Original article

Intersectionality and Adolescent Mental Well-being: A Cross-Nationally Comparative Analysis of the Interplay Between Immigration Background, Socioeconomic Status and Gender

Matthias Robert Kern, M.Sc. [a,*], Elisa L. Duinhof, M.Sc. [b], Sophie D. Walsh, Ph.D. [c], Alina Cosma, Ph.D. [b], Concepción Moreno-Maldonado, Ph.D. [d], Michal Molcho, Ph.D. [e], Candace Currie, Ph.D. [f], and Gonneke W. J. M. Stevens, Ph.D. [b]

[a] *Department of Social Sciences, University of Luxembourg, Esch-sur-Alzette, Luxembourg*
[b] *Department of Interdisciplinary Social Science, Utrecht University, Utrecht, The Netherlands*
[c] *Department of Criminology, Bar Ilan University, Ramat Gan, Israel*
[d] *Department of Developmental and Educational Psychology, University of Sevilla, Sevilla, Spain*
[e] *Discipline of Children Studies, National University of Ireland Galway, Galway, Ireland*
[f] *Glasgow Caledonia University London, London, United Kingdom*

A B S T R A C T

Purpose: Intersectionality theory highlights the importance of the interplay of multiple social group memberships in shaping individual mental well-being. This article investigates elements of adolescent mental well-being (life dissatisfaction and psychosomatic complaints) from an intersectional perspective. It tests mental well-being consequences of membership in combinations of multiple social groups and examines to what extent such intersectional effects depend on the national context (immigration and integration policies, national-level income, and gender equality).
Methods: Using Multilevel Analysis of Individual Heterogeneity and Discriminatory Accuracy, we assessed the role of the national context in shaping the interplay between immigration background, socioeconomic status, and gender, using data from 33 countries from the 2017/2018 Health Behaviour in School-aged Children survey.
Results: We found no uniform intersectionality effects across all countries. However, when allowing the interplay to vary by national context, results did point toward some intersectional effects. Some aggravated negative effects were found for members of multiple disadvantaged social groups in countries with low levels of income equality and restrictive migration policies, whereas enhanced positive effects were found for members of multiple advantaged groups in these countries. Similarly, mitigated negative effects of membership in multiple disadvantaged groups were shown in countries with higher levels of income equality and more inclusive migration policies, whereas mitigated positive effects were found for multiply advantaged individuals. Although for national-level gender equality results pointed in a similar direction, girls' scores were

IMPLICATIONS AND CONTRIBUTION

Study findings highlight the context dependency of intersectional effects in adolescent mental well-being. On a policy level, the findings suggest that adolescents belonging to multiple disadvantaged social groups might disproportionally benefit from policies encouraging equality and inclusivity on all levels.

counterintuitive. High national-level gender equality disproportionately benefitted groups of disadvantaged boys, whereas advantaged girls were doing worse than expected, and reversed effects were found for countries with low gender equality.

Conclusions: To fully understand social inequalities in adolescent mental well-being, the interplay between individual-level and national-level indicators must be explored.

© 2020 Published by Elsevier Inc. on behalf of Society for Adolescent Health and Medicine. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

Many adult mental health problems have their onset in childhood and adolescence [1,2]. The global prevalence rate of mental health problems among children and adolescents has been estimated to be 13.4% with little international or intercontinental variation [3], rendering adolescent mental health a global public health priority [4–6]. Adolescent mental health has been defined as an overarching, multifaceted concept that includes both the absence of mental health problems and the presence of subjective well-being. In the present article, we focus on elements of both parts of mental health and therefore use the term mental well-being throughout the article. Extensive research, based on ecological models, shows that adolescent mental well-being is influenced by a broad range of individual and contextual factors. From a sociology of health perspective, the effects of individuals' social group memberships are of special interest. Inequalities in adolescent well-being, based on their social group membership, are well documented. Although their magnitude is contingent on the social context, their direction tends to be quite stable with adolescents with (1) an immigration background, (2) from low socioeconomic status (SES) families, and (3) girls reporting lower levels of mental well-being than natives, adolescents from middle-to-high SES families, and boys [7–9]. However, people's experiences, resources, and identities are not only shaped by *multiple* individual characteristics such as immigration background, SES, and gender but also by their specific combinations. In line with this, intersectional theory stresses that membership in particular combinations of social groups represents a unique state of being and a particular set of social experiences with distinctive consequences for the lives and mental well-being of individuals, and particularly those of adolescents who are in the process of social identity formation [10].

From an intersectional perspective, it can thus be argued that studies that examine the effect of having such characteristics singularly, rather than combined, provide an incomplete picture of social inequalities in adolescent mental well-being, as the effect of membership in particular combinations of social groups might differ from the sum of the effect of each of those individual group memberships. According to the *multiple jeopardy hypothesis* [11], the negative effect of simultaneously being a member of multiple marginalized social groups is greater than the combined negative effect of all social group memberships. Thus, the combination of having an immigration background, coming from a low SES family, and being a girl may have an aggravating (multiplicative) rather than a simply cumulative (additive) negative effect on adolescent mental health.

To our knowledge, only very few studies have addressed the intersection of immigration background, SES, and gender on mental well-being among adolescent and young adult samples, and the few that have were exclusively conducted in the U.S. The results of these studies support an additive model, where the effect of membership in particular combinations of social groups equals the sum of the effects of each of those individual group memberships, rather than an intersectional one [12,13]. To assess whether the same holds true outside of the U.S. context, the present study, as a first step, aims to investigate the interplay between immigration background, SES, and gender by examining the effect of membership in all possible combinations of these variables using data from a large-scale, cross-nationally comparative study (including primarily European countries). Following the multiple jeopardy hypothesis, we assume that members of multiple disadvantaged social groups experience negative mental health effects that go above the combined negative effects of all their group memberships.

The role of the national context

Intersectionality theory does not only emphasize that membership in particular combinations of social groups establishes a unique set of social experiences and structural constrains [14] but also stresses that these experiences and constrains are shaped by the social context [10,14]. Accordingly, the necessity of context-sensitive intersectional research is widely acknowledged in the field [15]. Quantitative intersectional research explicitly modeling this context dependency of the effect of membership in particular combinations of social groups, however, is extremely sparse [15]. Research examining the effect of immigration background and SES on adolescent mental well-being individually found that it varied with certain national-level characteristics. Specifically, in countries with inclusive immigration and integration policies [7,16] and low national-level income inequality [17–19], social inequalities in adolescent mental well-being according to immigration background and SES tend to be relatively small. For countries with high levels of gender equality, comparable processes may be at play [20]. The exact impact of these national-level characteristics on the mental well-being of adolescents belonging to particular combinations of social groups is unknown. However, given that national-level inclusive immigration and integration policies, income equality, and gender equality reduce social inequalities in adolescent mental well-being, we suggest that the aggravated (as opposed to cumulative) negative effect of membership in multiple marginalized social groups is less likely in more inclusive and equal countries.

This study

The present study uses data from the cross-national 2017/2018 Health Behaviour in School-aged Children (HBSC) study to investigate the interplay between immigration background, SES, and gender on two indicators of adolescent mental well-being (life dissatisfaction and psychosomatic complaints) in a large, representative sample of adolescents between the ages of 10 and

16 years from 33 primarily European countries (Research question 1). It also tests whether this interplay varies between countries categorized according to indices of their immigration and integration policies and their national-level income equality and gender equality (Research question 2). To investigate this interplay, we use the new "gold standard" for research into health inequalities: Multilevel Analysis of Individual Heterogeneity and Discriminatory Accuracy (MAIHDA) that allows for an exploration of the complex interaction structures between a large number of social group memberships [21–23] (see Appendix for a more detailed discussion of the advantages of MAIHDA). In doing so, this study aims to shed light on the complex nature of social inequalities in adolescent mental well-being and how they are shaped by the national context. As outlined previously, the multiple jeopardy hypothesis assumes that the combination of having an immigration background, coming from a low SES family and being a girl, may have an aggravating rather than a simply cumulative (additive) effect on adolescent mental well-being. Given the general tendency for social inequalities in mental well-being to be less pronounced in more equal/inclusive societies, we argued that this aggravated effect may be less likely in countries with inclusive immigration and integration policies and in more income and gender-equal countries.

Methods

Sample

HBSC is a large cross-sectional, school-based survey carried out every 4 years in collaboration with the WHO Regional Office for Europe. The study included data from the 2017/2018 HBSC survey, for which 47 countries collected self-report data, nationally representative for 11-, 13-, and 15-year-old adolescents using a standardized study protocol. Samples were drawn using cluster sampling, with school classes or the whole school as the primary sampling unit. Data collection procedures and questionnaires were standardized and strictly followed the international research protocol [24]. Each country obtained ethical board approval. Thirty-three countries collected data on all individual-level variables used in the present study. National-level data on income equality and gender equality were available for all 33 countries, and data on immigration and integration policies were available for 26 countries. For the different steps of analyses, sample sizes ranged from 127,556 participants in 26 countries to 154,229 participants in 33 countries. The share of girls ranged from 49.02% in Croatia to 54.5% in Albania. The share of immigrants ranged from 4.17% in Albania to 72.24% in Luxembourg. The age of participants in our study ranged between 10 and 16.5 years, coinciding with early and middle adolescence. The mean age per country ranged from 13.02 years in Norway to 13.92 years in Finland (for more sample information and country-specific descriptive statistics, see Appendix).

Measures

Dependent variables

Life Dissatisfaction. Life dissatisfaction was assessed with the Cantril ladder [25]. Participants rated how satisfied they were with their life on a visual analogous scale ranging from (0) "the worst possible life" to (10) "the best possible life." The Cantril Ladder is easily understood and has shown good reliability and convergent validity among adolescents [26]. For the purpose of this study, responses were reverse coded so that higher scores indicated more life dissatisfaction.

Psychosomatic complaints. Items from the HBSC Multiple Health Complaints Checklist were used to assess the frequency of seven health complaints (headache, abdominal pain, backache, feeling low, irritability, feeling nervous, and dizziness) [27,28]. Adolescents indicated how often they had experienced each complaint over the last 6 months. Response categories ranged from (1) "about every day" to (5) "rarely or never." This instrument has adequate test–retest reliability and psychometric properties [27] and is commonly used as an indicator of adolescent mental well-being (e.g., Hagquist et al. [29]). In our sample, the scale had an acceptable reliability ($\alpha = .80$). The responses were reverse coded, and a sum score was built so that a higher number would indicate more psychosomatic complaints (range 0–28). In line with the literature [26,27], both dependent variables were treated as continuous.

Independent variables

Individual-level

Immigration background. Adolescents reported where they themselves, their mother, and their father were born. Participants were considered as having an immigration background if at least one of their parents was born outside of the survey country (for more information, see Appendix).

Family socio-economic status. Family SES was assessed using the revised Family Affluence Scale (FAS III) [30]. FAS measures material family wealth with six items, including, for instance, number of family cars, having a bedroom of one's own, number of bathrooms, and the number of family holidays in the last year [30]. Several studies have confirmed its validity [31,32]. Responses were summed in a total FAS score. To take the international differences in family affluence into consideration, we estimated FAS by comparing the individuals' summary scores on the FAS to that of all other participants of their age and gender in their respective country using a proportional rank [24]. Subsequently, proportional ranks were categorized into tertiles.

Gender and age. Respondents were asked to indicate whether they are a boy or a girl and to report their date of birth (month/year). Based on this, their gender and their age at the moment of data collection were computed.

Country-level

Immigration and integration policies. Data were obtained from the Migrant Integration Policy Index (MIPEX) from 2014 [33], which has been developed by the British Council and the Migration Policy Group [33]. It consists of eight indicators, such as policies about labor market mobility, family reunification, education, and antidiscrimination. The higher the MIPEX score, the better the policy meets the highest standard for equal treatment of natives and immigrants.

Income equality. Income equality was measured with the Gini coefficient. The Gini coefficient measures income inequality at the national level and has a theoretical range from 0 (everyone having equal income) to 1 (one person having all the income). We used the most recent World Bank Gini estimate available for each country from the World Development Indicators online database [34] (see Table 1 in the Appendix). The income equality

for each country was computed by subtracting the national Gini index from 1.

Gender equality. Gender equality was measured with the Gender Inequality Index (GII) obtained from the 2017 United Nations Development Program Human Development Report. The GII measures gender inequalities in three important aspects of human development: reproductive health, empowerment, and economic status. Gender equality was computed by inverting the GII.

All country-level indicators were categorized into tertiles: high, medium, and low (for more information, see Appendix, Table 1). Individuals with missing values on any of the variables were excluded from further analyses.

Analysis

Multilevel Analysis of Individual Heterogeneity and Discriminatory Accuracy was conducted [35], which requires that all possible unique combinations of social group memberships (often referred to as strata) are treated as higher level units in a two-level hierarchical random effects model [21]. In our study, first, separately for both outcome variables, MAIHDA was performed with individuals nested in 12 strata representing all unique combinations of individual characteristics—immigration background (native/immigrant), SES (high/middle/low), and gender (boy/girl)—(Research question 1). Then, again separately for both outcome variables, the same analyses were repeated three times (i.e., once for each national-level variable) to investigate the role of country-level MIPEX, income equality, and gender equality in shaping this interplay (Research question 2). To this end, individuals were nested in 36 strata representing all unique combinations of the national-level variable in question (which was categorized into high, medium, and low) and individual-level variables of immigration background, SES, and gender (Table 2 in the Appendix shows the sample sizes per stratum for all four sets of strata that were used). Analyses pertaining to Research question 1 were based on data from 33 countries. Analyses pertaining to Research question 2 were based on data from 33 countries when assessing the role of income equality and gender equality and on data from 26 countries when assessing the role of migration and integration policies.

In all four analyses, first, a null model was fit including only the overall intercept (i.e., the overall mean of the outcome variable) as well as the estimated stratum-level residuals for all strata (i.e., the difference between the stratum means and the overall mean). This model was additionally adjusted for age. In MAIHDA, the variance partition coefficient (VPC) of the null model serves as a measure of Discriminatory Accuracy [21,35]. Akin to a model fit statistic like R^2, it indicates how well individual scores on the outcome variable can be predicted based on the individual's combination of social group memberships (see Appendix for the formula used to calculate the VPC). Second, a main effects model was fit that additionally included dummy variables to control for the additive effects of all social group memberships [36]. We also controlled for age and survey country to take into account age and country differences in the distributions of life dissatisfaction and psychosomatic complaints. Because additive effects of social group memberships were adjusted for, in the main effects model, stratum-level residuals did not capture the difference between stratum means and the overall mean, but between stratum means and the means that would

Table 1
Main effect regression coefficients for individual characteristics

	Life dissatisfaction	Psychosomatic complaints
Girl	.31* (.25, .37)	2.27* (2.18, 2.36)
Immigrant	.21* (.14, .27)	.49* (.39, .59)
Medium SES	−.30* (−.37, −.23)	−.28* (−.39, −.17)
High SES	−.51* (−.59, −.43)	−.29* (−.40, −1.8)
Intercept	1.95* (1.83, 2.06)	5.16* (4.84, 5.47)

Models are additionally adjusted for age and survey country. Individuals are nested in strata based on their immigration background, SES, and gender. Main effect parameters are comparable for other models tested and can be found in Table 3 in the Appendix. Bayesian 95% Credible Interval in parentheses. Natives, low family SES, and boys were set as the reference groups.
SES = socioeconomic status.
*$p < .001$.

be expected for those strata by a purely additive model. Accordingly, inspection of stratum-level residuals and their associated credible intervals can reveal potential intersectional effects for particular combinations of social group memberships (Research question 1) or intersectional effects for particular combinations of social group memberships in particular national contexts (Research question 2). While stratum-level residuals, thus, provide us with a measure of stratum-specific intersectional effects, a measure of general intersectionality can be found in the Proportional Change in Variance (PCV) [36]. The PCV relates the variance of the stratum-level residuals in the main effects model (the difference between the stratum mean and the expected mean for that stratum based on an additive model) to the variance of stratum-level residuals in the null model (the difference between stratum means and the overall mean) and informs us about how much of the differences between individuals in different strata is explained by additive main effects. Accordingly, the unexplained part is attributable to intersectional effects (see Appendix for the formula used to calculate the PCV).

All models were fit in MLwiN 3.02 (University of Bristol, Bristol, United Kingdom) using Bayesian Markov Chain Monte Carlo estimation. The burn-in length was 500 iterations, and the total amount of iterations was 5,000. Bayesian 95% credible intervals for the fixed effect parameters as well as the strata-level residuals were obtained from the posterior distribution following procedures laid out by Fisk et al. [35,37].

Results

Main effects

Main effect parameters (Table 1) revealed significantly increased levels of life dissatisfaction and psychosomatic complaints among adolescents with an immigration background, from low SES families, and girls when compared with natives, adolescents from middle and high SES families, and boys. Accordingly, based on an additive model, irrespective of the national context, we would expect the highest levels of both variables among low SES immigrant girls and the lowest among high SES native boys.

Discriminatory accuracy

Table 2 shows that for all estimated null models, VPCs were relatively modest, ranging from 3.1% to 6.4%. These show that

Table 2
PCV and VPC scores of the four models tested

	Life dissatisfaction			
	Only individual level	MIPEX	Income equality	Gender equality
PCV	98.41	95.74	97.16	91.32
VPC[a]	4.0 (1.53–9.33)	3.14 (1.99–4.99)	3.14 (1.98–4.97)	3.44 (2.17–5.46)
	Psychosomatic complaints			
	Only individual level	MIPEX	Income equality	Gender equality
PCV	99.85	98.47	99.32	96.54
VPC[a]	6.37 (2.51–14.42)	5.55 (3.55–8.64)	4.81 (3.08–7.50)	4.55 (2.90–7.13)

MIPEX = Migrant Integration Policy Index; PCV = Proportional Change in Variance; VPC = variance partition coefficient.
[a] For the null model with Bayesian 95% confidence intervals.

immigration background, SES, gender, the national context variables, and their combinations contribute to individuals' life dissatisfaction and psychosomatic complaints but are by no means the only contributing factors.

The interplay of immigration background, SES, and gender

We did not find evidence for intersectional effects at all when investigating the interplay between immigration background, SES, and gender across all national contexts. PCV scores for both outcome variables revealed that differences between the 12 social strata are almost entirely (98.4% for Life Dissatisfaction and 99.9% for Psychosomatic Complaints) accounted for by cumulative (additive) main effects (Table 2). In line with this, for neither life dissatisfaction nor psychosomatic complaints did any of the residuals associated with the 12 strata significantly differ from zero (see Figures 1 and 2 in the Appendix).

Cross-country variation in the interplay between immigration background, SES, and gender

Table 2 shows that although PCV scores are generally lower when national context is considered, most interstrata differences

can still be explained by additive main instead of intersectional effects. In line with this, only 24 of 216 stratum-level residuals significantly differed from zero (see Table 3 for an integrated summary of the stratum-level residuals displayed in Figure 3–8 in the Appendix).

General intersectionality in models investigating the interplay between national-level immigration and integration policies, immigration background, SES, and gender amounted to 4.3% for life dissatisfaction and 1.5% for psychosomatic complaints (Table 2). Examination of stratum-level residuals revealed that in low and medium MIPEX countries (i.e., countries with relatively restrictive immigration and integration policies), low SES immigrant girls did worse on life dissatisfaction than predicted by a purely additive model, whereas specific groups of native girls (low SES native girls in low MIPEX countries and high SES native girls in medium MIPEX countries) did better than predicted. Conversely, in high MIPEX countries, high SES native boys did significantly worse than expected on life dissatisfaction, whereas low SES immigrant boys did significantly better. For psychosomatic complaints, only two stratum-level residuals showed significant intersectional effects. As we saw for life dissatisfaction, particularly low SES native girls were doing significantly better than expected in low MIPEX countries, whereas the same group was doing significantly worse than expected in medium MIPEX countries (Table 3 and Figures 3 and 4 in the Appendix).

General intersectionality in models investigating the interplay between national-level income equality and immigration background, SES, and gender was even lower, with 2.8% for life dissatisfaction and .7% for psychosomatic complaints (Table 2). Obtained stratum-level residuals revealed that in highly income equal countries, high and middle SES native boys did significantly worse, and low SES immigrant girls did significantly better on life dissatisfaction. In contrast, in countries with low levels of income equality, low SES immigrant girls scored significantly worse on life dissatisfaction than would be expected based on an additive model. Similar to life dissatisfaction, in highly income equal countries, high SES native boys showed more psychosomatic complaints than would be expected based on an additive

Table 3
Significant intersectional effects for the interplay between immigration background, SES, gender, and the national context

		Low	Medium	High
MIPEX				
Life dissatisfaction	More than expected[a]	Girl–immigrant–low SES	Girl–immigrant–low SES	Boy–native–high SES
	Less than expected[a]	Girl–native–low SES	Girl–native–high SES	Boy–immigrant–low SES
Psychosomatic complaints	More than expected[a]	-	Girl–native–low SES	-
	Less than expected[a]	Girl–native–low SES	-	-
Income equality				
Life dissatisfaction	More than expected[a]	Girl–immigrant–low SES	-	Boy–native–high SES
				Boy–native–middle SES
	Less than expected[a]	-	-	Girl–immigrant–low SES
Psychosomatic complaints	More than expected[a]	-	-	Boy–native–high SES
	Less than expected[a]	Boy–native–high SES	-	-
Gender equality				
Life dissatisfaction	More than expected[a]	Boy–immigrant–low SES	-	Girl–immigrant–high SES
				Girl–native–high SES
	Less than expected[a]	Girl–native–high SES	-	Boy–immigrant–low SES
				Boy–native–low SES
Psychosomatic complaints	More than expected[a]	Boy–immigrant–low SES	Girl–native–low SES	-
	Less than expected[a]	Girl–native–middle SES	-	-
		Girl–native–low SES		

Empty cells with "−" indicate no evidence for intersectional effects.
MIPEX = Migrant Integration Policy Index; SES = socioeconomic status.
[a] Based on additive effects.

model, whereas in countries with low levels of income equality, this same group showed fewer problems (Table 3 and Figures 5 and 6 in the Appendix).

General intersectionality in models investigating the interplay between national-level gender equality, immigration background, SES, and gender amounted to 8.7% for life dissatisfaction and 3.5% for psychosomatic complaints (Table 2). Inspection of stratum-level residuals revealed some seemingly counterintuitive results (Table 3 and Figures 7 and 8 in the Appendix). These residuals showed that, in the most gender-equal countries, high SES girls, both immigrant and native, scored significantly worse on life dissatisfaction than would be expected based on additive effects. In contrast, in those same countries, low SES boys, both immigrant and native, scored significantly better than predicted. In countries with low levels of gender equality, the reverse was found to be true: low SES immigrant boys scored significantly worse, whereas high SES native girls scored significantly better than would be expected based on additive effects. For psychosomatic complaints, somewhat comparable patterns were found. As seen for life dissatisfaction, the only group in countries with low levels of gender equality doing significantly worse than would be expected based on an additive model were low SES immigrant boys. In those same countries, native girls were again doing better than would be expected. However, now this was only true for native girls with middle and low (instead of high) SES. In contrast, in countries with medium gender equality, low SES native girls reported significantly more psychosomatic complaints than would be expected.

Discussion

In the present study, we examined the interplay between immigration background, SES, and gender on adolescent mental well-being across 33 countries. We also examined national-level variations in this interplay, according to immigration and integration policies, income equality, and gender equality. As expected, across all national contexts, being a member of any of the three disadvantaged social groups (i.e., immigrants, adolescents from low SES families, and girls) increased scores for life dissatisfaction and psychosomatic complaints, in comparison to adolescents from less disadvantaged groups (i.e., natives, adolescents from middle- and high SES families, and boys). In line with the multiple jeopardy hypothesis [11], we conjectured that being a member of multiple disadvantaged social groups would have an aggravated (and not just additive) negative effect. However, no such effect and no evidence for intersectionality, in general, was found when examining the interplay without allowing it to vary between different national contexts: members of particular combinations of social groups did not report better or worse mental health than expected based on just adding up effects from separate social group memberships. However, when allowing this interplay to vary based on country-level immigration and integration policies, income equality, and gender equality, we did find evidence for intersectionality.

The observed lack of intersectional effects when examining the interplay between immigration background, SES, and gender over all national contexts might be because of its context dependency. While, for instance, in high gender equality countries, high SES native girls did significantly worse and low SES immigrant boys significantly better on life dissatisfaction than would be expected by an additive model, the exact opposite was the case for both groups in low gender equality countries. These

intersectional effects in opposite directions depending on the national context might have canceled each other out. Results like this are relatively numerous in our findings and highlight the importance of taking the national context into consideration when investigating this interplay.

Although small in number, and accounting only for a small share of the overall social inequalities in adolescent mental well-being, the intersectional effects that were found for different national contexts are nevertheless meaningful and warrant some further exploration. In line with our hypotheses, we found aggravated negative effects of membership in multiple disadvantaged social groups in national contexts that were characterized by low levels of immigrant inclusivity and economic equality. Conversely, in those same countries, members of multiple privileged social groups were doing better than expected based on an additive model. Interestingly, in countries with high levels of immigrant inclusivity and income equality, members of multiple disadvantaged social groups were actually doing better than would be predicted by an additive model. Conversely, in those same countries, members of multiple privileged social groups were doing worse than would be expected based on an additive model. Possibly, vulnerable groups have a better chance of optimal development in countries that attempt to reduce social inequalities by focusing on inclusive immigration and integration policies and restricting income inequality than in other countries. Such contexts may reduce traditional real or symbolic privileges for advantaged groups.

To illustrate, in countries with relatively restrictive immigration policies, a clear aggravated negative effect was found in that the most disadvantaged group (i.e., low SES immigrant girls) reported more life dissatisfaction than expected based on additive effects. Conversely, in countries with the most inclusive immigration policies, a relatively disadvantaged group, that is low SES immigrant boys, showed less life dissatisfaction than an additive model would suggest, while the most privileged group (i.e., high SES native boys) reported more life dissatisfaction than would be expected. Similar intersectional patterns were found when examining income equality. Privileged high SES native boys showed more life dissatisfaction and more psychosomatic complaints in countries with high levels of income equality, whereas they showed less psychosomatic complaints than would be expected in countries with low levels of income equality. Conversely, low SES immigrant girls growing up in countries with the lowest national-level income equality showed higher life dissatisfaction, whereas the same group of girls reported less life dissatisfaction than expected in countries with high levels of income equality.

In the case of gender equality too, some evidence was found for the notion that aggravated negative effects of membership in multiple disadvantaged social groups are less likely in more equal contexts. However, what stood out here was the finding that high SES girls, either with or without an immigration background, were reporting more life dissatisfaction than expected in highly gender-equal countries, whereas low SES boys, again either with or without an immigration background, were reporting less life dissatisfaction than an additive model would suggest in this national context. Conversely, in countries with low levels of gender equality, low SES immigrant boys did worse than would be expected on life dissatisfaction and psychosomatic complaints and high SES native girls better on life dissatisfaction. In those same countries, less

psychosomatic complaints than would be expected were reported by middle and low SES native girls. Previous literature has suggested that gender equality is positive for adolescent life satisfaction, and that this effect is significant for boys and girls even when controlling for national wealth and income equality [38]. However, the current findings suggest that high SES girls may not benefit from gender equality, whereas it is the low SES boys that do. A comprehensive understanding of the reasons behind this is beyond the scope of the paper, yet we can suggest some preliminary understandings. In line with previous studies and theory [39], we suggest that high levels of gender equality may actually place a burden on high SES girls, as they may simultaneously feel pressure to fulfill traditional gender roles as well as to achieve academically and succeed. This relates to a concept that has been termed the "superwoman ideal" [40]. This may be especially acute in adolescence, as young people are still trying to consolidate a gender identity [41], based on identification and internalization of familial and social role models. At the same time, high levels of gender equality might place less emphasis on competition and masculine dominance [42], which may particularly put less pressure on the socially disadvantaged groups of boys (i.e., low SES immigrant boys).

There are some limitations to the present study. There are limits to the instruments we were able to use. In particular, the item "Are you a girl or a boy?" may conflate sex and gender and does not allow for a third option, accordingly some adolescents might have been unable to answer the question and had to be excluded from subsequent analyses or were misclassified. Furthermore, because the most up to date information on immigration and integration policies was from the year 2014, we cannot rule out that changes in these policies in the meantime might have led us to misclassify some countries as more or less inclusive than they are today. However, we want to argue that such misclassifications are not likely because the overall MIPEX score is a composite measure generated from 167 indicators from eight policy areas. Accordingly, although the different indicators may fluctuate over time, it seems unlikely that many of them have changed in such a short period. Furthermore, for our analyses, MIPEX scores were categorized into tertiles, and as such, to affect our results, changes would have had to be large enough to move a country from one category into another. In addition, although our outcomes have been used in ample former studies showing associations with relevant constructs for adolescents throughout Europe [27,43], they are not without weaknesses. Although the Cantril ladder, which we used to assess life dissatisfaction, has been shown to have a good reliability and convergent validity among adolescents [26], it might be susceptible to language effects and cultural measurement bias. Similarly, although our measure of psychosomatic complaints has adequate test–retest reliability and psychometric properties [27], it might be prone to recall bias. Although these weaknesses are unlikely to have substantially contributed to the observed interaction patterns, we cannot rule out entirely that the results may have been impacted by differences in the validity of the instruments between different social groups and national contexts. In addition, our study would have benefited from the inclusion of mental ill-health indicators, such as anxiety, depression, ADHD, or conduct problems, as this would have provided us with a more complete picture of adolescent mental health. To test the generalizability of our findings, we encourage future studies to replicate our analyses with variables tapping into different aspects, or correlates (such as social relations), of adolescent mental health.

Another limitation lies in the fact that our sample largely consists of European countries, as such, results might not be generalizable to other world regions. A further limitation is the relatively small number of investigated dimensions. The inclusion of different individual and context characteristics, such as sexual orientation, ethnicity, or local or regional level area deprivation might have led to different findings. Finally, some caution is warranted regarding the distinction between qualitative differences in the lived experiences of individuals occupying particular intersections and quantitative differences in their scores on the investigated outcome variables. Qualitative research might deliver a more in-depth picture of the categories adolescents employ in making sense of society and their place in it and how they experience membership in combinations of those categories.

Using a novel methodological approach on a uniquely large scale, cross-nationally comparative sample, we were able to investigate the interplay between immigration background, SES, and gender on adolescent mental well-being and the variation in this interplay between different national contexts. Our research clearly showed that immigrants, adolescents from low SES families, and girls had a higher risk for reporting low mental well-being. Over all national contexts, no evidence of intersectional effects between those social group memberships was found. However, when allowing for potential variation in this interplay between different national contexts, we did find evidence for intersectionality. Particularly, findings suggest that in immigrant inclusive and income equal countries, members of multiple privileged social groups are doing worse and members of multiple disadvantaged social groups are doing better than would be expected based on a purely additive model. Albeit in different directions, both these processes reduce social inequalities in adolescent mental well-being in more inclusive and equal countries. Future studies are encouraged to further test the context dependency of the intersection of multiple social group memberships, particularly focusing on other indicators on the national level such as the quality of support or services and more proximal environments, such as the schools and school classes. On a policy level, findings support the importance of policies that encourage the mental well-being of immigrants, adolescents growing up in low SES families and girls. Schools particularly can also be encouraged to develop resilience programs for young people who are members of one or more socially disadvantaged groups. In addition, our results suggest the importance of policies that aim to reduce income inequality and stimulate the integration of immigrants to broadly decrease social inequalities in adolescent mental well-being. In addition, findings suggest that special attention should be given to high SES adolescent girls in countries with higher gender equality, as they may be worse off than expected in specifically these countries.

Acknowledgments

International Coordinator was Jo Inchley (University of Glasgow) for the 2017/2018 survey. The Data Bank Manager was Professor Oddrun Samdal (University of Bergen). The 2017/2018 survey included in this study were conducted by the following Principal Investigators in the 33 countries: Albania (Gentiana Qirjako), Austria (Rosemarie Felder-Puig), Azerbaijan (Gahraman Hagverdiyev), Belgium (Flemish: Bart De Clercq; French: Katia Castetbon), Bulgaria (Lidiya Vasileva), Croatia (Ivana Pavic Simetin), Czech Republic (Michal Kalman), Denmark (Mette Rasmussen), Estonia (Leila Oja, Katrin Aasvee), Finland (Jorma Tynjälä), Germany (Matthias Richter), Greece (Anna Kokkevi), Hungary (Ágnes Németh), Iceland (Arsaell M. Arnarsson), Ireland (Saoirse Nic Gabhainn), Italy (Franco Cavallo), Kazakhstan (Shynar Abdrakhmanova and Valikhan Akhmetov), Luxembourg (Helmut Willems), Malta (Charmaine Gauci), The Netherlands (Gonneke Stevens and Saskia van Dorsselaer), Norway (Oddrun Samdal), Poland (Joanna Mazur), Portugal (Margarida Gaspar de Matos), Republic of Moldova (Galina Lesco), Romania (Adriana Baban), Russia (Anna Matochkina), Serbia (Jelena Rakic), Slovenia (Helena Jericek), Spain (Carmen Moreno), Sweden (Petra Lofstedt, Lilly Augustine), Switzerland (Marina Delgrande-Jordan and Hervé Kuendig), Ukraine (Olga Balakireva), United Kindgom (Scotland: Jo Inchley; Wales: Chris Roberts).

Funding Sources

Supplementary Data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jadohealth.2020.02.013.

References

[1] Kessler RC, Angermeyer M, Anthony JC, et al. Lifetime prevalence and age-of-onset distributions of mental disorders in the World Health Organization's World Mental Health Survey Initiative. World Psychiatry 2007;6:168−76.

[2] Rutter M, Kim-Cohen J, Maughan B. Continuities and discontinuities in psychopathology between childhood and adult life. J Child Psychol Psychiatry 2006;47:276−95.

[3] Polanczyk GV, Salum GA, Sugaya LS, et al. Annual research review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. J Child Psychol Psychiatry 2015;56:345−65.

[4] Patel V, Flisher AJ, Hetrick S, et al. Mental health of young people: A global public-health challenge. Lancet 2007;369:1302−13.

[5] Patel V, Saxena S, Lund C, et al. The Lancet Commission on global mental health and sustainable development. Lancet 2018;392:1553−98.

[6] Blakemore SJ. Adolescence and mental health. Lancet 2019;393:2030−1.

[7] Dimitrova R, Chasiotis A, van de Vijver F. Adjustment outcomes of immigrant children and youth in Europe. Eur Psychol 2016;21:150−62.

[8] Reiss F. Socioeconomic inequalities and mental health problems in children and adolescents: A systematic review. Soc Sci Med 2013;90:24−31.

[9] Thapar A, Collishaw S, Pine DS, Thapar AK. Depression in adolescence. Lancet 2012;379:1056−67.

[10] Ghavami N, Katsiaficas D, Rogers LO. Toward an intersectional approach in developmental science: The role of race, gender, sexual orientation, and immigrant status. Adv Child Dev Behav 2016;50:31−73.

[11] King DK. Multiple jeopardy, multiple consciousness: The context of a black feminist ideology. Signs 1988;14:42−72.

[12] Evans CR, Erickson N. Intersectionality and depression in adolescence and early adulthood: A MAIHDA analysis of the national longitudinal study of adolescent to adult health, 1995-2008. Soc Sci Med 2019;220:1−11.

[13] Jackson B, Goodman E. Low social status markers: Do they predict depressive symptoms in adolescence? Race Soc Probl 2011;3:119−28.

[14] Else-Quest NM, Hyde JS. Intersectionality in quantitative psychological research: I. Theoretical and epistemological issues. Psychol Women Q 2016;40:155−70.

[15] Evans CR. Reintegrating contexts into quantitative intersectional analyses of health inequalities. Health Place 2019;60:102214.

[16] Malmusi D, Palencia L, Ikram UZ, et al. Inequalities by immigrant status in depressive symptoms in Europe: The role of integration policy regimes. Soc Psychiatry Psychiatr Epidemiol 2017;52:391−8.

[17] Alemán-Díaz AY, Toczydlowska E, Mazur J, et al. Why income inequalities matter for young people's health: A look at the evidence. Florence, Italy: UNICEF Office of Research; 2016. Ap. Innocenti Working Paper 2016-06. Report: WP-2016-06.

[18] Elgar FJ, Pfoertner T-K, Moor I, et al. Socioeconomic inequalities in adolescent health 2002-2010: A time-series analysis of 34 countries participating in the Health Behaviour in School-aged Children study. Lancet 2015;385:2088−95.

[19] Pickett KE, Wilkinson RG. Child wellbeing and income inequality in rich societies: Ecological cross sectional study. BMJ 2007;335:1080.

[20] Torsheim T, Ravens-Sieberer U, Hetland J, et al. Cross-national variation of gender differences in adolescent subjective health in Europe and North America. Soc Sci Med 2006;62:815−27.

[21] Evans CR, Williams DR, Onnela J-P, et al. A multilevel approach to modeling health inequalities at the intersection of multiple social identities. Soc Sci Med 2018;203:64−73.

[22] Merlo J. Multilevel analysis of individual heterogeneity and discriminatory accuracy (MAIHDA) within an intersectional framework. Soc Sci Med 2018;203:74−80.

[23] Jones K, Johnston R, Manley D. Uncovering interactions in multivariate contingency tables: A multi-level modelling exploratory approach. Methodological Innov 2016;9:1−17.

[24] Inchley J, Currie D, Cosma A. Health Behaviour in School-aged Children (HBSC) study protocol: Background, methodology and mandatory items for the 2017/18 survey. St Andrews: CAHRU; 2018.

[25] Cantril H. Pattern of human concerns. New Brunswick, NJ: Rutgers University Press; 1965.

[26] Levin KA, Currie C. Reliability and validity of an adapted version of the Cantril Ladder for use with adolescent samples. Soc Indic Res 2014;119:1047−63.

[27] Haugland S, Wold B. Subjective health complaints in adolescence—reliability and validity of survey methods. J Adolesc 2001;24:611−24.

[28] Ravens-Sieberer U, Gosch A, Rajmil L, et al. The KIDSCREEN-52 quality of life measure for children and adolescents: Psychometric results from a cross-cultural survey in 13 European countries. Value Health 2008;11:645−58.

[29] Hagquist C, Välimaa R, Simonsen N, et al. Differential item functioning in trend analyses of adolescent mental health − illustrative examples using HBSC-data from Finland. Child Indicat Res 2017;10:673−91.

[30] Torsheim T, Cavallo F, Levin KA, et al. Psychometric validation of the revised family affluence scale: A latent variable approach. Child Indicat Res 2016;9:771−84.

[31] Hobza V, Hamrik Z, Bucksch J, De Clercq B. The family affluence scale as an indicator for socioeconomic status: Validation on regional income differences in the Czech Republic. Int J Environ Res Public Health 2017;14:1540.

[32] Hartley JE, Levin K, Currie C. A new version of the HBSC family affluence scale-FAS III: Scottish qualitative findings from the international FAS development study. Child Indicat Res 2016;9:233−45.

[33] Huddleston T, Vink MP. Full membership or equal rights? The link between naturalisation and integration policies for immigrants in 29 European states. Comp Migr Stud 2015;3:8.

[34] 2019 World Bank data BASE.

[35] Fisk SA, Mulinari S, Wemrell M, et al. Chronic obstructive pulmonary disease in Sweden: An intersectional multilevel analysis of individual heterogeneity and discriminatory accuracy. SSM Popul Health 2018;4:334−46.

[36] Bell A, Holman D, Jones K. Using shrinkage in multilevel models to understand intersectionality a simulation study and a guide for best practice. Methodology 2019;15:88−96.

[37] Browne WJ. MCMC estimation in MLwiN. Bristol (UK): Centre for Multilevel Modelling, University of Bristol; 2017.

[38] de Looze ME, Huijts T, Stevens GWJM, et al. The happiest kids on earth. Gender equality and adolescent life satisfaction in Europe and North America. J Youth Adolesc 2018;47:1073−85.

[39] Mensinger JL, Bonifazi DZ, LaRosa J. Perceived gender role prescriptions in schools, the superwoman ideal, and disordered eating among adolescent girls. Sex Roles 2007;57:557−68.

[40] Steiner-Adair C. The body politic: Normal female adolescent development and the development of eating disorders. J Am Acad Psychoanal 1986;14: 95–114.

[41] McLean KC, Breen AV. Processes and content of narrative identity development in adolescence: Gender and well-being. Dev Psychol 2009;45: 702–10.

[42] de Looze M, Elgar FJ, Currie C, et al. Gender inequality and sex differences in physical fighting, physical activity, and injury among adolescents across 36 countries. J Adolesc Health 2019;64:657–63.

[43] Ravens-Sieberer U, Erhart M, Torsheim T, et al. An international scoring system for self-reported health complaints in adolescents. Eur J Public Health 2008;18:294–9.