.092)
Migration background × Culture of teacher support								
First generation					0.307	(0.246)	0.312	(0.246)
Second generation					0.190	(0.143)	0.193	(0.142)
Migration background × Culture of student support								
First generation					0.154	(0.317)	0.157	(0.317)
Second generation					0.158	(0.182)	0.157	(0.182)
Country level								
Trust			0.188	(0.223)	0.398	(0.232)	0.610	(0.378)
Migration background × Trust								
First generation					−0.545**	(0.180)	−0.537**	(0.180)
Second generation					−0.083	(0.097)	−0.079	(0.096)
GINI(b)							0.088	(0.061)
GDP (/1000) (b)							−0.003	(0.013)
Variance								
Country level								
Intercept	1.463	(0.389)	1.645	(0.436)	1.599	(0.424)	1.660	(0.440)

Table 3 (continued)

Variance								
First generation	0.850	(0.298)	0.740	(0.258)	0.523	(0.198)	0.525	(0.198)
Second generation	0.210	(0.077)	0.134	(0.054)	0.120	(0.050)	0.118	(0.050)
School level								
Intercept	0.776	(0.047)	0.660	(0.041)	0.660	(0.041)	0.660	(0.041)
First generation	2.198	(0.426)	1.618	(0.365)	1.584	(0.362)	1.583	(0.362)
Second generation	0.216	(0.140)	0.240	(0.128)	0.209	(0.125)	0.208	(0.125)
Individual level								
Intercept	28.989	(0.121)	26.147	(0.109)	26.137	(0.109)	26.138	(0.109)
−2 LogLikelihood	757872.8		745525.9		7453434.6		745432.7	

All continuous variables are grand mean centred, with the exception of (a) which are group-mean centred

(b) Cross-level interaction terms between GINI and GDP on the one hand and migration background on the other are all insignificant and therefore excluded

$*p < 0.05$; $**p < 0.01$; $***p < 0.001$ (two-tailed test)

Fig. 2 Cross-level interaction term between generalized trust and having a first-generation migration background (based on Model 3)

Discussion

Findings from previous studies on the association between immigration background and adolescent mental health have produced an inconclusive picture. While some research—particularly from the United States and Canada—indicates an "immigrant paradox" (Suárez-Orozco et al., 2018), most European studies reveal that adolescents with an immigration background generally report worse mental health than their native counterparts (e.g., Dimitrova et al., 2016; Stevens & Vollebergh, 2008). From a theoretical perspective, it has been suggested that these inconsistent results are due to differences in the social contexts in which adolescents are living—such as schools and countries—, but empirical evidence was sparse. The current study therefore draws on Motti-Stefanidi and colleagues' integrative framework (2012) to investigate whether the association between immigration background and adolescents mental health varies according to social characteristics of their schools and countries. More particularly, the focus was on the impact of social capital, which may not only act as a

differences in national attitudes towards immigrants, immigration policies) (see Appendix B). Such a fixed effect approach has the drawback that no main effects of generalized trust can be included since all the variance at this level is already explained. Nonetheless, it is possible to include cross-level interaction effects (which are of main interest in this study), as these assess only potential non-linearities in the impact of individual-level factors (Delaruelle et al., 2020). As can be seen in Appendix B, the results confirmed that the national level of generalized trust protects against psychosomatic complaints for first-generation immigrants.

resilience resource at the individual level, but was also hypothesized to moderate immigration-related risks at the school and the national level. Three key findings were established.

First, in line with the first hypothesis, the analysis demonstrated that first- and second-generation immigrants reported more life dissatisfaction and psychosomatic symptoms than their native peers. This finding aligns with the "risk perspective", which entails that adolescents with an immigration background face many challenges, such as discrimination and social exclusion (Fangen, 2010), poor living conditions (Landale & Oropesa, 2001), and acculturative stress (Berry et al., 2006)—, with detrimental effects on their mental health.

Second, the association between immigration background and adolescent mental health appeared to depend upon the school and national contexts in which adolescents live. This is important to acknowledge, as there is a scarcity of internationally comparative studies on the mental health of immigrant adolescents (Stevens & Walsh, 2019). Moreover, it echoes Motti-Stefanidi and colleagues' (2012) argument that a deeper understanding of the adaptation of immigrant adolescents requires a three-level approach, where the impact of the individual level, the proximal environments (such as schools), and the distal environments (such as the country of residence) are examined simultaneously.

However, the school context proved to have a more substantial role in shaping the mental health of first-generation immigrants than second-generation immigrants. One possible explanation for this could be that second-generation immigrants, who have lived all their lives and received all their schooling in the receiving country, are more likely to be socially and culturally integrated into the dominant school culture than first-generation immigrants (Barban & White, 2011). Consequently, school factors may have little bearing on mental health disparities between natives and second-generation immigrants, while having a substantial impact on mental health disparities between natives and first-generation immigrants.

Several school and country characteristics could explain the contextual variation in the association between immigration background and adolescent mental health. At the school level, the immigrant school composition may play a role (Stevens & Walsh, 2019), while at the national level multicultural policies and favorable immigrant attitudes may be of relevance (Marks et al., 2018). However, the focus of the current study was upon the impact of the degree of social capital embedded in schools and countries. This leads to the third finding.

Some aspects of social capital turned out to have a moderating impact on the association between immigration background and adolescent mental health. In line with the third hypothesis, it was found that family support mitigates the negative mental health consequences of having an immigration background. For immigrant adolescents, a high level of family support likely has an impact beyond providing emotional and instrumental help. It may also aid in compensating for the lack of acceptance from peers and teachers (Runarsdottir & Vilhjalmsson, 2019), facilitating cultural adjustment (Tummala-Narra, 2015) and alleviating acculturative stress (Sirin et al., 2013), which in turn may protect against poor mental health in this population. In addition, individual-level student support appeared to operate as a resilience factor off-setting the negative mental health consequences of having a first-generation immigration background. First-generation immigrants, who perceive more support than others in their school do, may feel like they are popular and highly welcomed. This in turn could help them to deal with the specific stressors they face. Furthermore, the results showed that first-generation immigrants benefit from living in countries characterized by high degrees of generalized trust, where discriminatory practices are less prevalent and citizens tend to be more tolerant toward unknown others (Rustenbach, 2010; van der Linden et al., 2017). Such a welcoming environment might be especially important for the mental health of first-generation immigrants, who are more likely to experience disruptions in social networks due to cultural and linguistic barriers as compared to second-generation immigrants (Tegegne & Glanville, 2019). For them, migrating to high-trust countries may protect against psychosomatic complaints by fostering the expectation that they can count on others for help if needed.

In contrast, results found in this study regarding the moderating impact of teacher support went against the third hypothesis. Teacher support tended to reinforce the mental health risks that migration entails, especially for psychosomatic complaints. An exception to this finding was observed for life dissatisfaction, in that teacher support had little bearing on the association between being a first-generation immigrant and adolescent mental health. However, the overall picture emphasized that supportive teacher-student relationships provide more protection against poor mental health for native adolescents than for immigrant adolescents. Although speculative, it may be that adolescents with an immigration background—as opposed to their native peers—distrust receiving teacher support, as many teachers may be perceived to be prejudiced and to demand immigrant students to assimilate in the dominant culture (Van Praag et al., 2016). As such, experiences of supportive relationships with teachers may have limited impact on the mental health of adolescents with an immigration background. Two alternative explanations are possible too. First, it could be that teachers respond differently to the mental health problems of natives than to those of immigrant

adolescents, with teachers providing more support to natives in case of poor mental health. Second, it is also possible that immigrant adolescents with mental health problems feel less comfortable requesting help from their teachers than their native peers, because of their lower levels of cultural capital. In support of this explanation, Calarco (2011, 2014) demonstrated that adolescents draw on class-based cultural "tool kits" for navigating school interactions. More particularly, she found that adolescents from economically advantaged families are better equipped to voice their needs, and consequently to attract immediate support from their teachers. This may also be the case for native adolescents, with greater cultural competence, versus adolescents with an immigration background.

Finally, culture of student and teacher support at school level did not impact the association between immigration background and adolescent mental health. This finding is in line with previous research showing that high levels of school-level student and teacher support did not mitigate the higher vulnerability for bullying victimization of immigrant adolescents (Stevens et al., 2020). In contrast, the current study found that both native and immigrant adolescents were less likely to report poor wellbeing in schools in which average levels of perceived student and teacher support were high, confirming previous findings of Stevens et al. (2020).

Some limitations of this study should be noted. First, as national samples of adolescents with an immigration background were highly diverse in terms of country of origin, the data did not differentiate between groups from different ethnic backgrounds. This would nevertheless be very relevant, as previous studies have shown that adolescents from more culturally distant origins are more likely to experience stressors that may jeopardize their mental health (Bornstein 2017; Sortheix and Lönnqvist, 2015). Social capital could therefore have a stronger protective impact on this group of immigrant adolescents. Second, while adolescents born abroad (with at least one parent born abroad) were considered as first-generation immigrants, some of them may have immigrated to the receiving country prior to adolescence, and accordingly, should be categorized as "1.5 generation immigrants". They face different adaptive experiences than first- and second-generation immigrants, which is relevant in the context of this paper (Liu, 2015). Unfortunately, the HBSC study does not provide information on age of arrival in the receiving country, making it impossible to make a more fine-grained distinction between generations of adolescent immigrants. Third, all of the data were self-reported, which could introduce bias due to cross-cultural differences in response behavior. Although the measures of mental health used in this study have been found to have a good reliability and construct validity among adolescents (e.g., Levin & Currie, 2014), it remains

unknown whether they have similar scale properties for immigrant and native adolescents. Fourth, this study would have benefited from the inclusion of other mental health measures (such as anxiety, ADHD, or conduct problems), as well as from the inclusion of other aspects of social capital (such as positive parenting or positive relationships with teachers/peers). Future research could focus on these issues, and could additionally investigate age differences in the linkage between immigration background, adolescent mental health, and social capital. Fifth, the school-level variables were calculated by aggregating the mean individual scores on student support and teacher support. Although calculations of the mean rater reliability justified this modelling approach, they also indicated that there was not perfect agreement within schools. Future studies should therefore be designed to collect objective measures for school social capital (e.g., by using an administrative questionnaire for school principals, or looking at the existence of social support programs). Sixth, the cross-sectional nature of the HBSC study precludes a causal interpretation of the association between the variables. For instance, the main effects can easily be interpreted from a reverse causality perspective, in that adolescents with mental health problems tend to perceive less support from their environment. While the analysis was theoretically driven, a reverse causality bias cannot completely be ruled out. Future longitudinal studies should address this issue. Finally, the results may be biased by the exclusion of adolescents with missing data. For the analysis, list wise deletion was used, resulting in a drop of 15% in the number of respondents. Given that the data were not missing completely at random, more advanced techniques such as multiple imputation (MI) would have been more adequate. However, MI procedures that accounted for all nonlinearities in our model of interest (i.e., interaction effects, random slopes, group-mean centering) failed to generate reliable imputations, as model convergence could not be achieved. Different visualizations of the missing data patterns showed that adolescents with the poorest mental health scores were particularly likely to have missing values on family support, and were thus slightly underrepresented in the sample. This might mean that our results are less reliable for adolescents at the very low end of the mental health spectrum.

Conclusion

Prior work has yielded mixed results on the association between immigration background and adolescent mental health, and has paid insufficient attention to the potential moderating role of social capital at the individual, the school, and the national level in this association. Within an integrative resilience framework, the present study

addresses these shortcomings. It shows that immigrant adolescents generally report more life dissatisfaction and psychosomatic symptoms than their native peers, but this association varies with the school and the national context. In addition, it demonstrates that individual-level social support from peers and family and national-level trust protect against poor mental health in adolescents with an immigration background, while the opposite is true for individual-level teacher support. As such, this study highlights the importance of including social capital in future research on mental health in immigrant adolescent populations and to approach this from a multilevel perspective. In addition, it emphasizes the need for ecologically based interventions to tackle the mental health risks that migration entails. Such interventions could be designed to increase social capital in the form of family support, student support, and generalized trust. In addition, the results demonstrate that continuous efforts need to be made in order to provide teachers with training on how to be supportive towards their students, especially to those having an immigration background.

Compliance with Ethical Standards

Conflict of Interest The authors declare no competing interests.

Ethical Approval Research involving Human Participants: Approval was obtained from the Ethics Committee of the University Hospital of Ghent (EC 2019/0755), and ethical clearance or equivalent approval to conduct the survey was granted in each country. The procedures used in this study adhere to the tenets of the Declaration of Helsinki.

Informed Consent Active or passive consent was obtained from the parents/legal guardians, according to the demands of each country. Participation was voluntarily and anonymous and adolescents were allowed to opt out of participation at any time before or during the survey.

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Appendix

Appendix A. Number of respondents per country

Country	N
Albania	1395
Austria	3378
Belgium	6658
Bulgaria	4120
Croatia	3937
Czech Republic	9714
Estonia	4369
Finland	2864
Germany	3733
Greece	3530
Hungary	3409
Iceland	6279
Ireland	3062
Israel	5312
Italy	3846
Luxembourg	3238

Table (continued)

Country	N
Malta	2169
Netherlands	4486
Norway	2198
Poland	4717
Portugal	5313
Romania	3718
Russia	3791
Scotland	4208
Serbia	3318
Slovenia	5060
Spain	3740
Sweden	3527
Switzerland	6662
Total	121,751

Appendix B: Results of the multilevel analysis with regard to psychosomatic complaints ($N_{countries} = 29$, $N_{schools} = 5144$, $N_{individuals} = 121,751$), country fixed approach

	Model 4	
	b	(SE)
Individual level		
Intercept	6.244***	(0.179)
Gender (boy = ref.)	2.094***	(0.030)
Age	0.370***	(0.011)
SES (Highest 20 percent = ref.)		
Lowest 20 percent	0.043	(0.050)
Medium 60 percent	−0.073	(0.039)
Family structure (intact family = ref.)		
Single-parent family	0.644***	(0.042)
Stepfamily	0.900***	(0.064)
Non-parental family	1.130***	(0.096)
Migration background (natives = ref.)		
First generation	0.218*	(0.088)
Second generation	0.245***	(0.048)
Family support (a)	−0.488***	(0.010)
Teacher support (a)	−0.934***	(0.021)

Table (continued)

	Model 4	
	b	(SE)
Student support	−1.009***	(0.023)
Migration background × Family support		
First generation	−0.187***	(0.041)
Second generation	−0.202***	(0.027)
Migration background × Teacher support		
First generation	0.281**	(0.085)
Second generation	0.132*	(0.052)
Migration background × Student support		
First generation	−0.170	(0.090)
Second generation	−0.033	(0.058)
School level		
Culture of teacher support	−0.934***	(0.021)
Culture of student support	−1.009***	(0.023)
Migration background × Culture of teacher support	0.031	(0.238)
First generation	0.076	(0.138)
Second generation		
Migration background × Culture of student support		
First generation	0.469	(0.301)
Second generation	0.225	(0.172)
Country level		
Migration background × Trust		
First generation	−0.475***	('0.110)
Second generation	−0.001	(0.063)
Country dummies	YES	
Variance		
School level		
Intercept	0.651	(0.041)
First generation	2.029	(0.380)
Second generation	0.236	(0.124)
Individual level		
Intercept	26.133	(0.109)
2 LogLikelihood	745303.02	

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$ (two-tailed test)

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Katrijn Delaruelle is a post-doctoral researcher at Ghent University. Her research focuses on social inequalities in (mental) health from a comparative perspective.

Sophie D. Walsh is an associate professor at Bar Ilan University. Her research interests are adolescent risk behaviors and mental health, with an emphasis on violence, substance use, and delinquency and a particular research focus on immigrant adolescent development.

Maxim Dierckens is a researcher at Ghent University. His major research interests are social inequalities in adolescent health studied from different socio-ecological contexts.

Benedicte Deforche is a Full Professor at Ghent University. Her research focuses on the promotion of physical, mental and social health in different populations and age groups.

Matthias Robert Kern is a post-doctoral research at Utrecht University. His research aims to integrate contextual factors into models of immigrant adolescent health, well-being and health behavior.

Candace Currie is a professor of Global Adolescent Health. Her main research interests are adolescent health inequalities related to socioeconomic status and gender, as well as developmental determinants of adolescent health related to puberty.

Concepcion Moreno Maldonado is a postdoctoral researcher at the University of Seville. Her research interest include social inequalities in adolescent health and the development of gender identity.

Alina Cosma is a post-doctoral researcher at Palacky University Olomouc. Her major research interests include adolescent mental health with a focus on cross-national differences.

Gonneke W. J. M. Stevens is an Associate Professor of Interdisciplinary Social Science at Utrecht University. Her research focusses on understanding social inequalities in adolescent mental wellbeing.