



# Mental Health in Children of Immigrants in Germany: The Role of Socio-Demographic and Immigration-Related Characteristics

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## Abstract

Over the last decades, the number of immigrants in Germany has been rising steadily. One result of this is that currently, around 40% of children in the country have immigrant parents. Existing studies report rather mixed results concerning their mental health outcomes. The present study provides some insight into factors that affect the mental health of this population. We compared emotional and behavioral problems (assessed via the SOEP-SDQ) in 5- to 10- year-old children of immigrants and their native German peers ( $N=2441$ ). We considered socioeconomic status as well as immigration-related characteristics of parents (age at immigration, country of origin, perceived discrimination, host country language skills, and immigrant generation). We examined the mental health status of the parents as a possible mediator between these characteristics and the children's mental health outcomes. We did not find a difference in emotional and behavioral problems between immigrant and native children living in Germany. Low socioeconomic status was associated with more emotional and behavioral problems in both immigrant and native German children. Younger age at immigration to Germany in fathers and poorer German language skills among mothers were found to be directly associated with poorer mental health in children of immigrants. Mothers' mental health status mediated the effects of perceived discrimination and mothers' German language skills. The results underline the urgent need for a more detailed examination of immigration-related characteristics in immigrants living in Germany in order to better understand and prevent possible mental health-related disadvantages among their children.

**Keywords** Emotional and behavioral problems · Immigration · Perceived discrimination · Mental health

## Highlights

- No differences were found in respect to emotional and behavioral problems between children of immigrants and their native German peers.
- Low socioeconomic status in both children of immigrants as well as native German peers was found to be associated with increased emotional and behavioral problems.
- Better German language skills among mothers and older age at immigration to Germany among fathers were associated with fewer emotional and behavioral problems in children. The associations between perceived discrimination and mothers' German language skills and children's emotional and behavioral problems were mediated by maternal mental health status.

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The complex interplay between health and immigration is a research field of growing importance. The number of international immigrants has increased continuously over

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the past five decades worldwide (from 84 million in 1970 to 272 million in 2019). While the United States of America was the main receiving country of international immigrants in 2019, Germany was the second top destination country (McAuliffe et al., 2019). More than 13 million people currently living in Germany were born abroad (Federal Statistical Office of Germany, 2020). Moreover, about 40% of children under the age of ten living in Germany are 1st (6.7%), or 2nd or 3rd generation (33.3%) immigrants (Federal Statistical Office of Germany, 2020). Most immigrants in Germany originate from Turkey and Poland. The group of German repatriates (ethnic Germans mostly from the Russian Federation and Eastern Europe, called *Spätaussiedler*) is the third-largest group of immigrants. Regardless of ethnicity, numerous studies report that all three groups (including their descendants) experience discrimination as well as worse mental health outcomes that can be traced to the experience of being an immigrant (Mewes et al., 2015; Nesterko et al., 2014; Schunck et al., 2015; Wittig et al., 2008). In the present study, we focus on parents and children who have immigrated to Germany from another country (1st generation immigrants) as well as on individuals born in Germany who have at least one immigrant parent (2nd generation immigrants).

Immigrants have to deal with many changes in their lives, e.g. loss of work, family, and friends, and with facing a number of social and economic challenges after immigration (Schenk, 2007). This includes dealing with new and in some cases conflicting lifestyles and norms, learning a new language, finding work, and/or coping with discrimination in the host country (Kirkcaldy et al., 2006). Such experiences can be described as critical life events and might cause stress (e.g., acculturative stress described by Berry et al., 1987). They can even lead to mental health symptoms (Schenk, 2007).

Acculturative stress experienced by immigrant parents might have an impact on the well-being of their children (Leon, 2014). Additionally, there is evidence that children of immigrants are often disadvantaged in respect to their social and economic status, a factor related to lower well-being (Bradley & Corwyn, 2002). However, available research reports rather mixed finding on immigrant children's mental health compared to their native peers (Belhadj Kouider et al., 2014). In Europe, some studies have indicated worse mental health status in children of immigrants (Daglar et al., 2011; Flink et al., 2012), others showing no differences between native and children of immigrants (Washbrook et al., 2012; Zwirs et al., 2007), and a few have reported better mental health in this population (Vaage et al., 2009).

In Germany, immigrant parents report more emotional and behavioral problems among their children (aged 3–6 years) compared to native German parents in a study by

Hölling et al. (2007). By contrast, in a study conducted by Denner (2006), teachers in Germany reported no differences in emotional and behavioral problems between 3–6 years old immigrant and native German children. In an analysis Kuschel et al. (2008) conducted of parents and teachers' reports, they found that only the mothers reported increased emotional and behavioral problems. These mothers only reported more internalizing problems, but no higher level of externalizing problems.

Methodological differences between the studies might partly explain the inconsistency of the reported results (Stevens & Vollebergh, 2008). Studies vary: (1) in the definition and thus assessment/operationalization of immigrant population(s); (2) in the studied host countries and countries of origin; (3) in the assessments of mental health outcomes; and (4) in the sources of information, e.g., teachers, parents, or children in question (Stevens & Vollebergh, 2008). However, one of the most important reasons for such a wide spectrum of differing results mentioned above is the great heterogeneity within the group of immigrants (Nesterko et al., 2019). In Germany, as a case in point, immigrant populations differ in respect to their origin, immigrant generation, age at immigration, and perceived discrimination, due to visible ethnic, cultural, and/or religious affiliations. It remains unclear, what influence those immigration-related characteristics of the parents might have on children's emotional and behavioral problems. What is more, many studies did not consider parents' socioeconomic status (SES; Stevens & Vollebergh, 2008), which is strongly associated with children's mental health. Consequently, when examining mental health outcomes among children of immigrants, two theoretical frameworks should be considered: (1) general models of children's well-being considering economic pressure (Conger & Conger, 2002) and (2) specific models addressing mental health among ethnic minority children (García Coll et al., 1996).

In their family stress model, Conger and Conger (2002) underline the impact of the family economic status on children's well-being. According to the model, economic pressure impairs children's well-being mediated by the mental health status of the parents. The model was confirmed not only within the European and American majority populations, but also within an African American and a Mexican American sample in the USA (Conger et al., 2002; White et al., 2009). There is a great body of research indicating a link between lower SES of the family and mental health problems among children. Financial and social resources are reduced in low SES families and both children and parents have to cope with numerous stress-inducing conditions (e.g., Bolger et al., 1995; European and African American children in the USA). However, the question of whether this relation is similar for immigrant families remains open (Bradley & Corwyn, 2002). Beiser

et al. (2002) report on fewer emotional and behavioral problems in children of immigrants compared to native children in Canada, although they found children of immigrants to be at twice the risk of living in poverty. As immigrant families are often disadvantaged in their social and economic status (Bradley & Corwyn, 2002), an in-depth examination of the possible influence of immigrant families' SES on children's mental health that analyses SES and immigration status independently seems crucial.

As mentioned above, factors related to their minority status might also affect children of immigrants' mental health. García Coll and colleagues (1996) developed an integrative model for the study of developmental competencies in minority children. In this model, special attention is given to the stress-related consequences of perceived discrimination experienced by ethnic minority families. The relationship between perceived discrimination of parents and children's mental health seems to be of a rather complex nature. In a study conducted by Caughy, O'Campo and Muntaner (2004), children of African American families whose parents denied experiencing discrimination showed more behavioral problems than children of parents who said they did experience discrimination. By contrast, in other studies, perceived discrimination by parents was related to higher levels of distress in African American children (Gibbons et al., 2004), more emotional and behavioral problems in ethnic minority children living in the UK (Kelly et al., 2013), and worse mental health in ethnic minority children living in the USA (Tran, 2014). In their longitudinal study Bécaries, Nazroo and Kelly (2015) report on an association between perceived discrimination of ethnic minority mothers living in the UK with emotional and behavioral problems among their children. This association was mediated by worse mental health among mothers and stricter parenting styles.

In their model, García Coll et al. (1996) also highlight the role parents' migration and acculturation patterns play in their children's development. They report that parents who are more adapted to the host country might more easily understand multiple influences on their child's behaviour. We explore three factors related to acculturation in our study: age at immigration to the host country, host country language skills, and immigrant generation. There is differing evidence concerning possible associations between age at immigration and mental health in immigrants and their children. While some studies from North America reveal a negative impact of childhood immigration (Islam et al., 2014; Patterson et al., 2013), studies from Europe find increased odds of mental health problems in older immigrants (Honkaniemi et al., 2020; Lanari et al., 2018). A benefit of young age at immigration is often explained by a better and faster adaptation to the host country.

Age at immigration is directly related to the length of stay in the host country when looking at specific age groups of immigrants. Positive associations between length of stay and mental health outcomes were found among immigrants in Canada (Bagley, 1993) and immigrants in Sweden (Koochek et al., 2007; Leão et al., 2009). By contrast, other studies have found negative associations between length of stay and mental health in adult immigrants living in Europe (Honkaniemi et al., 2020; Lanari & Bussini, 2012). The latter findings support the claim that a possible Healthy Migrant Effect for mental health (a mental health advantage upon arrival of immigrants in their new home countries) diminishes over time (Wu & Schimmele, 2005). However, the question of whether immigrant parents' length of stay has an impact on the mental health of their children has yet to be addressed. Such a relationship between parents' length of stay and their children's mental health might be mediated by parent's mental health status (Belhadj Kouider et al., 2014) and better host country language skills.

Language is not only a means of everyday communication, but also a powerful symbol of belonging, and unfortunately a motive for discrimination if it is not mastered. Host country language skills are essential for educational success and success on the labour market and thus, for socioeconomic status. Furthermore, language plays an important role as a door opener for establishing and deepening social contacts with the majority of host country society for adults as well as for children (Esser, 2006, 2009; Gleumes, 2006, Liu et al., 2009). Several studies revealed an association between poor host country language skills and distress, poor mental health, and low life satisfaction in adult immigrants (Amit, & Bar-Lev, 2015; Wiking et al., 2004; Ying, 1995). A positive impact of better language skills was also found in many studies examining the relationship between the acculturation process and health status with sufficient host country language skills operationalized as an aspect of a successful acculturation strategy (Huang et al., 2017; Pawliuk et al., 1996; Ünlü Ince et al., 2014).

Concerning the influence of maternal host country language skills on children's mental health, it was found that children of immigrant mothers with poor host country language skills tend to show more problematic behavior (children of immigrants living in Netherlands; Jansen et al., 2010) and increased depressive symptoms (Chinese American children in the USA; Liu et al., 2009). In their review on the mental health of immigrant children, Belhadj Kouider et al. (2014) list low parental language skills as a risk factor for mental health status in children. They also mention the burden when children are taking the role of (language) mediator for their parents in everyday life. Moreover, parents' language skills influence their child's language skills (Troesch et al., 2021) and thus have an indirect impact on the child's social contacts and

educational success as mentioned above. In addition, when parents have insufficient language skills, children are likely to have less access to health care (Skinner et al., 2010). On the other hand, mothers with sufficient host country language skills on the other hand tend to be more capable of providing support for their children both academically and emotionally (Liu et al., 2009).

Immigration-related characteristics seem to have an impact not only on those who immigrated, but also on their children (and grandchildren) who are born and socialized in the host country. The process of acculturation is multi-generational (Pawliuk et al., 1996; Schwartz et al., 2010). Moreover, 2nd generation children of immigrants are often found to be in poorer mental health than 1st generation children (Driscoll et al., 2008; Harker, 2001; Montazer & Wheaton, 2011; Mood et al., 2017; Zhou, 1997). It is currently a matter of discussion whether 2nd generation immigrants may even bear a greater cumulative load in acculturating as they must navigate the frequently contradictory cultural and/or community-based expectations and commitments imposed on them both by parents/family from one side and peers/the host country majority from the other (Portes & Rumbaut, 2001).

Harker (2001) suggests that there are protective factors in 1st generation immigrant children that buffer negative impacts of migration such as parental supervision, lack of parent-child conflict, religious practices, and social support. These protective factors seem to diminish in later generations (Harker, 2001). Mood et al. (2017) and Montazer and Wheaton (2011) make more specific claims about the health advantage 1st generation children have. According to them, the mental health advantage in immigrants takes effect only when the child migrates from low GNP countries (Montazer & Wheaton, 2011)/non-western countries (Mood et al., 2017). They observed better family cohesion and less conflict in these families. Thus, the process of acculturation of both 1st and 2nd generation immigrants, as well as their children, should be seen as a complex, long-term, and transgenerational interplay between socio-demographic, immigration-related, and mental health-related characteristics of different generations within immigrant families (Pawliuk et al., 1996; Schwartz et al., 2010).

The described immigration-related characteristics and the SES may have direct or indirect effects on children's emotional and behavioral problems. While Conger et al. (2002) expect the negative impact of low SES to be mediated by parental mental health, García Coll et al. (1996) focus on the direct effects of their proposed variables on child development. As we focus in our study on parental reports and parental characteristics, we expect the impact of immigration-related characteristics to be at least partly mediated by parental mental health. In Germany, as in many other countries, children generally spend more time with

their mothers than with their fathers (Hook & Wolfe, 2013; Sayer et al., 2004). Therefore, we expect maternal characteristics to have a bigger impact on children's emotional and behavioral problems than paternal characteristics.

Following research questions guide the analyses presented below:

1. Are there differences in emotional and behavioral problems between native German children and the children of immigrant parents living in Germany?
2. What impact does SES have on emotional and behavioral problems among children of 1st and 2nd generation immigrants as well as on native German children?
3. What impact do immigration-related characteristics of immigrant mothers and fathers (age at immigration, perceived discrimination, host country language skills, immigrant generation, and country of origin for 1st generation immigrants) have on children's emotional and behavioral problems?
4. Does the mental health status of parents mediate the associations between immigration-related characteristics of immigrant parents and emotional and behavioral problems among their children?

## Methods

### Data, Participants, and Procedure

The analyses are based on a dataset from the German Socio-Economic Panel (SOEP), a representative longitudinal study of private households from the German general population carried out by the German Institute for Economic Research (DIW; DIW Berlin, 2007). Since 2008, the SOEP-survey has included a mother-child questionnaire that asks mothers a set of questions about their children from birth onward (Schupp, 2009). Datasets from ten survey waves of the SOEP 2008–2017 were compiled, including information given by mothers about children aged 5- to 10 years.

The dataset for the present study includes age, sex, and information about children's emotional and behavioral problems, measured with the Strengths and Difficulties Questionnaire (SDQ; R. Goodman, 1997). We merged the data of the children with the socio-demographic, health-related, and immigration-related characteristics of both parents. Information on SES and valid information for both parents on their immigrant status was available for 2441 children. The data of these participants were analyzed for study question one and two. Characteristics of the sample are displayed in Table 1. Valid data on all immigration-

**Table 1** Descriptives of native German children and children of immigrants and their parents

Child					
Immigrant status	<i>N</i>		Sex (% female)	Age in months ( <i>M/SD</i> )	Household ISEI ( <i>M/SD</i> )
German native	925		50.7	75.51/15.86	53.54/15.97
Both parents born abroad	468		54.5	90.65/23.84	39.37/14.97
Both parents are immigrants, at least one born in Germany (2nd generation)	127		49.6	84.1/22.26	45.16/15.6
One Native German parent, one immigrant parent	294		50	81.6/20.75	52.42/16.73
	<i>N</i>	<b>Mental health component of HRQoL (MCS; <i>M/SD</i>)</b>	<b>German language skills (range: 2–10; <i>M/SD</i>)</b>	<b>Perceived discrimination (%)</b>	<b>Age at immigration to Germany (years; <i>M/SD</i>)</b>
<b>Mothers</b>					
1 <sup>st</sup> generation	272	49.08/9.4	7.95/1.87	42	21.72/8.56
2 <sup>nd</sup> generation	57	50.06/9.4	9.79/0.56	42.9	
<b>Fathers</b>					
1 <sup>st</sup> generation	312	52.30/8.26	7.43/1.84	45.2	24.46/9.44
2 <sup>nd</sup> generation	55	52.77/7.78	9.22/1.24	32.70	

related characteristics analyzed in the present study (age at immigration, perceived discrimination, host country language skills, immigrant generation and country of origin for 1st generation immigrants) was available for 329 mothers and 367 fathers (1st and 2nd immigrant generation). Data of these participants were analyzed for study questions three and four.

## Measures

### Children's emotional and behavioral problems

Children's emotional and behavioral problems were assessed with the SOEP version of the SDQ (SOEP-SDQ). The SDQ is a short questionnaire for measuring children's behavioral strengths and weaknesses. The original questionnaire by R. Goodman (1997) consists of five subscales (hyperactivity, peer relationship problems, conduct problems, emotional problems, and prosocial behaviour), each of them containing five items. Scores from the first four subscales were summed up to a total difficulties score. The SDQ is currently one of the most widely used screening instruments for assessing mental health among children and adolescents (Richter et al., 2017). It has been validated in many countries including Germany (Woerner et al., 2002). Validation studies show high correlations with clinical diagnoses in psychiatric samples (S. H. Goodman & Gotlib, 1999; Klasen et al., 2000).

In the SOEP-SDQ, 17 of the 25 original items were used and the response scale was changed from three categories to a seven-point Likert-scale. For the 5- and 6-year-old children, the subscale's internal reliability varied between

Cronbach's  $\alpha$  0.48–0.82, and for children aged 9 to 10 years it ranged from 0.55 to 0.84 (Richter et al., 2017). Due to the reduced number of items and the low internal reliability of some subscales, in the present study, we decided to use the total difficulties score only. Since previous studies did not find measurement invariance between parents with different cultural backgrounds for the original SDQ (Runge & Soellner, 2019; Stevanovic et al., 2017) we tested for invariance of the one-factor solution (total difficulties score) between migrant and non-migrant parent respondents in our sample. Results can be found in Table A1 in the Appendix A. Configural and weak invariance was confirmed, but only partial invariance when fixing intercepts to be equal (four intercepts had to be set free). Therefore, we compare level of problem behaviour and we test the impact of SES using the latent SDQ factor taking into account the four freed intercepts.

### Socio-demographic characteristics

Sex (male, female) and age (in months) of the child and the parents (in years) were included. The ISEI Index was used to determine SES. The ISEI Index, developed by Ganzeboom (1992), is based on information about the income, education, and occupation status of a person (SOEP Group, 2018). For comparing levels of emotional and behavioral problems, a household ISEI score was used, representing the higher of the ISEI scores from either the mother or father of the child. When testing mediation effects by parental mental health, their individual score was used. Possible scores range from 16 and to 90, with higher scores indicating higher ISEI.



## Health-related quality of life of the parents

Health-related quality of life (HRQoL) of parents was assessed via SF-12v2—SOEP-Version. The SF-12 consists of 12 items, divided into a physical (PCS) and a mental (MCS) health component scale (Radoschewski, 2000). It has been validated in a number of countries and several languages (Daig & Lehmann, 2007). The validation of SF-12 in a representative sample of the German population is based on SOEP Data from 2004 (Andersen et al., 2007). To calculate the MCS, the items are scored and normalized via a standardized algorithm. Possible scores range from 0 to 100 (with a mean score of 50 and a standard deviation of 10), with higher scores indicating better mental health (Nübling et al., 2006). Only MCS scores were analyzed in the present study.

## Immigration-related characteristics

Age at immigration to Germany was determined by calculating the difference between the variables “year of immigration” and “birth year”. Second generation immigrants’ age at immigration was set to 0. Countries of birth were combined into regions due to small sample sizes in individual countries. Parents were asked to rate their German speaking and writing skills on two separate 5-point Likert-scales ranging from “not at all” (1) to “very good” (5). A total score of both items was calculated representing general “German language skills”. Perceived discrimination was measured by the item “How often in the last two years have you felt discriminated against here in Germany because of your ethnic origin?”. For the present analyses, answer options “often” and “seldom” were classified as “perceived discrimination”, the answer option “never” as “no perceived discrimination”.

## Data Analyses

Statistical analyses were performed using the Statistical Package of Social Sciences version 25.0 for Windows and the *lavaan* package in R (Rosseel, 2012). Chi-square tests and ANOVAs were used to compare the groups’ descriptive statistics. Measurement invariance of the SOEP-SDQ between migrant and non-migrant respondents was analyzed using Multi Group Confirmatory Factor Analysis (MGCFAs). Information on the analysis and results can be found in the Appendix A (Table A1). When fixing intercepts to be equal (strong invariance), only partial invariance was reached. Therefore, we used latent scores to compare the level of emotional and behavioral problems in native German children and those of immigrants.

A latent regression model with Robust Maximum Likelihood estimation (MLR) was used. For children’s

immigrant status, dummy variables were coded using native German children as the reference category. To account for the four variant item intercepts, regression paths from dummy variables to the four items were included (regression coefficients in the Appendix B, Table B1). Dummy variables represent “both parents born abroad”, “both parents are immigrants, at least one born in Germany (2nd generation)” and “one Native German parent, one immigrant parent”. ISEI score and the interaction terms of the dummy variables times the ISEI scores were included. We examined Model fit and regression slopes. Full information maximum likelihood (FIML) for missing data was used.

Path analysis (estimation: RML) was used to analyze associations of parental immigration-related characteristics with the SOEP-SDQ scores. We tested a model for mothers’ and fathers’ characteristics separately to avoid multicollinearity and because information for both the mother and father was not available for all children. We modeled direct paths from all variables included to the SDQ total difficulties score. Mediation by health-related quality of life of the parent (MCS, mental health component) was modeled for the ISEI score and the immigration-related characteristics of the parent. Model fit and regression slopes are examined. Full information maximum likelihood (FIML) for missing data was used.

## Results

### Sample Characteristics

Table 1 gives an overview of the socio-demographic characteristics of the children and the immigration-related characteristics of their parents. There were no differences between groups with respect to the children’s sex ( $\chi^2(3) = 2.35$ ,  $p = 0.50$ ). Children whose parents were both born abroad were older than children in other groups ( $F(3,1810) = 63.83$ ,  $p < 0.001$ ). The household ISEI of children of immigrant parents was lower than the ISEI of children with one or no immigrant parent ( $F(3,1805) = 9019$ ,  $p < 0.001$ ).

When comparing 1st and 2nd generation mothers and fathers, there was no difference regarding health-related quality of life (MCS mothers;  $F(1,327) = 0.51$ ,  $p = 0.48$ ; MCS fathers:  $F(1,365) = 0.15$ ,  $p = 0.67$ ) and experiences of discrimination (mothers:  $\chi^2(1) = 0.01$ ,  $p = 0.92$ ; fathers:  $\chi^2(1) = 2.96$ ,  $p = 0.09$ ). The 1st generation mothers  $F(1,327) = 54.19$ ,  $p < 0.001$  and fathers  $F(1,365) = 48.34$ ,  $p < 0.001$  reported weaker German language skills compared to 2nd generation mothers and fathers. The largest group of these mothers originated from the Former Soviet Union (FSU) (28.3%), followed by the Balkan States (27.4%), Turkey (16.9%), Eastern Europe (15.1%), North Africa (5.9%), and Western Europe (2.7%). The largest

**Table 2** Immigrant status of the child, SES, and SDQ total difficulties score: Regression coefficients

	<i>B</i>	Standard Error	<i>p</i>	Beta
<b>Regressions on Child's SDQ score</b>				
Both parents born abroad*	−0.02	0.18	0.91	−0.01
One native German parent, one immigrant parent*	0.46	0.28	0.10	0.15
Both parents are immigrants, at least one born in Germany (2 <sup>nd</sup> generation)*	0.40	0.37	0.27	0.09
Household SES (ISEI)	−0.01	0.002	0	−0.15
Child's sex	−0.33	0.05	0	−0.16
Child's age	0	0.001	0.82	0.01
ISEI × Both parents born abroad*	−0.001	0.004	0.9	−0.01
ISEI × One native German parent, one immigrant parent*	−0.01	0.005	0.15	−0.13
ISEI × Both parents are immigrants, at least one born in Germany*	−0.01	0.007	0.16	−0.11

\*Child immigrant status variables are dummy variables with native German children serving as reference group

group of fathers originated from Balkan States (27.7%), followed by other groups from the FSU (23.6%), Turkey (22.3%), Eastern Europe (13.6%), North Africa (5.0%), and Western Europe (4.1%).

### SOEP-SDQ, SES and Immigrant Status

There was no significant effect of children's immigration status or age on their level of emotional and behavioral problems as measured by the SOEP-SDQ. Being female and having a higher household SES (ISEI) was found to be associated with fewer problems. There was no interaction effect between household ISEI and children's immigration status. Model fit indices indicated an acceptable model fit ( $\chi^2(145) = 745.05$ ,  $p < 0.001$ , robust CFI = 0.92, RMSEA [90% CI] = 0.043 [0.040–0.046], SRMR = 0.033). Standardized betas are displayed in Table 2.

### SOEP -SDQ and Immigration-Related Characteristics of the Mother and the Father

Variable correlations can be found in Table 3. Model fit indices indicated good model fit for the model including characteristics of the father ( $\chi^2(1) = 1.01$ ,  $p = 0.31$ , robust CFI = 1.0, RMSEA[90% CI] = 0.005 [0.00–0.00], SRMR = 0.005) and for the model with characteristics of the mother ( $\chi^2(1) = 0.07$ ,  $p = 0.79$ , robust CFI = 1.0, RMSEA [90% CI] = 0.00 [0.00–0.00], SRMR = 0.001). Models are displayed in Figs. 1 and 2. Significant standardized beta paths coefficients are shown in the figures. A full list of paths coefficients including non-significant betas can be found in the Appendix B (Table B2, B3).

The mental health component (MCS) of fathers' HRQoL as well as their age at immigration were found to be directly associated with their children's emotional and behavioral problems, showing higher scores on MCS as well as higher

age at immigration as being linked with fewer emotional and behavioral problems in children.

In the model including the mothers' characteristics, children's sex, and maternal HRQoL, mothers' SES and German language skills were directly associated with children's emotional and behavioral problems. Fewer emotional and behavioral problems among children were directly associated with better mental health (MCS), higher SES, and better German language skills on the part of the mother. In addition, two mediation effects were found: (1) perceived discrimination was found to be directly associated with worse maternal mental health, negatively impacting children's emotional and behavioral problems; and (2) better German language skills were found to be associated with lower MCS scores, with the MCS having a negative impact on children's emotional and behavioral problems.

### Discussion

In the present study, analyzing mental health in children of immigrants living in Germany using a population-based data, we found no differences in emotional and behavioral problems between native German children and children of immigrants. The results of the present study are in line with previous research conducted in Germany (Denner, 2006) as well as the UK, Canada, the US, and Australia (Washbrook et al., 2012). However, there are also studies reporting higher prevalence rates of emotional and behavioral problems among immigrant children (Diler et al., 2003; Sagatun et al., 2008). Surprisingly, our study found a different outcome than a comparable analysis using another representative sample of children in Germany and the same instrument we used (Hölling et al., 2007). In this study, immigrants' children between 3 and 6 years of age showed more emotional and behavioral problems than their native peers. The discrepancy

**Table 3** Bivariate Pearson correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Child's sex															
2 Child's age	-0.01														
3 Mother's age	-0.01	0.15**													
4 Father's age	-0.01	0.19**	0.70**												
5 ISEI score mother	-0.01	-0.13**	0.18**	0.10**											
6 ISEI score father	0.05*	-0.13**	0.22**	0.14**	0.43**										
7 Household ISEI	0.02	-0.15**	0.21**	0.12**	0.81**	0.85**									
8 Mental health (MCS) father	-0.01	0.01	0.00	0.00	-0.01	-0.03	-0.02								
9 Mental health (MCS) mother	0.00	0.00	0.04*	0.05*	0.03	0.02	0.05*	0.30**							
10 German language skills mother	0.02	-0.29**	0.02	-0.05	0.29**	0.22**	0.3**	0.08*	0.03						
11 German language skills father	0.00	-0.26**	-0.04	-0.14**	0.16**	0.36**	0.31**	0.08*	0.06	0.52**					
12 Perceived discrimination father	0.06	-0.06	0.04	0.03	-0.11	-0.07	-0.09*	-0.10**	-0.05	0.07	0.06				
13 Perceived discrimination mother	0.00	0.00	0.00	0.02	-0.04	-0.03	-0.05	-0.12**	-0.08*	0.01	-0.01	0.40**			
14 Age at immigration to Germany father	-0.01	0.38**	0.17**	0.39**	-0.16**	-0.14**	-0.18**	-0.07*	-0.05	-0.47**	-0.57**	-0.07	-0.06		
15 Age at immigration to Germany mother	-0.02	0.36**	0.31**	0.31**	-0.12**	-0.06	-0.1**	-0.06*	-0.05	-0.59**	-0.39**	-0.08*	-0.01	0.70**	
16 SDQ total difficulties score	-0.13**	0.01	-0.05**	-0.06**	-0.12**	-0.10**	-0.12**	-0.08**	-0.15**	-0.10**	-0.05	0.06	0.13**	-0.02	0.00

\* $p < 0.05$ ; \*\* $p < 0.01$ .

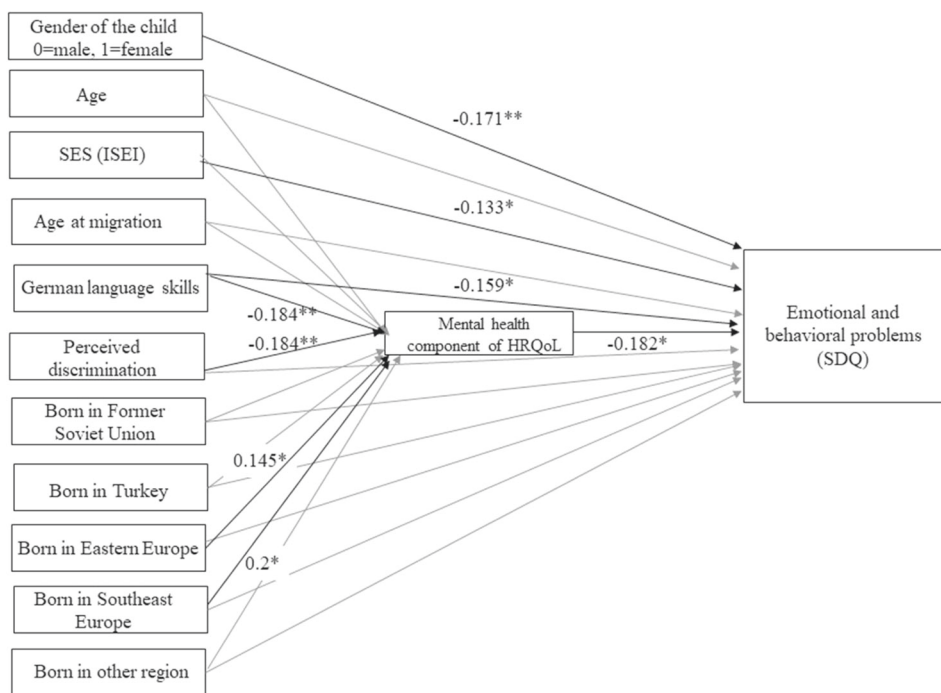
with the finding presented here might be explained by that study's use of the original SDQ (25 items, 3 response categories). It is possible that the selection of items and the changed answer scale in the SOEP-SDQ (17 items, 7-point Likert scale) affected the results. In a cross-national study, Harzing et al. (2009) found that changing a 5-point Likert scale to a 7-point Likert scale reduced response bias. Moreover, in the current study, we found only partial measurement invariance when comparing immigrant versus non-immigrant respondents. Studies that do not test and adapt for measurement invariance might be biased when comparing total scores.

Taking a closer look at different kinds of emotional and behavioral problems in native and immigrant children might provide a deeper understanding of potential differences between the groups. Belhadj Kouider, Koglin, and Petermann (2014) conclude in their review on emotional and behavioral problems in European children of immigrants that evidence for higher prevalence rates of problems in children of immigrants is indeed found more often found when internalizing problem behavior is considered as an independent factor. As the present study focused on a specific age group (5–10-year-olds), it is also possible that differences between native children and immigrant's children occur at an older age. This might be due to immigration-related characteristics such as perceived discrimination (Zwirs et al., 2007). The impact of perceived discrimination at a personal as well as at an institutional level might be more visible in later life, for example, if adolescents encounter more restricted opportunities within the educational system (Denner, 2006).

In our study, we focused on parental SES and immigration-related characteristics as factors associated with children's emotional and behavioral problems. Conger and Conger (2002) describe the negative effect of economic pressure on children's adjustment, mediated by parents' distress and interparental conflicts. Our results are in line with findings showing negative impacts of low SES on both immigrant and native children (Bolger et al., 1995; Conger et al., 2002; White et al., 2009). We found no difference in size or direction of the relationship between SES and emotional and behavioral problems influenced by children's immigrant status. However, no mediation on this relationship by fathers' and mothers' mental health was found. There was no association between SES and the mental health component of HRQoL for either fathers or mothers. Beiser et al. (2002) suggested that newly arrived immigrants, who do not have a job and satisfying living conditions, still expect their situation to improve and thus their low status does not affect their well-being that much. Maybe this was true in our sample for immigrant

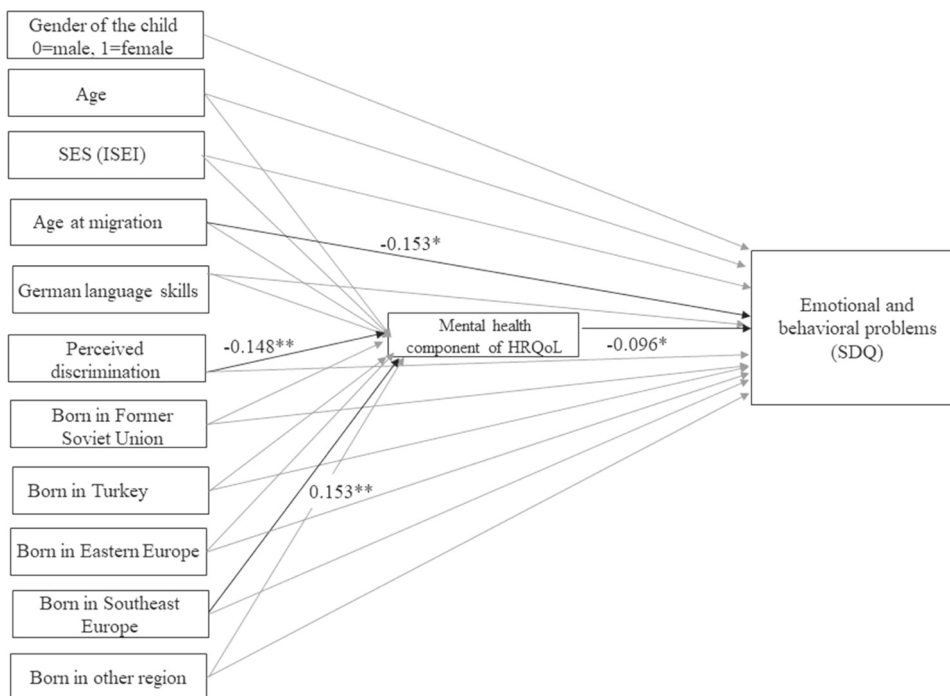


**Fig. 1** Relations between maternal immigration-related characteristics, her mental health and children’s emotional and behavioral problems. Note. Numbers display standardized beta coefficients. \* $p < 0.05$ , \*\* $p < 0.01$



Note. Numbers display standardized beta coefficients. \* $p < 0.05$ , \*\* $p < 0.01$

**Fig. 2** Relations between paternal immigration-related characteristics, his mental health and children’s emotional and behavioral problems. Note. Numbers display standardized beta coefficients. \* $p < 0.05$ , \*\* $p < 0.01$



Note. Numbers display standardized beta coefficients. \* $p < 0.05$ , \*\* $p < 0.01$

parents, but did not protect their children from the negative effects of low SES.

When tested separately for immigrant parents, while the mothers’ SES had an impact on children’s emotional and

behavioral problems the fathers’ did not. Bøe et al. (2014) tested mediation paths from SES indicators to children’s emotional and behavioral problems. They found a direct effect of maternal education level on negative parenting

practices, which in turn had a negative impact on their children's internalizing and externalizing problems. They did not find this mediation for fathers' education level. One reason might be that fathers are often less involved in parenting compared to mothers (Bøe et al., 2014; Hook & Wolfe, 2013; Sayer et al., 2004). Moreover, a mediation via parenting practices may explain an effect of maternal status independent of the mother's mental health.

Because of the wide range of countries of origin, lengths of stay, legal statuses, religious affiliations, etc. represented by the immigrant population in Germany, it has often been characterized as a highly heterogeneous group (Nesterko et al., 2019). Thus, the status of being an immigrant is not necessarily a significant factor when analyzing immigration-related health outcomes and consequently needs more detailed examination. García Coll et al. (1996) proposed a set of characteristics that potentially influence the development of ethnic minority children. In their model, the parents' acculturation patterns play a role in their children's development, with better adaptation to the majority society having a positive impact on the child's well-being. In the current study, we confirm that parental immigration-related characteristics have an impact on emotional and behavioral problems in children of immigrants. Host country language skills and perceived discrimination reported by the mothers, and fathers' age at immigration show significant associations with their children's mental health. No such associations were found however for country of birth or immigrant generation.

Mothers with better host country language skills reported less problematic behavior in their children in our study. We found both a direct effect of maternal language competence as well as a mediation via the mothers' mental health component of HRQoL. In general, better maternal language skills lead to better access to mental health care and counseling services (Skinner et al., 2010) and may enable the mother to provide higher levels of support to their children both academically and emotionally (Liu et al., 2009). Moreover, maternal language skills are closely linked with their children's language skills (Chiswick et al., 2005). However, according to the results presented here, better language skills of immigrant mothers were found to be associated with lower scores on the HRQoL mental health component. Since SES, immigrant generation, and age at immigration were included in our analysis, this particular result is a rather unexpected one. One possible explanation might be the long-term effect of acculturation in Germany resulting in cumulative conflicts between the culture of origin and the host country's culture. Such effects were shown in studies that used the acculturation stress model proposed by Berry (2005), which revealed that assimilation strategies can become a risk factor for the well-being of different groups of immigrants living in different host

countries (Nguyen, 2006). As we did not assess acculturation strategies in our sample, further, more in-depth research is needed on this particular relationship.

In contrast to the findings presented by Gibbons et al. (2004), who observed an indirect and a direct effect of mothers' experiences with discrimination on their children's emotional and behavioral problems, in the current study, we found no such direct effect. The relationship between perceived discrimination by mothers and children's mental health was mediated by mothers' mental health, a supposition supported by Tran (2014) as well as by Gibbons et al. (2004), mothers who perceive discrimination tend to report poor mental health, which is associated significantly with more problematic child behavior reports. The only immigration-related characteristic of fathers that had an impact in our study was the age at which they immigrated to Germany. There was a negative relation: the younger fathers were when they immigrated, the higher the level of emotional and behavioral problems reported among their children was.

The current study is one of very few that have differentiated between fathers and mothers when examining the possible impact of several parental immigrant characteristics on children's behaviour and well-being. Moreover, the current study combines a number of immigration-related characteristics with socio-demographic information using population-based data, shedding light on different sub-groups within the quite heterogeneous population of immigrants living in Germany. Although the present study has some major strengths mentioned above, some limitations must be considered when interpreting the results. Future research would benefit from including multiple reporters (mother, father, child, and/or teacher) as well as different methods of assessment (questionnaires, observational data, health records) to strengthen the measurement of primary study variables and reduce the possibility of methodological bias, which might occur when only subjective parental subjective reports are analyzed. This study used a modified version of the SDQ (Richter et al., 2017), thus the comparability with studies that used the original scale remains limited. The selection of items and changed response scale could have an effect on response bias as discussed above. Moreover, important factors influencing children's emotional and behavioral problems are missing in this study. For example, parenting style, family relations, social support, and the child's social skills (Bécares et al., 2015; Belhadj Kouider et al., 2014) might be of relevance in further investigations. In this light, some risk but also some protective factors have often been discussed in previous research. For example, parental control and religious affiliation seem to be important protective factors for immigrant children's mental health (Fegert et al., 2011).

Gaining more specific insights into the studied associations is of great importance for establishing prevention programs that provide support tailored to the specific needs of immigrant families in respect to mental health problems in children and adolescents. Our results indicate that immigration status itself is not a risk factor, regardless of which generation a person belongs to or where their parents were born. In addition to the age of the father at immigration, rather changeable characteristics, such as host country language skills as well as perceived discrimination were found to be significant. This is an important finding that emphasizes the need for community-based as well as integration politics solutions for better prevention of mental health problems in immigrants and their children.

For mothers, acquiring the host country's language seems to be especially key for protecting the well-being of their children. The problem of limited German language skills is a relevant one in Germany, considering the fact that 90% of the large group of refugees who came to Germany in the last few years, reported having no German language skills upon their arrival (Brücker et al., 2016). The problem also exists in immigrant groups who have been in Germany for longer periods; of these groups, language skills seem to be the lowest among female Turkish immigrants (Haug, 2008), a large group of immigrants in Germany. With respect to the growing number of immigrants in Germany and worldwide, the present research highlights the great importance of a deeper understanding of the complex relationship between mental health and immigration-related characteristics. Moreover, the results presented here provide both health care services as well as official authorities with initial insights concerning specific groups of immigrants and their children in special need of mental health care.

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## Compliance with Ethical Standards

**Conflict of Interest** The authors declare no competing interests.

**Ethical Approval** All procedures performed in studies involving human participants were conducted in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed Consent** Informed consent was obtained by Kantar Public (field work for the SOEP data) from all individual participants included in the study.

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