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Master thesis

*“Ethnic inequalities in adolescents’ subjective well-being:
the effects of social capital”*

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Abbreviations

SWB = subjective well-being

SWLS = satisfaction-with-life-scale

CD = cultural distance

SC = social capital

NEPS = National Educational Panel Study in Germany

SC4 = Starting Cohort 4

Abstract

Despite the significant structural inequalities and psychosocial challenges that young immigrants experience during their acculturation process in Germany, it is only partly understood how these additional obstacles affect their subjective well-being. This paper aims at closing this research gap by exploring potential life satisfaction differences between young natives and immigrants based on a sample of 10,222 tenth graders from the fourth starting cohort of the National Educational Panel Study in Germany. In contrast to the initial hypothesis, the results suggest that adolescent immigrants and natives are, on average, equally satisfied with their lives in Germany. Multivariate regression techniques reveal that immigrant youth are even more satisfied with their lives than their counterparts after controlling for several socio-economic effects. Analysing cultural integration mechanisms and different forms of friendship and family social capital shows that friendships are a decisive complement to support from the family during adolescence. Especially culturally distant immigrant youth benefit from good and supportive friendship networks.

Keywords: Adolescence, immigrants, subjective well-being, satisfaction with life, social capital, cultural distance

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1. Introduction

Immigrants' subjective well-being (SWB) is an increasingly studied subject in integration research. This concept complements traditional literature, which mainly focuses on structural integration processes, by emphasizing the importance of the subjective and multidimensional integration experiences that immigrants have depending on varied individual factors (Hendriks & Bartram 2018). Life satisfaction was found to be a particularly important measure to explore the overall situation of immigrants in their new sociocultural context (Safi 2010; Kirmanoglu & Baslevent 2014; Arpino & de Valk 2018). Despite its great potential, subjective well-being, and life satisfaction in particular, remains highly understudied in German migration research. The scarce empirical evidence suggests that the marked structural inequalities between immigrants and natives (Kristen et al. 2011; Diehl 2016) also pertain to inequalities in life satisfaction between both groups (e.g. Brockmann 2012; Kämpfer 2014).

While the literature on adult immigrants' SWB is slowly growing, the well-being of young immigrants during childhood and adolescence remains almost unexplored in Germany. This research gap is astonishing given the fact that already today, more than one third of Germany's population under the age of 20 has an immigration background¹ (Destatis 2019). Moreover, this group faces structural disadvantages (Clauss & Nauck 2009), especially in the German educational system (Alba et al. 2011: 397; Salikutluk 2016; Dollmann 2017), and young immigrants are often confronted with discrimination and ethnic boundary marking, for instance due to lower German language proficiency (Strobel 2016). Since these adverse experiences can hinder adolescents' formation of stable identities during the transition from childhood to adulthood (Wigfield & Wagner 2005), it is highly relevant to explore how young migrants fare with regard to their well-being in comparison to their native peers. Youth with an immigration background who perceive high cultural distance in Germany may suffer from additional adverse experiences, leading to poorer psychological and socio-cultural outcomes (Frankenberg et al. 2013).

A crucial aspect that needs to be considered when analysing adolescents' well-being is their social embeddedness and support (Chu et al. 2010; Tomás et al. 2020). The family and especially the parents are particularly important for young people's development and well-being (Goswami 2012; Mood et al. 2017). They provide value orientation, emotional affection or help with important decisions related to educational transitions. While most of the literature on young people's SWB focusses on support within the family, less is known about the role of friendships, which gain marked importance during adolescence (Crosnoe 2000; Brown & Larson 2009). Findings by Goldbeck et al. (2007) indicate that friendships are highly relevant for life satisfaction over the course of adolescence, while the satisfaction with family relations decreases during this time. Friends are essential for adolescents' development toward independence and autonomy (Crosnoe et al. 2003) and they build bridges into new social networks that help youth in their personal orientation, identity development and daily lives (Granovetter 1973; de Moor et al. 2019; McMahan et al. 2020). This is especially important for youth with an immigration background because a good embeddedness in the receiving social context was found to be a vital indicator for integration success (Berry et al. 2006; Frankenberg et al. 2013).

Despite their important complementary roles, family and friendship relationships are rarely studied simultaneously to explain well-being differences between adolescents. This pertains in particular to integration research in Germany, where it is only partly understood

¹ An *immigration background* is defined as having at least one parent who is born abroad (Destatis 2019; see also Olczyk et al. 2016). If not stated otherwise, this definition is used throughout the paper.

how friendship and family resources interact in the determination of young immigrants' life satisfaction. Hence, the aim of this paper is to bridge this gap by answering the following two research questions:

1. *Are there differences in the life satisfaction between native and immigrant adolescents?*
2. *And how does family and friendship social capital affect immigrants' and natives' life satisfaction during adolescence?*

A sample of 10,222 tenth graders from the National Educational Panel Study in Germany (NEPS) is used to analyse adolescents' satisfaction with their lives. The tenth grade is a particularly interesting time point in the German educational system to research differences in well-being among adolescents because fundamental decisions regarding educational transitions need to be made at this stage. Good social embeddedness and supportive networks can be expected to be particularly promotive for young people's well-being during this time. Three subsamples of students with immigration background are distinguished based on their self-stated cultural distance and regression techniques are used to model the effect of different social capital measures on their SWB in comparison to their native peers.

2. Theoretical framework and the state of the art

2.1 Adolescents' subjective well-being

Since the start of the 'positive psychology' literature in the 1980s, research on well-being has experienced huge growth and interdisciplinary expansion (Myers & Diener 2018: 218). In this field, it is common to distinguish between hedonic and eudaimonic conceptualizations of well-being (Disabato et al. 2016; Joshanloo 2016). While the latter relates to people's effective psycho-social and cognitive functioning (e.g. psychological well-being), the former refers to the affective and reflective dimensions of people's well-being (e.g. happiness and satisfaction with life). This paper focusses on the reflective-hedonic dimension of well-being because it aims at gaining insights into inequalities between the experienced realities of adolescents with and without immigration background in Germany. This individual quality of life evaluation can be defined as subjective well-being (SWB) (Diener et al. 2018). The subjective nature and the multidimensionality of the construct explain its strength in contrast to single objective measures for adolescents' well-being (e.g. family income, academic achievement, number of friends, etc.), because 'different people likely weight different objective circumstances differently depending on their goals, their values, and even their culture' (Diener et al. 2018: 2). Therefore, the concept of SWB is especially useful in integration research as it allows the depiction of one overall comparable outcome of the complex and diverse integration contexts that individual immigrants experience (Hendriks & Bartram 2018).

Furthermore, the empirical evidence from adolescence research underlines the great potential of SWB to explore how young people cope with the biological, psychological and social changes and challenges they experience during the stressful transition from childhood to adulthood (Goldbeck et al. 2007; Bradshaw & Richardson 2009; Newland et al. 2019; McMahan et al. 2020). Adolescents' SWB has not only been related to the development of stable identities and good mental health (Gilman & Huebner 2006; Proctor et al. 2010), it was also found to be associated with educational achievements (Datu & King 2018; Putwain et al. 2019), problem behaviours (Arslan & Renshaw 2018), and the ability to set and achieve later life goals (Salmela-Aro 2010). Despite the high relevance of SWB during adolescence,

little is known about immigrants' satisfaction with their lives in this crucial period. However, there are several theoretical and empirical reasons to expect that youth with immigration background experience significant challenges and developmental problems that have a negative effect on their well-being.

2.2 Young immigrants' subjective well-being and the role of cultural distance

Young immigrants' integration experiences are diverse and depend on multiple individual and contextual factors (Clauss & Nauck 2009). A framework that is particularly suited to explore ethnic differences in well-being during adolescence is Berry's *acculturation theory* (1974, 1997). This theory recognises the stress and cultural tensions that young immigrants encounter during adaptation to a new societal context. It emphasises that young immigrants' well-being depends on two crucial factors: the extent to which they seek involvement with the culture of the new society and the extent to which they maintain their culture of origin (Berry et al. 2006). Berry and his colleagues expected that "*the combined involvement with both the national and the ethnic cultures [...] would be the most adaptive mode of acculturation and the most conducive to immigrants' well-being*" (Berry et al. 2006: 306). Testing these assumptions with an international comparative study, the authors found that immigrant youth fare indeed best when they have low distance to the new society's culture while maintaining parts of their cultural heritage at the same time. High distance to the new society's culture and perceived discrimination were found to be negatively associated with young immigrants' psychological well-being, while strong ethnic identities showed protective effects (Berry et al. 2006; see *Supplement I* for an extended discussion of this theoretical framework in relation to further integration theories).

These findings are supported by several recent studies on the socio-psychological development of adolescents with immigration background. In a meta-analysis of the growing literature on this subject in Europe, Belhadj Kouider et al. (2014) found that, in many contexts, young immigrants' migration status itself is a risk factor for their (mental) well-being. Uncertain cultural identities were found to be significant predictors for prevalence rates in adolescents' problem behaviour. For Germany, however, the evidence is scarce and less clear. Controlling differences in socio-economic status, Brettschneider et al. (2015) showed that youth with a Turkish background, who are the largest and culturally a rather distant migrant group in Germany, have more mental health problems compared to their native peers. In line with that, a review on the general situation of immigrant youth in Germany found that young immigrants tend to have more emotional and behavioural problems, especially in younger age groups (Frankenberg et al. 2013). In contrast to this, Mood and her colleagues (2016) found that 14-15-year-old adolescents with an immigration background (particularly those from culturally distant countries) had better mental health compared to German natives. In a subsequent study, Mood et al. (2017) could explain a great share of this 'immigrant-health-paradox' with immigrant-specific family social capital.

While these mixed empirical findings relate to the eudaimonic part of well-being (psycho-social and cognitive functioning), even less is known about young immigrants' hedonic (subjective) well-being in Germany. Studies that focus mainly on the adult population suggest that significant gaps in the life satisfaction between natives and immigrants exist, depending on immigrants' cultural distance as well as their integration progress (Safi 2010; Nesterko et al. 2013; Kämpfer 2014; Brockmann 2017). In addition, Arpino and de Valk (2018) showed that immigrants' SWB disadvantage diminishes over generations, which underlines that decreasing cultural distance could be a relevant mechanism behind inequalities in well-being.

However, explicit SWB differences between native and immigrant adolescents remain markedly understudied in Germany. Therefore, the first main target of this paper is to explore possible ethnic inequalities in life satisfaction between young immigrants and natives. Based on the theoretical and empirical findings presented above, it can be expected that adolescents with an immigration background have significantly lower life satisfaction compared to their native peers (*hypothesis 1*). Additionally, *cultural distance* seems to be a crucial factor for ethnic variation in well-being. The development of a stable identity in close relation to the culture of the receiving context is highly adaptive for young immigrants (Berry et al. 2006, Frankenberg et al. 2013). In contrast, culturally distant immigrants have fewer opportunities for structural integration in the new society (e.g. due to lower proficiency in the native language) and they might be confronted with discrimination and symbolic boundaries between ethnic groups (Esser 2010; Strobel 2016), which were found to be significant indicators for decreases in SWB (Beier & Kroneberg 2013). Thus, it can be hypothesised that young immigrants' satisfaction with life decreases with increasing cultural distance (*hypothesis 2*). On the other hand, acculturation theory indicates that involvement in the co-ethnic context and the preservation of an identity related to the culture of origin can have protective functions for young immigrants (Berry et al. 2006, Schotte et al. 2018; see also Portes & Zhou 1993). This leads to *hypothesis 3*: A pronounced identification with the culture of origin has a positive effect on young immigrants' life satisfaction.

2.3 The role of social capital in adolescents' well-being

Since recent studies repeatedly emphasized the importance of social embeddedness and social support for adolescents' well-being (Holder & Coleman 2009; Chu et al. 2010; Goswami 2012; Calmeiro et al. 2018), the second main aim of this paper is to explore the role of *social capital* for ethnic differences in young people's life satisfaction. Coleman (1988: 98-101) defines social capital as social structures, existing in the relations among persons, that facilitate action and enable the achievement of certain ends. Using the example of school dropouts, Coleman showed that social capital, in form of obligations, information-flow and norms within the family and the community, plays a crucial role in the development of children and adolescents. This theoretical concept is ubiquitous in the growing literature about the positive effects of strong and supportive social networks during adolescence (Goswami 2012; Walker 2015; Windzio 2018). Scholars found that support by parents, relatives or peers is one of the most powerful predictors for adolescents' subjective well-being (Calmeiro et al. 2018; Wang et al. 2019; Tomás et al. 2020). Social support reduces externalising and internalising problem behaviour (Attar-Schwartz et al. 2019), loneliness and social anxiety (Cavanaugh & Buehler 2016), as well as depressive symptoms (Burke et al. 2017). Moreover, social support enhances vital developmental factors such as self-esteem (Guan & Fuligni 2016), social competence and health-promoting behaviour (Youngblade et al. 2007).

Given this remarkably broad empirical evidence for the positive effects of social capital, it is quite surprising that different sources and types of social capital are rarely considered simultaneously to analyse well-being differences among adolescents. Most research focusses on social capital from the family or from peers separately, although Malecki and Demaray (2003) emphasised the importance to distinguish emotional, informational, appraisal and instrumental support from different sources such as the family and peers (see also Mendonça & Simões 2019). Furthermore, several studies indicate that the relevance of social capital sources changes dynamically over the course of adolescence (Furman & Buhrmester 1992; Burke et al. 2017; Schacter & Margolin 2019). During the

shift away from parental affection and intimacy, and towards greater individual independence and autonomy, peer relationships become increasingly significant for young people's development (Brown & Larson 2009; Attar-Schwartz et al. 2019; McMahon et al. 2020).

With regard to subjective well-being, Goldbeck and colleagues (2007) found that satisfaction with family relations decreases while satisfaction with friends remains on a high level for German adolescents between the age of 11 and 16. Furthermore, satisfaction with friends and classmates was found to be highly relevant for adolescents' overall life satisfaction (Casas et al. 2013). In line with this, support by peers turned out to be more beneficial than support by parents, especially for 16-18-year-olds (Bokhorst et al. 2010). In contrast, Ma and Huebner (2008) showed, based on a study with middle school students from the USA, that parental social capital was a stronger predictor of life satisfaction than peer relationships. Despite this dynamic interplay of friendship and family support during adolescence, both types of social capital make a unique and complementary contribution to young peoples' subjective well-being (Cavanaugh & Buehler 2016). In sum, these findings indicate that it is important to take both sources of social capital into account when analysing youths' satisfaction with their lives. It can be expected that family as well as friendship social capital is uniquely associated with an increase in adolescents' life satisfaction (*hypothesis 4*).

2.4 Does the effect of social capital depend on immigrants' cultural distance?

A remaining question is whether different sources of social support play varying roles for adolescents with and without an immigration background. Drawing on Coleman's (1988) ideas, Putnam (2000: 20-22) differentiated two forms of social capital that are especially useful for the analysis of integration processes: *bonding* and *bridging* social capital. While the former ties together small social networks and promotes demarcation between them and the rest of the society, the latter includes members of other societal groups through the generalization of trust, norms and values. In the context of immigration, bonding social capital can be related to dense co-ethnic networks with strong family bounds, whereas bridging social capital refers to interethnic ties that promote cultural exchange. This conceptualisation of social capital is an important theoretical complement to the afore-mentioned acculturation strategies of young immigrants, found by Berry and colleagues (2006): A good balance of bonding and bridging social capital can be expected to promote ethnic as well as native dimensions of cultural identity development, which Berry et al. (2006) identified as the most adaptive mode of migrant youth's acculturation. However, high cultural distance hampers immigrants' development of bridging social capital and restrains important integration resources. A lack of interethnic ties can, for instance, mean that adolescents with an immigration background miss essential information on the receiving context (e.g. about the functioning of the educational system), which in turn impedes their structural integration (Granovetter 1973; Kristen et al. 2011).

In this context, friendships (especially with native peers) are a vital resource for bridging social capital that promotes young immigrants' integration. Having supportive and ambitious friends is a highly relevant factor for adolescents' development (Crosnoe et al. 2003) and it is particularly helpful for the acculturation of young immigrants. Therefore, it can be hypothesised that the effect of friendship social capital on adolescents' life satisfaction is stronger for immigrants than for natives (*hypothesis 5*) and that this effect is moderated by cultural distance (*hypothesis 5.1*). In other words, this study investigates whether immigrants, and especially those that experience high cultural distance, benefit more from friendship relations than their native peers. On the other hand, bonding social capital in the form of strong co-ethnic family relations can have protective effects for youth

with immigration background (see also Portes & Zhou 1993; Bratt 2015). Hence, the final hypothesis is that the effect of family social capital on adolescents' life satisfaction is stronger for immigrants than for natives (*hypothesis 6*) and that this effect is moderated by cultural distance (*hypothesis 6.1*).

3. Research design

3.1 Data

The fourth starting cohort (SC4) of the National Educational Panel Study (NEPS) is particularly suited to test the above hypotheses. This longitudinal panel study traces students' development during adolescence and its consequences for their individual life courses (Blossfeld et al. 2011). The SC4 is a multi-stage stratified cluster sample of grade 9 classes within schools in Germany in 2010 (LifBi 2019a). Since the scope of the analysis is limited to adolescents' situation in grade 10, cross-sectional data from the second wave (tenth graders in 2011) is used, complemented by variables that were only collected in the first wave. Hence, the population is defined as students attending regular schools in grade 10 in Germany. Students that left school after grade 9 or who attend special needs schools are not part of the population. This definition results in an initial sample of 14,126 students. List-wise deletion of cases with missing information in one or more analysis variables yielded a final analytical sample of 10,222 students (52% female; $\bar{x}_{age} = 15,7$).²

3.2 Operationalisations

Subjective well-being

The dependent variable in the following analyses is the Satisfaction with Life Scale (SWLS)³, which captures students' subjective evaluation of the current and general quality of their life with values ranging from 0 (entirely dissatisfied) to 10 (entirely satisfied) (LifBi 2019b: 10). In addition to general life satisfaction, students rate their satisfaction with the following five dimensions of well-being on the same scale: economic situation, health, school, family and friends. These five measures will be used (mean-centered) to explore whether immigrant and native adolescents weigh certain dimensions of well-being differently with regard to their overall life satisfaction.

Cultural distance and ethnic identity

In the NEPS questionnaire, students were asked to rate their approval with regards to the statement "*I feel closely related to the German culture*" on a scale from 1 "*does not apply at all*" to 4 "*applies completely*". Based on a recode of this variable, *cultural distance* is operationalised as *high* (2) when migrant students stated "*does not apply at all*" or "*does rather not apply*", as *low* (1) when students stated "*does rather apply*", and as *none* (0) when students stated "*applies completely*". These three cultural distance categories are used in later steps of the analysis to distinguish immigrant subsamples.

² A detailed analysis of the missing values showed no systematic non-response pattern (see *Appendix I*). The average share of missing values was 4% in the overall sample with numbers ranging from 0.37% (immigration background) to 7.74% (social capital measure for having determined friends).

³ The SWLS is one of the most widely used SWB instruments in social sciences (Diener et al. 1985, Pavot & Diener 2008). Particularly in research with children and adolescents, the SWLS has been widely applied to measure young respondents' assessments of their lives (Gilman & Huebner 2003; Proctor et al. 2009; Navarro et al. 2017; Vujčić et al. 2019; see *Supplement II* for detailed discussion of this construct).

To assess students' *ethnic identity*, the NEPS contains a scale that measures immigrants' belonging to the ethnic cultural context via four items (“*I feel closely related to this culture of origin*”, “*I feel I am part of this culture of origin*”, “*I feel content in this culture of origin*” and “*I feel content with being part of this culture of origin*”). The scale that ranges from 1 (*does not apply at all*) to 4 (*applies completely*) was averaged over the four items (Cronbach's alpha = 0.93). The variable is used in a mean-centered version in the analyses to enable better interpretability of interaction effects.

Social capital measures

To obtain information about students' social capital in grade 10, the NEPS questionnaire contained an instrument that asked students to imagine the hypothetical scenario of searching for a vocational training position. Given this scenario, students were asked to state from whom they would expect to get *information* about interesting open positions and who would make an *effort* to help them obtain these positions. Based on these two social capital resources (expected information and expected efforts), two dummy variables are coded “1” when students stated at least one family member (parents, siblings or relatives), and two further dummy variables are coded “1” when students stated friends. This results in four dummy variables that capture whether students expect to receive information and/or support from the family and/or from friends.

While crucial informational and instrumental dimensions of social capital are covered with this operationalisation, three further measures are included to depict details about the quality and the structure of students' peer relations. To get an indicator for students' social embeddedness and the vitality of their peer network, a first dummy variable based on students' self-stated *peer popularity* is coded 1 for high popularity versus 0 for no or only partial popularity. The second variable, providing information about *friends' aspirations and determination*, is based on the statement “*most of my friends think getting ahead in their career is very important*” (LifBi 2019b: 289), with values ranging from 1 “*does not apply at all*” to 5 “*applies completely*”. A dummy variable that indicates whether students stated “*applies completely*” (1) or not (0) is included in the analyses. And finally, the *share of immigrants* in students' friendship networks is used to operationalise young immigrants' opportunity structure for establishing bridging ties to native networks. The original scale, ranging from 1 “*none*” to 7 “*all*” is recoded to 0-6 and treated as a continuous variable in the analyses.

Control variables

Based on the current state of research, several variables can be identified that need to be controlled for when analysing adolescents' well-being (see Chu et al. 2010 and Belhadj Kouider et al. 2014 for systematic reviews). Since most studies found significantly lower life satisfaction in girls (e.g. Piko & Hamvai 2010), a dummy variable indicating female *gender* is included. Furthermore, the models are controlled for *age* (mean-centered), since life satisfaction was found to vary significantly over the course of adolescence (Goldbeck et al. 2007). Additionally, a quadratic age-term is added to control for effects resulting from skipping or repeating classes (being significantly younger or older than 16 in grade 10 could lower the SWB). Moreover, to hold effects of different *personalities* constant, the “Big Five” personality dimensions extraversion, agreeableness, conscientiousness, neuroticism, and openness are included via variables that were pre-generated based on psychometric scales in the NEPS questionnaire (Heilmann et al. 2020; see also Harris et al. 2017). The highest *German and math grades* from the mid-year and the final report in grade 10 are reverse-coded (1= lowest, 6=highest) and included in the descriptive statistics to detect structural inequalities between the samples. The last two controls on the individual level are dummy

variables that provide information about students' *family situation*. Students are asked: "When you talk about your 'father'/'mother' in the questionnaire, who exactly do you mean?". The first dummy variable is coded 1 for students that stated one/two non-biological (step-, adoptive or foster) parent/s and the second dummy variable is coded 1 for students with one/two unknown or lost parent/s (in both cases compared to students who stated their two biological parents).

Finally, a set of three variables is used to explore and control regional and school-related differences between subsamples. The first one is a dummy variable for the *sample region*, distinguishing East (1) from West Germany (0). The second one covers the *school track* respondents are currently in (0=low, 1=middle, 2=comprehensive/other, and 3=high). The highest three categories are included as dummy variables in comparison to the low school track. The last control variable is the share of immigrants in the class (ranging from 1 "none" to 7 "all", recoded to 0-6), which is treated as a continuous variable that captures further opportunity structures for bridging social capital, as well as socio-economic differences between schools.

3.3 Analytical strategy and methods

Three subsequent analyses steps were conducted to answer the initial research questions and to test the deduced hypotheses. First, a descriptive analysis of the dependent and central explanatory variables was conducted. T-tests of mean differences between the subsamples of natives (n=8,006) and first-and-second-generation immigrants (n=2,216) yielded initial conclusions about the hypothesised life satisfaction gap between the groups. Throughout the analyses, the SWLS was treated as a ratio-scaled variable and Ordinary Least Squared (OLS) estimates were calculated in Stata (version 15.1). Robust standard errors (Wooldridge 2016: 249-253) were used since the homoscedasticity assumption is violated due to a left-skewed response pattern on the SWLS (log-transformation did not optimise the distribution markedly, see *Appendix 2*).

For the second and third part of the analysis, the immigrant sample was further subdivided based on cultural distance (CD), resulting in four analysis groups: natives (n=8,006), immigrants with high CD (n=669), with low CD (n=908) and with no CD (n=639). Dummy variables for these groups (with natives as baseline), the five SWB dimensions (economic, health, school, family and friends), as well as interaction terms between the groups and the SWB dimensions were included in regression models that predict life satisfaction, in order to explore group specific well-being patterns. At this stage, first inferences regarding the varying relevance of family and friendship relations among the analysis groups were possible.

Hierarchically nested multivariate regressions were used in the third part of the analysis to disentangle the relevance of different social capital measures. Moreover, the buffering effect of ethnic identity was tested in the immigration subsamples through interaction effects with social capital measures. Finally, robustness checks were performed, and limitations of the research design were discussed.

4. Results

4.1 Descriptive analysis

The descriptive statistics of all analysis variables for the native and the immigrant samples, shown in *Table 1*), provide insight into the properties of the samples and reveal preliminary inequalities between both groups. Students in the immigrant sample are on average older in

Native Germans	N	Min	Max	Mean	Median	SD
SWB: Satisfaction with life	8006	0	10	7.38	8	2.07
SWB: Satisfaction with health (mc*)	8006	-8.20	1.80	-.033	.799	2.212
SWB: Satis. with economic situation (mc*)	8006	-8.06	1.94	.029	.938	1.979
SWB: Satisfaction with school (mc*)	8006	-6.60	3.40	.033	.401	2.416
SWB: Satisfaction with family (mc*)	8006	-8.32	1.68	-.005	.677	2.282
SWB: Satisfaction with friends (mc*)	8006	-8.61	1.39	.014	.393	1.84
SC: Information from family	8006	0	1	.683	1	.465
SC: Efforts made by family	8006	0	1	.825	1	.38
SC: Information from friends	8006	0	1	.278	0	.448
SC: Efforts made by friends	8006	0	1	.219	0	.413
SC: Having determined friends	8006	0	1	.554	1	.497
SC: High peer popularity	8006	0	1	.395	0	.489
SC: Share of immigrant friends	8006	0	6	1.366	1	1.049
Gender: female	8006	0	1	.515	1	.5
Age	8006	13	19	15.634	16	.668
Grade: German**	8006	1	6	4.201	4	.809
Grade: Math**	8006	1	6	4.083	4	1.007
Big5: Extraversion	8006	1	5	3.434	3.5	.89
Big5: Agreeableness	8006	1	5	3.434	3.333	.648
Big5: Conscientiousness	8006	1	5	3.145	3	.87
Big5: Neuroticism	8006	1	5	2.759	3	.857
Big5: Openness	8006	1	5	3.46	3.5	.947
Parent status	8006	0	2	.136	0	.434
Sample region: East Germany	8006	0	1	.143	0	.35
School track	8006	0	3	1.845	2	1.132
Class: share of immigrants	8006	0	6	1.508	1	1.006
First- and second-generation immigrants						
SWB: Satisfaction with life	2216	0	10	7.46	8	2.214
SWB: Satisfaction with health (mc*)	2216	-8.20	1.80	.12	.799	2.178
SWB: Satis. with economic situation (mc*)	2216	-8.06	1.94	-.104	-.062	2.145
SWB: Satisfaction with school (mc*)	2216	-6.60	3.40	-.12	.401	2.555
SWB: Satisfaction with family (mc*)	2216	-8.32	1.68	.017	.677	2.401
SWB: Satisfaction with friends (mc*)	2216	-8.61	1.39	-.052	.393	1.969
SC: Information from family	2216	0	1	.56	1	.496
SC: Efforts made by family	2216	0	1	.711	1	.454
SC: Information from friends	2216	0	1	.271	0	.445
SC: Efforts made by friends	2216	0	1	.235	0	.424
SC: Having determined friends	2216	0	1	.648	1	.478
SC: High peer popularity	2216	0	1	.426	0	.495
SC: Share of immigrant friends	2216	0	6	3.058	3	1.606
Gender: female	2216	0	1	.549	1	.498
Age	2216	14	19	15.833	16	.758
Immigration status: 2 nd generation	2216	0	1	.767	1	.423
Cultural distance: none, low, high	2216	0	2	1.014	1	.768
Ethnic identity (mc*)	2216	-1.995	1.005	.047	.005	.868
Grade: German**	2216	1	6	4.01	4	.843
Grade: Math**	2216	1	6	3.894	4	1.035
Big5: Extraversion	2216	1	5	3.461	3.5	.877
Big5: Agreeableness	2216	1	5	3.497	3.667	.699
Big5: Conscientiousness	2216	1	5	3.215	3	.856
Big5: Neuroticism	2216	1	5	2.811	3	.86
Big5: Openness	2216	1	5	3.549	3.5	.939
Parent status	2216	0	2	.157	0	.465
Sample region: East Germany	2216	0	1	.054	0	.225
School track	2216	0	3	1.455	1	1.196
Class: share of immigrants	2216	0	6	2.586	2	1.377

Table 1) Descriptive statistics of analysis variables – natives compared to immigrants

*mc = mean-centered; **grades are reversed to 6 “highest grade” and 1 “lowest grade”

grade 10 (+0.2 years, $p < 0.001$) and the share of females is higher in this group (+3.4 percentage points, $p < 0.001$). Moreover, 5.4 percent of the adolescents in the immigrant sample live in East Germany (sample region), while this share is 14.3 percent in the native sample. This distribution is in line with the overall distribution of people with and without immigration background in East Germany (Destatis 2019: 24). Within the immigrant sample, 76.6 percent of the adolescents belong to the second generation, which is again very close to the true value in the population (Maaz et al. 2016: 16). These sample properties indicate a good representativity of the data.⁴

The included structural integration indicators showed that adolescents with an immigration background had on average lower German grades and math grades (both -0.19, $p < 0.001$), they attended lower school tracks ($p < 0.001$)⁵, and had markedly more students with immigration background in their classes ($p < 0.001$). These findings confirm the broad literature on young immigrants' structural disadvantages and ethnic segregation in Germany (e.g. Clauss & Nauck 2009).

Regarding the social capital measures, however, the pattern is ambiguous. The share of students who received information and efforts from the family (instrumental support) was on average significantly lower in the immigrant sample (-12.3 and -11.5 percentage points, $p < 0.001$). However, students with an immigration background had more friends that were determined (+9.4 percentage points, $p < 0.001$) and high peer popularity (+3 percentage points, $p < 0.01$). Information and efforts from friends showed no significantly different distribution across the samples: In both groups, around 22-28% of the adolescents expected these SC resources in the hypothetical scenario of looking for a vocational training position. Taken together, the descriptive results showed that instrumental support from the family was more available to native adolescents, while youth with immigration background reported higher quality (popularity & determination) in their friendship networks. Hence, it seemed promising to test the effects of the different social capital measures in the following analysis steps.

But prior to that, the most remarkable finding from the descriptive statistics was that adolescents with immigration background did not have a lower life satisfaction than their native peers. The mean difference between both samples was statistically not significant ($p = 0.115$). Hence, *hypothesis 1* (adolescents with immigration background have significantly lower life satisfaction compared to their native peers) must be rejected. In the next step, the immigrant sample was disaggregated based on cultural distance, in order to explore the underlying mechanisms in more detail.

4.2 Differences in ethnic well-being and the role of cultural distance

As *Figure 1*) depicts, cultural distance was indeed a crucial determinant for the life satisfaction of students with an immigration background. Migrant students that felt *no distance* to the German culture had on average almost 0.5 scale points higher life satisfaction, compared to migrants that expressed *high distance* to the German culture ($p < 0.05$). Moreover, migrants without cultural distance had on average even a higher satisfaction with their lives than natives (+0.32, $p < 0.001$; see *Appendix 3, Model 1*). Migrant students that had a *low distance* (feeling "rather" closely related to the German culture) showed no significant SWB difference to natives and the other two migrant groups. These results are in line with Berry's acculturation theory (1997) and they confirm the *second hypothesis* of this paper: young

⁴ Nonetheless, inference-statistical claims about the population are not valid since the data is used unweighted.

⁵ The mean differences of the categorical "school track" variable must be interpreted with caution since the order of the track categories (high > comprehensive/other > middle > low) must not always be meaningful or correct.

migrants' satisfaction with life decreases with increasing cultural distance. However, the higher SWB of culturally well-integrated immigrants raised the question, which factors contributed to their life satisfaction advantage.

Therefore, the five SWB dimensions “economic situation”, “health”, “school”, “family” and “friends” were included in addition to the group variable into a second regression model that predicted life satisfaction (*Appendix 3, Model 2*). This enabled to test whether cultural distance remained a significant explanatory factor after controlling for these context effects. Adding the five SWB dimensions into the regression function increased the explained variance markedly (from $R^2=0.002$ to $R^2=0.478$). Remarkably, the higher life satisfaction of young migrants with no cultural distance remained significant ($p<0.001$), even after controlling for economic, school, health, family and friend related effects. *Figure 2*) shows the effect sizes and confidence intervals of the coefficients from that extended model. The advantage of the no-distance-group decreased only slightly from 0.32 to 0.26 scale points. Interestingly, also the life satisfaction of the high-distance-group was more pronounced in comparison to natives after holding all SWB dimensions constant (statistically, however not significant: $p>0.1$). Moreover, it was no longer significantly different from the other immigrant groups. This indicates that the included SWB dimensions cover crucial disadvantages that young immigrants with high cultural distance experience in Germany. Furthermore, this addresses the first research question by concluding that, after holding economic, school, health, family and friend related effects constant, adolescents with an immigration background had on average a higher life satisfaction than natives – caused by those migrants with no perceived cultural distance.

Regarding the individual SWB dimensions, the most important finding in relation to the second research question was the strong effect of the satisfaction with friends on the overall life satisfaction of adolescents in grade 10. As depicted in *Figure 2*), the effect size of friendship satisfaction was stronger than adolescents' satisfaction with their health or their school. Moreover, it was stronger than the satisfaction with the family, although statistically not significant ($p>0.05$). Only economic satisfaction showed a greater influence on adolescents' general SWB. Interaction effects that were included in *Models 3 to 7 (Appendix 3)* show that belonging to one of the immigrant groups had no moderating impact on the effect of friendship satisfaction. Only family satisfaction was found to be (statistically marginal) more important for the life satisfaction of young immigrants with high cultural distance (compared to natives; see *Model 6 in Appendix 3*). In sum, these findings confirm recent studies that emphasized the crucial role that friendship and family resources play for the youth's life satisfaction (e.g. Bokhorst et al. 2010 & Casas et al. 2013). Moreover, it seems to be promising to explore *hypothesis 6* (family support is more important for immigrants than for natives) in more detail in the next step.

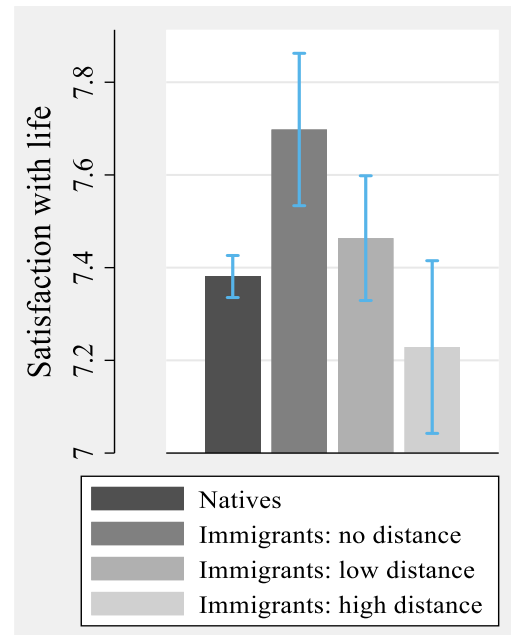


Figure 1) Group differences in life satisfaction
Mean-values; 95%-confidence level

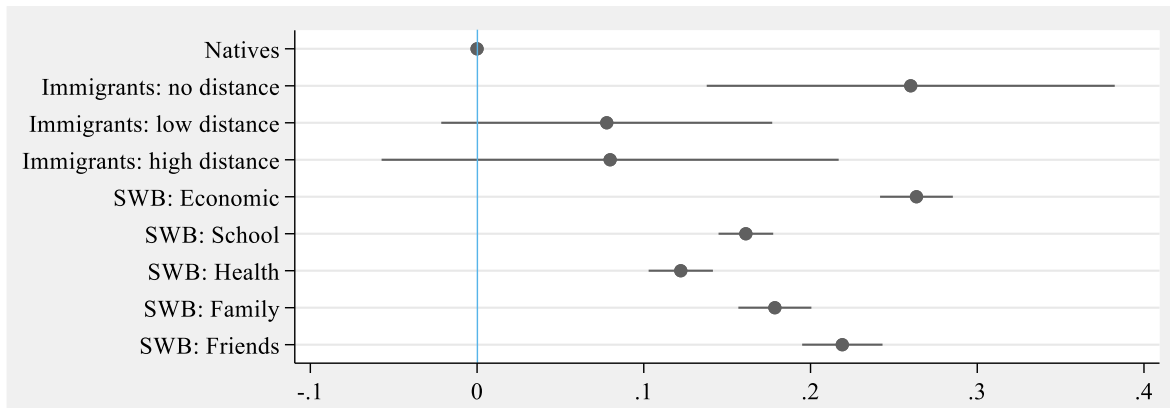


Figure 2) Coefficients-Plot of group differences and SWB dimensions (based on *Model 2, Appendix 3*) with 95%-confidence-intervals

4.3 The role of social capital: exploring family and friendship effects

To test the effect that family and friendship social capital has for adolescents in grade 10, the previous OLS regression model predicting life satisfaction was adapted and extended in three steps. First, all relevant control variables were included, and the SWB dimensions “family” and “friends” were excluded in *Model 8 (Table 2)*. This constitutes a valid framework to isolate possible causal effects that different sources of social capital might have on adolescents’ SWB. As the directed acyclic graph (DAG)⁶ in *Appendix 4* shows, most theoretically relevant variables could be controlled for. Possible bias resulting from unobserved heterogeneity is discussed in the end of the analysis. In the second step, family SC and friendship SC measures were included separately in *Model 9 & 10* to test their individual contributions to life satisfaction. In *Model 11*, both types of SC were added simultaneously. *Table 2*) enables the comparison of coefficients across *Models 8 to 11*.

With regard to the social capital effects, the coefficients of the added family SC variables in *Model 9* show that having family members who would make an effort to help obtain possible vocational training positions was significantly beneficial for adolescents in grade 10 ($\beta=0.10$, $p<0.05$). However, getting information about possible positions from the family had no effect on their SWB. The exact opposite was the case for friendship SC (added in *Model 10*). Here, information was significantly more beneficial ($\beta=0.09$, $p<0.05$), whereas hypothetical efforts made by friends had no effect on young people’s life satisfaction. This pattern remained (marginally) significant even when all four instrumental SC measures are added simultaneously in *Model 11*. Hence, despite some collinearity, efforts from parents and information from friends were complementary. Having determined (career oriented) friends showed a comparable effect size ($\beta=0.07$, $p<0.05$). Almost three times stronger, however, was the effect of peer popularity: Having high popularity increased adolescents’ life satisfaction on average by 0.21 scale points ($p<0.001$). Taken together, these findings provided evidence in favour of *hypothesis 4*: different forms of family SC and friendship SC were uniquely associated with an increase in adolescents SWB. Furthermore, the findings underlined the elevated role of friendship networks during adolescence.

To test whether friendship and family support were more important for migrants’ than for natives’ life satisfaction (*hypotheses 5 and 6*), a further set of regression models was specified with interaction effects between the SC variables and the analysis groups (*Models 12 to 16, Appendix 5*). The statistically significant interaction terms in *Model 12 and 13* show that efforts from the family as well as efforts from friends were on average more important

⁶ See e.g. Knüppel & Stang (2010) for detailed information about this approach on causal inference.

	Model 8	Model 9	Model 10	Model 11
Immigrants: no distance	0.189** [0.066]	0.201** [0.065]	0.139* [0.066]	0.148* [0.066]
Immigrants: low distance	0.110* [0.056]	0.125* [0.056]	0.049 [0.059]	0.061 [0.059]
Immigrants: high distance	0.041 [0.078]	0.063 [0.078]	-0.018 [0.081]	-0.003 [0.081]
Gender: female	-0.312*** [0.034]	-0.322*** [0.034]	-0.292*** [0.034]	-0.298*** [0.034]
Age	0.065** [0.025]	0.068** [0.025]	0.055* [0.025]	0.058* [0.025]
Age squared	-0.069** [0.026]	-0.067* [0.026]	-0.068** [0.026]	-0.066* [0.026]
Big5: Extraversion	0.234*** [0.020]	0.231*** [0.020]	0.202*** [0.020]	0.202*** [0.020]
Big5: Agreeableness	0.141*** [0.027]	0.139*** [0.027]	0.132*** [0.027]	0.131*** [0.027]
Big5: Conscientiousness	0.045* [0.020]	0.045* [0.020]	0.041* [0.020]	0.040* [0.020]
Big5: Neuroticism	-0.193*** [0.021]	-0.193*** [0.021]	-0.186*** [0.021]	-0.186*** [0.021]
Big5: Openness	-0.050** [0.018]	-0.051** [0.018]	-0.052** [0.018]	-0.053** [0.018]
SWB: Health	0.207*** [0.009]	0.207*** [0.009]	0.206*** [0.009]	0.206*** [0.009]
SWB: Economic	0.368*** [0.011]	0.366*** [0.011]	0.364*** [0.011]	0.362*** [0.011]
Parents: One/both not biological	-0.078 [0.070]	-0.072 [0.070]	-0.081 [0.070]	-0.076 [0.070]
Parents: One/both unknown/dead	-0.089 [0.098]	-0.079 [0.099]	-0.093 [0.099]	-0.085 [0.099]
SWB: School	0.199*** [0.009]	0.198*** [0.009]	0.197*** [0.009]	0.197*** [0.009]
Class: Share of immigrants	0.019 [0.015]	0.020 [0.015]	0.004 [0.017]	0.005 [0.017]
SC: Infos from family		0.052 [0.036]		0.026 [0.038]
SC: Efforts from family		0.103* [0.045]		0.090+ [0.046]
SC: Infos from friends			0.088* [0.038]	0.077+ [0.041]
SC: Efforts from friends			0.026 [0.042]	0.014 [0.043]
Friends: career important			0.075* [0.032]	0.073* [0.032]
High peer popularity			0.214*** [0.033]	0.211*** [0.033]
Friends: Share of immigrants			0.037* [0.016]	0.037* [0.016]
constant	6.823*** [0.151]	6.722*** [0.155]	6.768*** [0.151]	6.693*** [0.155]
r2	0.437	0.437	0.440	0.441
N	10222	10222	10222	10222

Dependent var.: satisfaction with life; Robust SE in []; Base categories omitted.
+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 2) Hierarchically nested OLS regression to detect effects of social capital (SC) on the satisfaction with life of tenth graders at regular schools in Germany

for immigrants with high cultural distance than for natives.⁷ *Figure 3*) depicts these relations based on *Model 16*, where both interaction effects were specified simultaneously. It shows that culturally distant immigrants benefitted significantly from support within their friendship network (+0.43 scale points, $p < 0.001$), whereas the native group showed no such effect (graph on the right side). A comparable pattern emerged for support from the family (graph on the left side). Here, the effect was less pronounced for immigrants but slightly noticeable for natives. It is important to notice that the effect was statistically not significant for the immigrant group ($\beta = 0.23$, $p > 0.1$), and statistically only marginally significant for natives ($\beta = 0.09$, $p < 0.1$). In this way, *Figure 3*) illustrates the great complementary role that supportive friends play for the well-being of culturally distant young immigrants in comparison to natives, who benefitted only marginally from efforts made by the family.

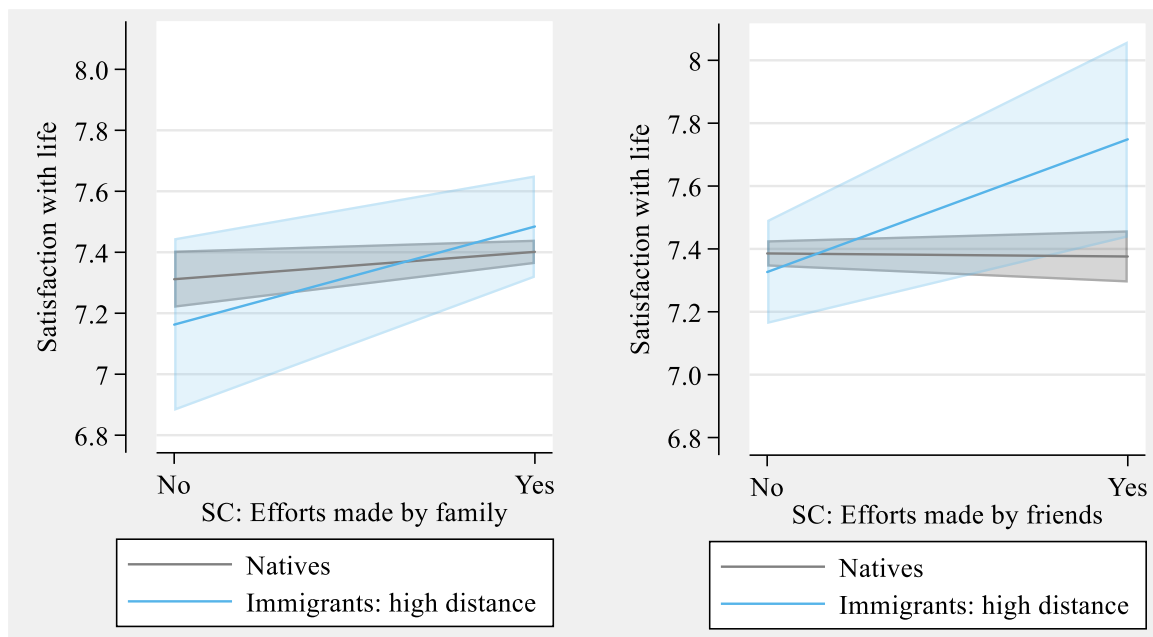


Figure 3) Marginal effects plots of the interaction effects from *Model 16* (*Appendix 5*); 95%-confidence-intervals.

Interestingly, also peer popularity was on average more beneficial in the high distance group, when compared to natives (β of the interaction effect = 0.25, $p < 0.1$; see *Model 14*). While high peer popularity increased natives' life satisfaction by 0.2 scale points ($p < 0.001$), this effect was more than two times stronger for immigrants with high cultural distance ($\beta = 0.45$, $p < 0.001$). In sum, these findings confirmed *hypotheses 5 and 5.1*: Friendship SC was more important for migrants' than for natives' life satisfaction and culturally distant youth benefitted even more. Regarding family support, the advantages of immigrant youth were only marginally significant. Tests of linear restrictions showed that in sum, the family SC measures were statistically not more beneficial for immigrants, compared to natives. Hence, *hypotheses 6 and 6.1* could not be confirmed.

In the final step of the analysis, regression models were specified for each of the analysis groups separately (*Appendix 6*). This simplified the comparison of coefficients across samples and also enabled the inclusion of the measure of ethnic identity, in order to test its hypothesised positive effect within the immigrant samples (*hypothesis 3*). For easier interpretation of significant differences across the analysis groups, a random sample of 900 natives was drawn (*Model "Natives_s"* in *Appendix 6*). Three final results can be derived

⁷ In the case of efforts from the family only marginally significant ($p < 0.1$).

from *Figure 4*), which shows the effect sizes and confidence intervals of the relevant analysis variables from each sample-specific regression. First, the significant effect of high ethnic identity in the high-distance-sample ($\beta=0.299$, $p<0.05$) confirms *hypothesis 3* conditionally: A pronounced identification with the culture of origin had a positive effect on young immigrants' life satisfaction, *but* only for those with high cultural distance. Second, the (marginally) significant interaction effect of ethnic identity and efforts from friends indicates that this type of social capital was more important to culturally distant immigrants that maintain strong bonds to their culture of origin.⁸ Finally, the figure confirms once more the previous finding that the effect of peer popularity increases with increasing cultural distance and that efforts from the family seem to be relevant for immigrants with high cultural distance. In sum, the beneficial effects of social capital (especially from friends) on young immigrants' life satisfaction were found to be dependent on cultural integration factors. These findings will be contextualized and discussed in the last section of the paper.

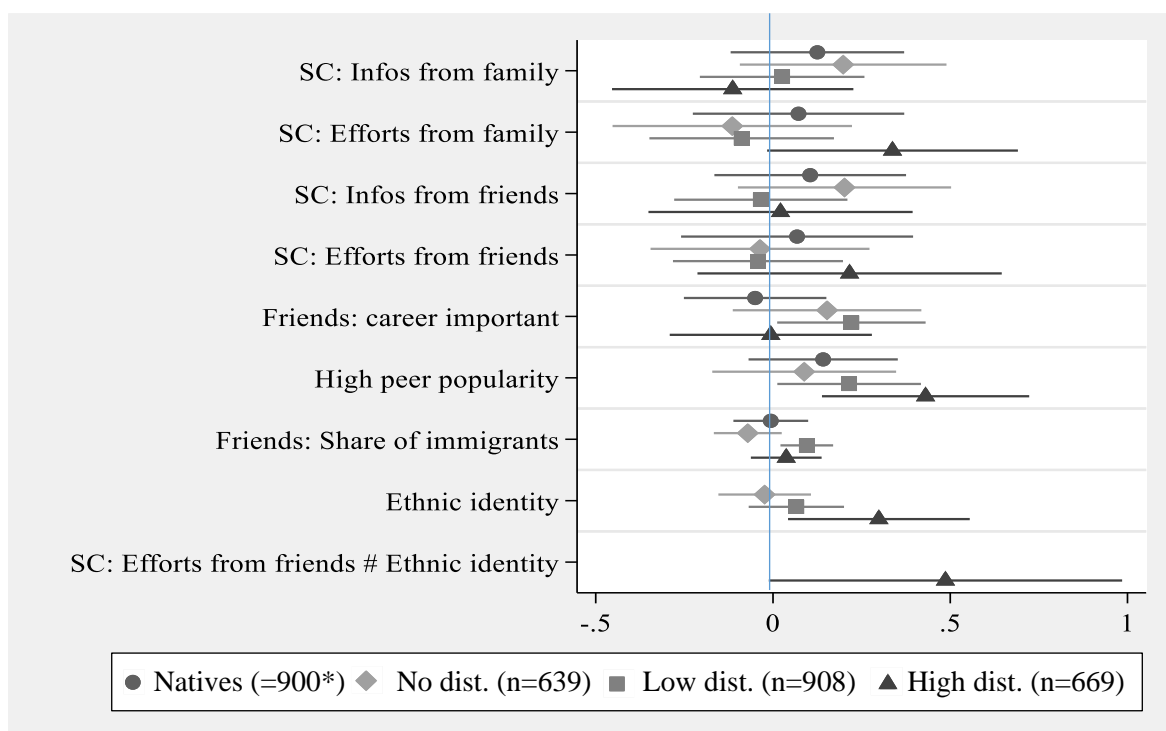


Figure 4) Coefficients plot of the subsample-specific regressions (*Appendix 6*). Control variables omitted.
*randomly drawn from the native sample to make confidence intervals more comparable.

4.4 Robustness checks and limitations

Several measures were taken to ensure that the found results are reliable and valid. Since the OLS assumptions of a normally distributed dependent variable and of randomly distributed residuals were violated due to the left skewed response pattern on the SWLS, robust standard errors were used. To test further bias resulting from possible misspecification of the functional form, all models were re-estimated using an ordinal logistic regression function. As exemplified based on the sub-sample models in *Appendix 7*), no deviating effects were found and the confidence level of the used OLS estimates were even more conservative. Tests of

⁸ Several additional interaction effects between ethnic identity and the social capital measures were tested in each subsample but only the (marginally) significant effect in the high distance sample is displayed in *Figure 4*), since the others showed no significant results.

multicollinearity for each model showed that all included variables made a unique contribution to explaining variance in life satisfaction.⁹

There are, however, three important limitations: First, inference statistical claims about effects in the population must be made with caution because the data was used unweighted. This means that possible bias resulting from the sampling procedure or from selectivity in panel dropouts were not taken into account. Second, bias resulting from unobserved heterogeneity is likely since it was not possible to control for all suspected confounding variables (see *Appendix 4*). The unobserved romantic relationship status of adolescents, for instance, can be expected to moderate the found associations between the social capital measures and life satisfaction. Moreover, the used social capital measures were quite limited. Family cohesion, family size, number of friends, or the density of students' friendship networks are only a few examples of further SC measures that could be analysed in future studies and that might confound effects in the present one. Finally, reversed causality between the SC measures and life satisfaction is theoretically possible in certain cases when adolescents' low life satisfaction promotes support by friends or family.

5. Discussion and conclusion

Departing from the question of whether young immigrants and natives differ with regard to their life satisfaction in Germany, the conducted analyses based on the National Educational Panel Study made three central contributions to the existing literature.

First, and in contrast to the initial hypothesis, the analyses showed that tenth graders with an immigration background are as satisfied with their lives as native youth. This finding is surprising, given the ubiquitous structural inequalities that persist among natives and immigrants, especially in the German education system (Clauss & Nauck 2009; Alba et al. 2011). Remarkably, after controlling for economic, health, school, family, and friendship related effects, the overall life satisfaction of young migrants was, on average, even higher compared to natives. This result is an important complement to previous studies that found significant life satisfaction disadvantages for migrants in the *adult* population (Safi 2010; Kämpfer 2014). To explore underlying factors that could contribute to young migrants' high well-being, the analyses were extended with cultural and social integration elements.

This led to the second important finding: As hypothesised based on acculturation theory (Berry 1997; Berry et al. 2006), the analyses showed that culturally well-integrated immigrants are more satisfied with their lives than culturally (rather) distant immigrants. In contradiction to Berry's integration hypothesis, however, maintaining a distinct ethnic identity was not found to be promotive for young immigrants in general. Only the culturally distant adolescents benefitted from strong co-ethnic involvement. These findings support results by Schotte and colleagues (2018) who found that maintaining an ethnic identity is only beneficial for certain outcomes in specific immigrant groups, whereas the identification with German culture contributes to immigrants' adaptation in general.

Considering social capital within families and within friendship networks simultaneously was the third focus of the paper. The results showed that support from the family (information and efforts in the hypothetical scenario of looking for vocational training positions) is more available to natives, whereas young immigrants reported markedly higher peer popularity and aspirations in their friendship networks. In line with that, friendships were found to be particularly relevant for immigrants' life satisfaction, especially for those students with high cultural distance: They benefitted significantly more from efforts made

⁹ Highest variance inflation factors (VIF) were found for the two variables indicating the share of immigrants in the class and in the friendship network (VIF = 1.36 and 1.39) and for the instrumental SC variables indicating information/efforts from family/friends (VIF between 1.21 and 1.37).

by friends than their native peers. This positive effect of friendship support was even higher when students reported a strong ethnic identity. Moreover, only immigrants with some or high cultural distance benefitted from peer popularity, whereas natives and immigrants without cultural distance showed no such effect. In sum, this indicates that embeddedness in strong friendship networks is vital for the life satisfaction of culturally distant migrant youth. A more interdependent relational self construal due to a more collectivist cultural identity could be one relevant mechanism that explains the greater role that relationships play for the well-being of those immigrants, as compared to their rather individualist native peers in Germany (Markus and Kitayama 2010; Hofstede 2001; Schwartz et al. 2010). Correspondingly, family satisfaction was found to contribute significantly more to overall life satisfaction in the culturally distant migrant group, compared to the native group. Therefore, it could be worthwhile to consider more comprehensive measures for family social capital (e.g. family cohesion and aspirations) in future studies as well.

Moreover, it is noteworthy that the shares of immigrants in students' friendship networks and in school classes were held constant throughout the analyses. The fact that an increasing share of immigrant friends was not beneficial for culturally distant immigrants indicates that bridging social capital to natives could have contributed to the discovered positive friendship effects. Hence, it might be promising for future integration studies on subjective well-being to explore compositional effects within friendship networks of youth with immigration background in more detail.

In any case, it is crucial to consider the dynamic interplay of family and friendship social capital when analysing ethnic inequalities in youth subjective well-being. The presented results complement previous studies that mainly focussed on the adaptive effect of social embeddedness within families for young immigrants' (psychological) well-being (e.g. Mood et al. 2017; Runarsdottir & Vilhjalmsson 2019). However, the included SC measures were not able to elucidate the remarkable finding that immigrants without cultural distance had significantly higher life satisfactions than natives. An explanation for this effect could be a positive selection on determinants that were not controlled for in the analysis. The parents of those young students with an immigration background that perceive no cultural distance in Germany could be a quite selective group. It is likely that more labour immigrants from Western countries than refugees from more distant countries comprise this group. Hence, higher aspirations and greater educational resources could be transmitted to their children which could then explain their higher life satisfaction. Considering these more fine-grained parent effects, as well as the region or country of origin can be a fruitful perspective for subsequent integration studies on adolescents' well-being.

In sum, it can be concluded that youth with an immigration background fare remarkably well in terms of their life satisfaction, given the structural disadvantages and ethnic boundaries many of them encounter in Germany. The social embeddedness in friendship networks was found to be an important complement to parental support, particularly for culturally distant youth. Promoting young immigrants' social integration seems to be a promising way to familiarize them with their new societal context and to bridge cultural distances, which were found to be an important determinant for their life satisfaction.

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Appendix

Appendix 1) Analysis of missing cases

Variable	Missing	Total	% Missing
SWB: Satisfaction with life	657	14,126	4.65
SWB: Satisfaction with health (mc*)	645	14,126	4.57
SWB: Satis. with economic situation (mc)	655	14,126	4.64
SWB: Satisfaction with school (mc)	654	14,126	4.63
SWB: Satisfaction with family (mc)	699	14,126	4.95
SWB: Satisfaction with friends (mc)	684	14,126	4.84
SC: Information from family	77	14,126	0.55
SC: Efforts made by family	73	14,126	0.52
SC: Information from friends	114	14,126	0.81
SC: Efforts made by friends	89	14,126	0.63
SC: Having determined friends	1,094	14,126	7.74
SC: High peer popularity	584	14,126	4.13
SC: Low share of immigrant friends	1,098	14,126	7.77
Gender: female	104	14,126	0.74
Big5: extraversion	830	14,126	5.88
Big5: agreeableness	869	14,126	6.15
Big5: conscientiousness	754	14,126	5.34
Big5: neuroticism	774	14,126	5.48
Big5: openness	778	14,126	5.51
Parent status	448	14,126	3.17
Sample region: Eastern Germany	0	14,126	0.00
School type	245	14,126	1.73
Class: share of immigrants	569	14,126	4.03

Missing-value patterns
(1 means complete)

Percent	Pattern					
	1	2	3	4	5	6
99%	1	1	1	1	1	1
<1	0	0	0	0	0	0
100%						

Variables are (1) swb2 (2) swb_economic2
(3) swb_family2 (4) swb_friends2
(5) swb_health2 (6) swb_school2

Missing-value patterns
(1 means complete)

Percent	Pattern			
	1	2	3	4
94%	1	1	1	1
2	1	1	1	0
1	1	1	0	1
1	1	1	0	0
<1	1	0	0	0
<1	0	1	1	1
<1	1	0	1	1
<1	0	1	0	0
<1	0	0	0	0
<1	0	1	0	1
<1	0	1	1	0
<1	1	0	0	1
100%				

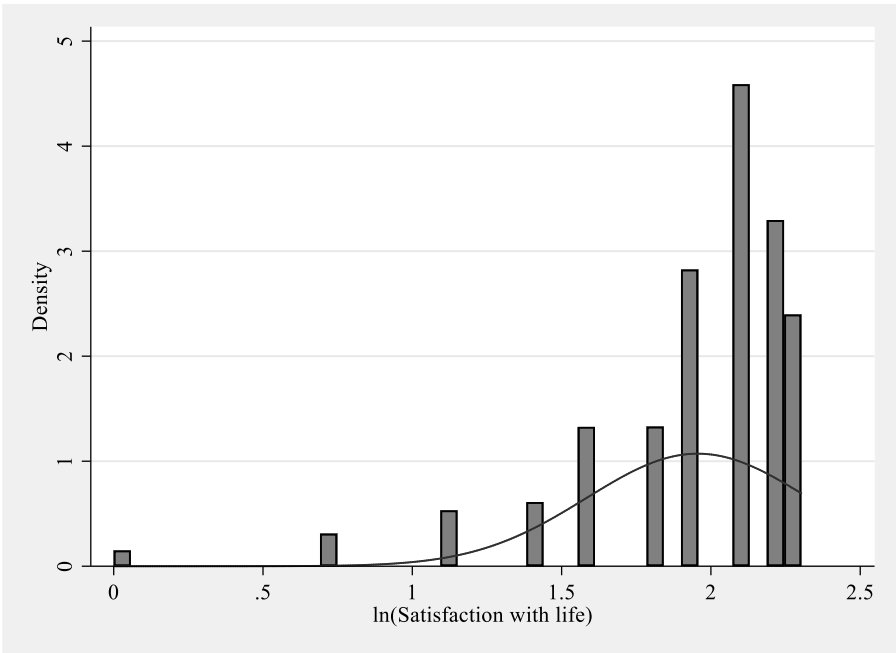
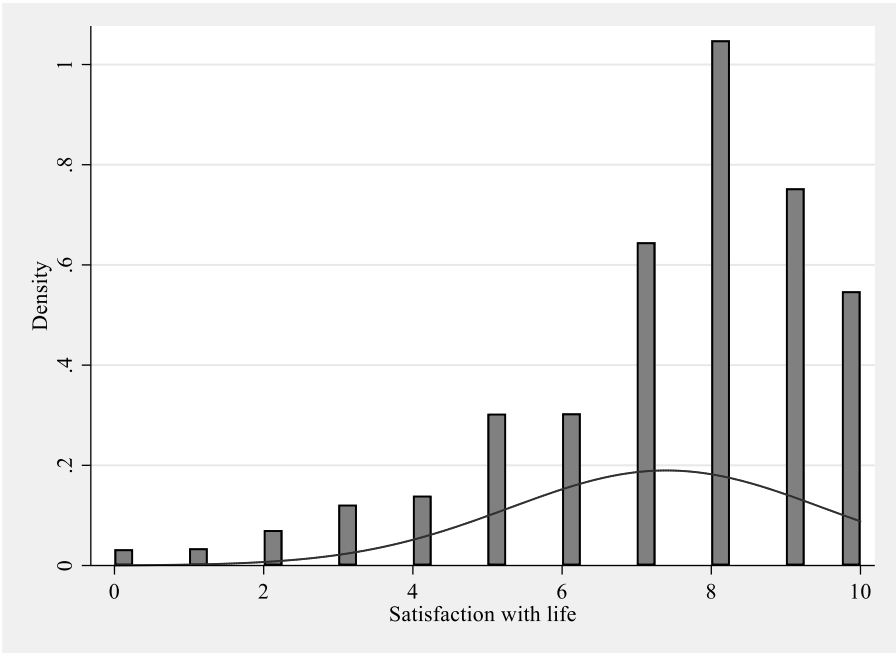
Variables are (1) migback_gen22
(2) gender_female2 (3) parents2
(4) class_migshare2

Missing-value patterns
(1 means complete)

Percent	Pattern						
	1	2	3	4	5	6	7
87%	1	1	1	1	1	1	1
5	1	1	1	1	1	0	0
2	1	1	1	1	0	1	1
2	1	1	1	1	1	1	0
1	1	1	1	1	1	0	1
<1	1	1	1	1	0	0	0
<1	0	0	0	0	0	1	1
<1	1	1	1	1	0	0	1
<1	1	1	1	1	0	1	0
<1	1	1	1	0	1	1	1
<1	1	1	0	0	1	1	1
<1	0	0	0	0	0	0	0
<1	0	0	0	0	0	1	0
<1	1	1	0	1	1	1	1
<1	1	1	1	0	0	1	1
<1	1	0	1	0	1	1	1
<1	1	1	1	0	0	0	0
<1	1	1	1	0	1	0	1
<1	0	0	0	0	0	0	1
<1	1	0	1	1	1	1	1
<1	1	1	0	0	0	0	0
<1	1	1	0	0	0	1	1
<1	1	1	0	0	1	0	0
<1	1	1	1	0	1	0	0
<1	1	1	1	0	1	1	0
100%							

Variables are (1) fam_SCeffort2
(2) fam_SCinfo2
(3) friends_SCeffort2
(4) friends_SCinfo2
(5) peer_popularity2
(6) friends_determined1
(7) friends_migshare_low1

Appendix 2) Histograms of satisfaction with life & log(satisfaction with life)

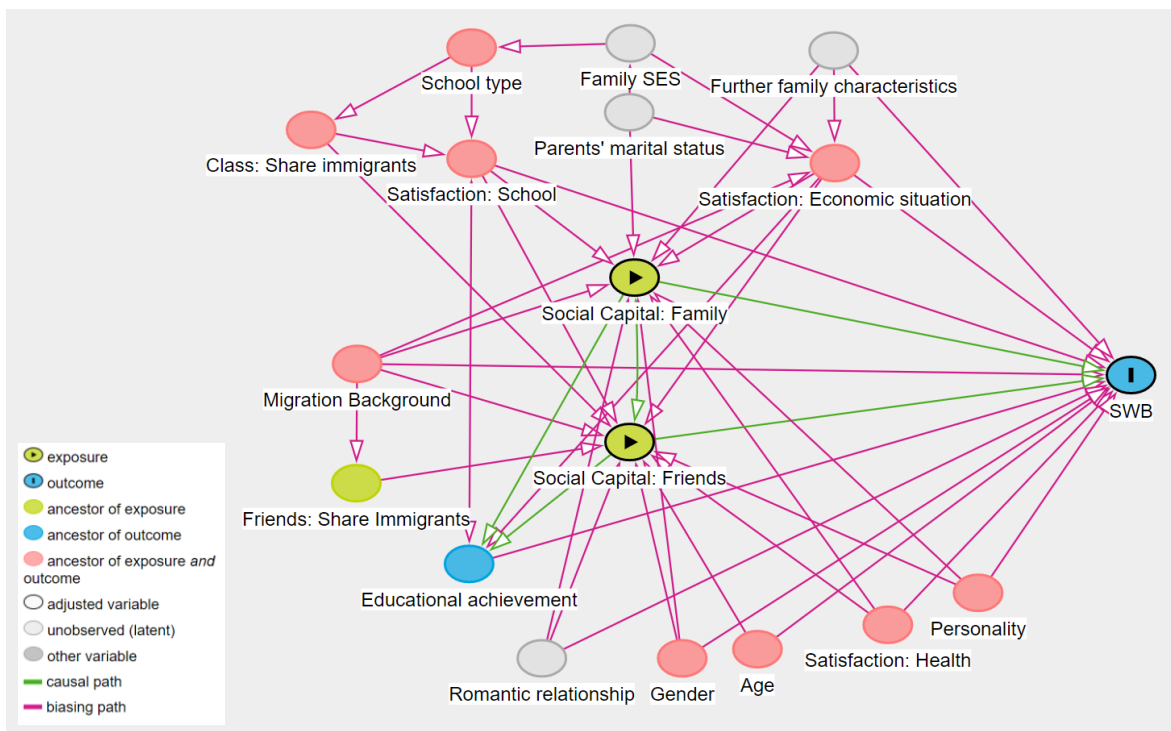


Appendix 3) ANOVA of life satisfaction and analysis groups (Model 1), the effects of specific SWB dimensions and interaction effects to model group-specific effects of SWB dimensions on overall satisfaction with life (dependent variable); OLS estimation.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Immigrants: no distance	0.317*** [0.087]	0.260*** [0.062]	0.263*** [0.063]	0.266*** [0.063]	0.258*** [0.064]	0.260*** [0.062]	0.258*** [0.063]
Immigrants: low distance	0.083 [0.072]	0.078 [0.051]	0.084+ [0.050]	0.077 [0.050]	0.074 [0.052]	0.072 [0.051]	0.078 [0.051]
Immigrants: high distance	-0.152 [0.098]	0.080 [0.070]	0.084 [0.069]	0.078 [0.068]	0.082 [0.070]	0.086 [0.070]	0.075 [0.070]
SWB: Economic		0.264*** [0.011]	0.256*** [0.012]	0.263*** [0.011]	0.263*** [0.011]	0.263*** [0.011]	0.264*** [0.011]
SWB: School		0.161*** [0.008]	0.161*** [0.008]	0.167*** [0.009]	0.161*** [0.008]	0.162*** [0.008]	0.161*** [0.008]
SWB: Health		0.122*** [0.010]	0.122*** [0.010]	0.122*** [0.010]	0.117*** [0.011]	0.122*** [0.010]	0.122*** [0.010]
SWB: Family		0.179*** [0.011]	0.179*** [0.011]	0.179*** [0.011]	0.178*** [0.011]	0.171*** [0.012]	0.179*** [0.011]
SWB: Friends		0.219*** [0.012]	0.219*** [0.012]	0.219*** [0.012]	0.219*** [0.012]	0.218*** [0.012]	0.219*** [0.013]
No distance # SWB: Economic			-0.017 [0.032]				
Low distance # SWB: Economic			0.072** [0.028]				
High distance # SWB: Economic			0.022 [0.032]				
No distance # SWB: School				-0.054+ [0.028]			
Low distance # SWB: School				-0.011 [0.024]			
High distance # SWB: School				-0.011 [0.033]			
No distance # SWB: Health					0.018 [0.033]		
Low distance # SWB: Health					0.021 [0.029]		
High distance # SWB: Health					0.041 [0.035]		
No distance # SWB: Family						0.004 [0.030]	
Low distance # SWB: Family						0.039 [0.026]	
High distance # SWB: Family						0.054+ [0.030]	
No distance # SWB: Friends							0.040 [0.037]
Low distance # SWB: Friends							-0.010 [0.031]
High distance # SWB: Friends							-0.019 [0.035]
constant	7.381*** [0.023]	7.370*** [0.017]	7.370*** [0.017]	7.369*** [0.017]	7.370*** [0.017]	7.370*** [0.017]	7.370*** [0.017]
r2	0.002	0.478	0.479	0.479	0.478	0.479	0.478
N	10222	10222	10222	10222	10222	10222	10222

Note: Robust standard errors in parantheses; Reference category: Natives.
+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Appendix 4) Directed Acyclic Graph (DAG) to identify the minimal sufficient adjustment set for estimating the causal effects of Family/Friendship Social Capital on adolescents SWB (life satisfaction)



Result: The minimal sufficient adjustment set for estimating the total effect of “Social Capital: Family” and “Social Capital: Friends” on SWB (life satisfaction) is:

- Migration Background
- Gender
- Age
- Personality
- Satisfaction: Health
- Satisfaction: Economic situation
- Parents' status
- Satisfaction: School
- Class: Share immigrants,
- Romantic relationship (unobserved!)
- Further family characteristics (unobserved!)

Note: Created with DAGitty version 3.0 (<http://www.dagitty.net/>)

Appendix 5) Interaction effects of analysis groups with family & friendship social capital
 Dependent variable: satisfaction with life; OLS estimation.

	Model 12	Model 13	Model 14	Model 15	Model 16
Immigrants: no distance	0.199 [0.156]	0.148+ [0.079]	0.181+ [0.093]	0.363** [0.119]	0.199 [0.156]
Immigrants: low distance	0.188 [0.115]	0.089 [0.067]	0.052 [0.074]	-0.133 [0.116]	0.197+ [0.116]
Immigrants: high distance	-0.211 [0.149]	-0.103 [0.088]	-0.105 [0.106]	-0.311+ [0.176]	-0.239 [0.148]
Gender: female	-0.300*** [0.034]	-0.296*** [0.034]	-0.298*** [0.034]	-0.296*** [0.034]	-0.298*** [0.034]
Age	0.057* [0.025]	0.057* [0.025]	0.059* [0.025]	0.058* [0.025]	0.057* [0.025]
Age squared	-0.067* [0.026]	-0.067** [0.026]	-0.066* [0.026]	-0.067** [0.026]	-0.068** [0.026]
Big5: Extraversion	0.202*** [0.020]	0.202*** [0.020]	0.202*** [0.020]	0.203*** [0.020]	0.203*** [0.020]
Big5: Agreeableness	0.130*** [0.027]	0.131*** [0.027]	0.131*** [0.027]	0.131*** [0.027]	0.130*** [0.027]
Big5: Conscientiousness	0.041* [0.020]	0.040+ [0.020]	0.041* [0.020]	0.039+ [0.020]	0.040* [0.020]
Big5: Neuroticism	-0.186*** [0.021]	-0.186*** [0.021]	-0.186*** [0.021]	-0.186*** [0.021]	-0.186*** [0.021]
Big5: Openness	-0.052** [0.018]	-0.053** [0.018]	-0.054** [0.018]	-0.052** [0.018]	-0.053** [0.018]
SWB: Health	0.206*** [0.009]	0.206*** [0.009]	0.206*** [0.009]	0.205*** [0.009]	0.206*** [0.009]
SWB: Economic	0.362*** [0.011]	0.363*** [0.011]	0.362*** [0.011]	0.363*** [0.011]	0.363*** [0.011]
Parents: One/both not biological	-0.074 [0.070]	-0.073 [0.070]	-0.079 [0.070]	-0.072 [0.070]	-0.072 [0.070]
Parents: One/both unknown/dead	-0.085 [0.099]	-0.086 [0.099]	-0.086 [0.099]	-0.079 [0.099]	-0.086 [0.099]
SWB: School	0.197*** [0.009]	0.197*** [0.009]	0.197*** [0.009]	0.197*** [0.009]	0.197*** [0.009]
Class: Share of immigrants	0.004 [0.017]	0.005 [0.017]	0.005 [0.017]	0.005 [0.017]	0.005 [0.017]
SC: Infos from family	0.026 [0.038]	0.027 [0.038]	0.024 [0.038]	0.025 [0.038]	0.027 [0.038]
SC: Efforts from family	0.085 [0.052]	0.085+ [0.046]	0.090+ [0.046]	0.085+ [0.046]	0.088+ [0.053]
SC: Infos from friends	0.076+ [0.041]	0.079+ [0.041]	0.078+ [0.041]	0.078+ [0.041]	0.078+ [0.041]
SC: Efforts from friends	0.015 [0.043]	-0.007 [0.048]	0.014 [0.043]	0.014 [0.043]	-0.007 [0.048]
Friends: career important	0.071* [0.032]	0.072* [0.032]	0.073* [0.032]	0.071* [0.032]	0.071* [0.032]
High peer popularity	0.211*** [0.033]	0.210*** [0.033]	0.197*** [0.037]	0.211*** [0.033]	0.211*** [0.033]
Friends: Share of immigrants	0.036* [0.016]	0.036* [0.016]	0.037* [0.016]	0.021 [0.019]	0.036* [0.016]
No distance # Family: Efforts	-0.067 [0.171]				-0.072 [0.175]
Low distance # Family: Efforts	-0.175 [0.127]				-0.160 [0.129]
High distance # Family: Efforts	0.316+ [0.167]				0.227 [0.171]
No distance # Friends: Efforts		0.007 [0.137]			0.024 [0.140]
Low distance # Friends: Efforts		-0.105 [0.120]			-0.070 [0.123]
High distance # Friends: Efforts		0.502** [0.178]			0.438* [0.184]
No distance # High popularity			-0.065 [0.130]		
Low distance # High popularity			0.023 [0.106]		
High distance # High popularity			0.253+ [0.146]		
No distance # Friends: % Immigrants				-0.079 [0.050]	
Low distance # Friends: % Immigrants				0.071+ [0.038]	
High distance # Friends: % Immigrants				0.098* [0.049]	
constant	6.698*** [0.156]	6.703*** [0.155]	6.698*** [0.155]	6.718*** [0.155]	6.702*** [0.156]
r2	0.441	0.441	0.441	0.441	0.442
N	10222	10222	10222	10222	10222

Note: Robust standard errors in parantheses. Base categories omitted.
 + p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Appendix 6) Subsample-specific regression models; ethnic identity included for migrants.
 Dependent variable: satisfaction with life; OLS estimation.

	Natives_a	Natives_s	No Dist.	Low Dist.	High Dis.
Gender: female	-0.307*** [0.038]	-0.058 [0.118]	-0.185 [0.136]	-0.369*** [0.103]	-0.198 [0.152]
Age	0.047+ [0.028]	0.082 [0.084]	0.077 [0.096]	0.012 [0.078]	0.191 [0.118]
Age squared	-0.076* [0.032]	-0.096 [0.108]	-0.095 [0.119]	0.004 [0.055]	-0.140+ [0.078]
Big5: Extraversion	0.206*** [0.023]	0.173** [0.062]	0.257*** [0.077]	0.230*** [0.067]	0.095 [0.090]
Big5: Agreeableness	0.141*** [0.031]	0.365*** [0.093]	0.196* [0.092]	0.090 [0.078]	-0.071 [0.113]
Big5: Conscientiousness	0.030 [0.023]	0.012 [0.065]	0.072 [0.076]	0.108 [0.067]	-0.027 [0.094]
Big5: Neuroticism	-0.203*** [0.024]	-0.250*** [0.075]	-0.277*** [0.081]	-0.071 [0.064]	-0.069 [0.088]
Big5: Openness	-0.050* [0.020]	-0.095 [0.064]	-0.088 [0.069]	-0.050 [0.058]	-0.019 [0.085]
SWB: Health	0.196*** [0.010]	0.157*** [0.029]	0.251*** [0.038]	0.199*** [0.034]	0.276*** [0.042]
SWB: Economic	0.350*** [0.012]	0.369*** [0.034]	0.371*** [0.039]	0.436*** [0.035]	0.361*** [0.044]
Parents: One/both not biological	-0.075 [0.078]	-0.096 [0.243]	-0.524+ [0.312]	0.187 [0.173]	-0.104 [0.351]
Parents: One/both unknown/dead	-0.078 [0.115]	-0.140 [0.278]	0.186 [0.348]	-0.121 [0.326]	-0.377 [0.342]
SWB: School	0.208*** [0.010]	0.220*** [0.028]	0.129*** [0.031]	0.166*** [0.026]	0.196*** [0.035]
Class: Share of immigrants	0.003 [0.020]	0.014 [0.055]	-0.002 [0.060]	-0.022 [0.041]	0.075 [0.057]
SC: Infos from family	0.023 [0.043]	0.125 [0.125]	0.198 [0.148]	0.026 [0.118]	-0.114 [0.173]
SC: Efforts from family	0.093+ [0.053]	0.072 [0.152]	-0.115 [0.172]	-0.088 [0.133]	0.337+ [0.180]
SC: Infos from friends	0.090* [0.046]	0.105 [0.138]	0.202 [0.153]	-0.034 [0.124]	0.021 [0.190]
SC: Efforts from friends	-0.012 [0.050]	0.068 [0.167]	-0.037 [0.157]	-0.042 [0.122]	0.216 [0.219]
Friends: career important	0.051 [0.036]	-0.050 [0.102]	0.152 [0.135]	0.221* [0.107]	-0.006 [0.145]
High peer popularity	0.199*** [0.037]	0.142 [0.107]	0.088 [0.132]	0.215* [0.103]	0.430** [0.149]
Friends: Share of immigrants	0.021 [0.020]	-0.006 [0.054]	-0.071 [0.049]	0.095* [0.038]	0.037 [0.051]
Ethnic identity			-0.023 [0.066]	0.066 [0.069]	0.299* [0.131]
Ethnic ID # Friends: Efforts					0.486+ [0.254]
constant	6.761*** [0.174]	6.412*** [0.507]	6.974*** [0.609]	6.186*** [0.511]	6.991*** [0.762]
r2	0.435	0.485	0.459	0.499	0.480
N	8006	900	639	908	669

Note: Robust standard errors in parantheses. Base categories omitted.
 + p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Appendix 7) Robustness check: Re-estimation of sub-sample models with an ordinal logistic regression function

	Natives_a	Natives_s	No Dist.	Low Dist.	High Dis.
2 swb					
Gender: female	0.701*** [0.030]	0.910 [0.125]	0.820 [0.133]	0.653*** [0.083]	0.700* [0.110]
Age	1.078* [0.035]	1.121 [0.115]	1.060 [0.118]	1.062 [0.099]	1.165 [0.134]
Age squared	0.964 [0.033]	0.954 [0.122]	1.004 [0.104]	1.015 [0.068]	0.910 [0.068]
Big5: Extraversion	1.307*** [0.034]	1.317*** [0.104]	1.416*** [0.133]	1.340*** [0.114]	1.162+ [0.104]
Big5: Agreeableness	1.209*** [0.044]	1.549*** [0.184]	1.216+ [0.134]	1.120 [0.109]	1.017 [0.113]
Big5: Conscientiousness	1.065* [0.029]	1.030 [0.082]	1.173+ [0.104]	1.203* [0.101]	1.043 [0.100]
Big5: Neuroticism	0.786*** [0.021]	0.788** [0.067]	0.729*** [0.069]	0.928 [0.073]	0.894 [0.083]
Big5: Openness	0.932** [0.021]	0.895 [0.065]	0.939 [0.070]	0.962 [0.069]	0.992 [0.083]
SWB: Health	1.238*** [0.014]	1.199*** [0.039]	1.294*** [0.058]	1.264*** [0.052]	1.289*** [0.052]
SWB: Economic	1.502*** [0.021]	1.529*** [0.059]	1.551*** [0.074]	1.752*** [0.079]	1.453*** [0.065]
Parents: One/both not biological	0.920 [0.084]	0.878 [0.277]	0.646 [0.191]	1.129 [0.239]	0.787 [0.254]
Parents: One/both unknown/dead	0.876 [0.111]	0.735 [0.252]	1.477 [0.605]	0.839 [0.303]	0.714 [0.253]
SWB: School	1.272*** [0.015]	1.290*** [0.045]	1.163*** [0.040]	1.217*** [0.039]	1.237*** [0.046]
Class: Share of immigrants	1.019 [0.024]	0.996 [0.069]	1.071 [0.070]	0.968 [0.047]	1.129* [0.067]
SC: Infos from family	1.022 [0.050]	1.061 [0.160]	1.279 [0.232]	1.101 [0.154]	0.882 [0.155]
SC: Efforts from family	1.086 [0.064]	1.083 [0.189]	0.776 [0.157]	0.846 [0.130]	1.467* [0.259]
SC: Infos from friends	1.043 [0.054]	1.195 [0.203]	1.153 [0.196]	0.940 [0.147]	1.004 [0.202]
SC: Efforts from friends	1.056 [0.060]	1.133 [0.212]	0.965 [0.172]	1.030 [0.157]	1.194 [0.258]
Friends: career important	1.054 [0.043]	0.973 [0.121]	1.145 [0.171]	1.379* [0.175]	0.956 [0.137]
High peer popularity	1.320*** [0.057]	1.298+ [0.175]	1.175 [0.182]	1.385* [0.175]	1.517** [0.228]
Friends: Share of immigrants	1.009 [0.023]	0.984 [0.065]	0.971 [0.055]	1.137** [0.054]	1.020 [0.053]
Ethnic identity			0.992 [0.074]	1.072 [0.091]	1.288* [0.156]
Ethnic ID # Friends: Efforts					1.739* [0.449]
/					
cut1	0.003*** [0.001]	0.005*** [0.004]	0.006*** [0.005]	0.003*** [0.002]	0.011*** [0.008]
cut2	0.008*** [0.002]	0.008*** [0.006]	0.016*** [0.012]	0.008*** [0.006]	0.023*** [0.016]
cut3	0.023*** [0.005]	0.039*** [0.025]	0.025*** [0.019]	0.033*** [0.023]	0.037*** [0.026]
cut4	0.062*** [0.013]	0.120*** [0.073]	0.074*** [0.053]	0.109** [0.074]	0.067*** [0.046]
cut5	0.121*** [0.025]	0.239* [0.145]	0.146** [0.104]	0.245* [0.163]	0.135** [0.095]
cut6	0.305*** [0.062]	0.519 [0.313]	0.419 [0.293]	0.797 [0.522]	0.417 [0.293]
cut7	0.599* [0.121]	1.111 [0.666]	0.764 [0.536]	1.744 [1.142]	0.770 [0.535]
cut8	1.790** [0.360]	3.437* [2.070]	2.236 [1.560]	5.093* [3.317]	1.904 [1.325]
cut9	8.238*** [1.667]	15.268*** [9.336]	9.419** [6.669]	22.316*** [14.708]	6.216** [4.349]
cut10	35.777*** [7.348]	75.796*** [47.243]	32.831*** [23.519]	73.674*** [49.536]	18.925*** [13.435]
r2					
N	8006	900	639	908	669

Note: Odds-Ratios displayed; Robust standard errors in parantheses.
+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Supplement: theoretical and methodological reflection

This document reflects on the two central theoretical and methodological decisions that shaped the framework of the master thesis: life satisfaction as the dependent variable and cultural distance as the subsample distinction. Enhanced justifications and background information are provided, and alternatives to these decisions are discussed based on current scientific debates.

Supplement I: Reflecting on Berry's acculturation theory and the use of cultural distance to distinguish the migrant subsamples

When studying immigrants' integration, social scientists can choose from a variety of theoretical approaches that emerged over the past decades to explain the specific integration dynamics of their time. Before discussing Berry's acculturation theory in relation to other relevant approaches, it is worthwhile to define and to distinguish between the terms '*assimilation*' and '*integration*' because they are used in certain contexts differently and have different connotations. '*Assimilation*' is used to describe the adaptation of migrants and natives in certain domains (Diehl 2016: 469). In this context, Esser (2009) distinguishes four different assimilation dimensions: '*structural*', '*cultural/cognitive*', '*social*' and '*identificative*' assimilation. These dimensions are in general seen as being independent from each other in the beginning: Structural assimilation in the educational system, for instance, can be unrelated to migrants' average number of native friends (social assimilation). *Classical assimilation theory* (Gordon 1964), however, expected that structural integration eventually promotes the adaptation in the other dimensions as well. '*Integration*', on the other hand, even though it is less clearly defined, is the more common term in German migration research because it is less normatively connotated (Windzio 2018: 374). This term mainly denotes the process of adaptation to structural domains of a society – without a parallel cultural and social assimilation.

In contrast to classical assimilation theory, that assumed a straight-line assimilation of immigrants towards the societal mainstream, the *segmented assimilation theory* (Portes & Zhou 1993, Portes & Rumbaut 2001) and the *new assimilation theory* (Alba and Nee 1997) emphasised – in reaction to increasingly diverse migration flows and ethnic pluralisation in the United States and in other Western immigration countries – the role of ethnic communities, cultural identity and the mutual influences of immigrants and natives. While Alba and Nee (2003) expected assimilation to cause a “melting-pot”-like society, in which cultural identities and ethnic boundaries lose their relevance, Portes & Zhou (1993) theorised that migrants assimilate to different segments of a society rather than to a societal mainstream. Portes and Rumbaut (2001) found evidence that, in addition to an upwards movement towards the societal mainstream, two further assimilation paths are possible. They argued that, depending on the strength and the support of the ethnic group and the ways in which migrant groups were received by the society, also *selective acculturation* (the new country's language is learned and used, but the migrants remain socially and identically bound to their ethnic group) and *downward assimilation* (adaptation towards the domestic underclass) are possible outcomes. Even though its empirical evidence is mixed (Kalter 2007; Kroneberg 2008), the segmented assimilation theory broadened the perspective in integration research by emphasising the role of ethnic networks and the cultural connection to the country of origin as new explanatory factors besides individual and family resources.

Despite these theoretical advances and the increasing recognition of potentially positive outcomes for migrants that maintain their ethnic identity and embeddedness, the public integration discourse in Germany is still focussed on optimising assimilation while

the maintenance of cultural identity is widely neglected (Frankenberg et al. 2013). Reviewing recent research on young immigrants in Germany, Frankenberg and colleagues (2013) come to the conclusion that “a strong host-country orientation, rather than maintenance of heritage culture, [...] is most beneficial to young migrants’ psychological and sociocultural adaptation in Germany” (p. 164).

In this context, Berry’s *acculturation theory* (1974, 1997) provided a suitable backdrop to analyse potential negative outcomes resulting from the cultural tensions and assimilation pressure that young migrants may encounter in the German society. Because Berry puts the cultural integration dimension centre stage and emphasises two crucial factors for young immigrants’ well-being: involvement with the larger society on the one hand, and maintaining their heritage culture and identity on the other (Berry et al. 2006: 306). Depending on the degree to which young migrants seek involvement in these dimensions, Berry theorised four possible modes of acculturation: *assimilation* (little cultural maintenance & strong involvement with the larger society), *separation* (cultural maintenance & avoiding involvement larger society), *marginalisation* (neither cultural maintenance nor involvement with the larger society) and *integration* (both cultural maintenance & involvement with the larger society). As already stated in the main text of the paper, Berry expected integration to be the most adaptive mode of acculturation for young immigrants.

However, a recent study by Schotte et al. (2018) confirmed the previous findings by Frankenberg and colleagues (2013) that the integration hypothesis does not hold for an assimilationist mainstream context like Germany. Based on these theoretical and empirical findings, it was promising to contribute to this literature by distinguishing the analysis groups based on cultural distance and to test the integration hypothesis in the context of adolescents’ SWB by including a measure of ethnic identity into the subsample analysis. Moreover, this cultural integration perspective could easily be complemented with social capital theory. Putnam’s (2000) notion on bonding and bridging social capital could be linked to maintaining an ethnic identity through strong co-ethnic ties (e.g. within the family), and to seeking involvement in the larger society through bridging social capital via intra-ethnic ties (e.g. through friendships to natives). In this way it could be hypothesised that both family and friendships could be more adaptive for young migrants than for young natives.

Nonetheless, a fundamental limitation of the resulting analytical strategy (distinguishing migrants based on their cultural distance) was to disregard their ethnicity. Especially in the context of Germany’s complex immigration history (Diehl 2016; Van Mol & de Valk 2016), future studies could shed light on country-of-origin-specific determinants of life satisfaction. Together with measures of duration of stay (also from students’ parents), the country of origin could allow to disentangle possible migration-flow specific well-being pattern among adolescents. This would be especially important for effective political intervention. However, the present research design can serve as a good foundation that underlines the importance to consider the interplay of cultural and social integration dynamics when studying well-being in integration research.

Supplement II: Discussing the concept and operationalisation of subjective well-being

The central goal of the paper was to explore the possible differences in the well-being of adolescents with and without immigration background in Germany. As briefly described in the main text, a broad theoretical debate about the dimensions of well-being exists and there are a variety of operationalisations to choose from (Diener et al. 2018). In integration research, recent studies focussed mainly on the effective psychosocial functioning (eudaimonic) dimension of adolescents’ wellbeing (Belhadj Kouider et al. 2014; Mood et al. 2017). From this perspective, well-being does not only reflect “feeling good”, it is moreover

understood as psychological well-being or mental health, operationalised for example with measures of internalising and externalising problem behaviour (Brettschneider et al. 2015; Mood et al. 2016). These measures entail, for instance, self-stated feelings of being worried, depressed, anxious or self-stated negative behaviours related to aggressiveness or delinquency. Notwithstanding the relevance of these specific outcomes for youths' development, they do not enable to deduce how adolescents themselves evaluate the quality of their lives (Diener et al. 2018).

In this context, there were two arguments – a theoretical and an empirical one – that led to the decision to focus on the hedonic dimension of well-being (i.e. subjective well-being) in the present study. The first one is that scholars, especially from the perspective of an interpretivist research paradigm, have repeatedly argued that statements about the overall well-being of adolescents are only valid when they come from these adolescents first-hand (Casas 2016; Vujčić et al. 2019). It can be argued that only adolescents can precisely evaluate which factors are important to them and which weight these factors get in their overall evaluations of their lives. In other words, the “distinction between ingredients of a life lived well and the subjective evaluations of that life are essential” (Diener et al. 2018: 2).

The second reason relates to the situation that a decade ago, it was simply unknown whether immigrants and natives were equally satisfied with their life in Germany: No sociological study had examined immigrants' subjective well-being quantitatively back then (Brockmann 2012: 4). Since then, this remarkable research gap in German integration studies has slowly been shrinking. However, the few recent studies focus almost exclusively on the adult population (Kämpfer 2014; Brockmann 2017). Explicit subjective well-being differences between immigrants and natives during adolescence are markedly understudied. Hence, focussing on immigrant adolescents' subjective well-being allowed to complement the existing literature in a promising and beneficial way.

Choosing this theoretical construct raised the question how to operationalise it. Again, two arguments can be summarised that led to the decision for using the satisfaction with life scale (SWLS). The first argument relates to the situation that this scale is widely used in social research (Diener et al. 2013) and that it was found to be psychometrically sound (Lucas & Donnellan 2012; Cheung & Lucas 2014). Hence, using this operationalisation of SWB enhances the generalizability and comparability of the findings within the social sciences. Furthermore, a recent qualitative study indicates that the SWLS is particularly valid in adolescence research. Vujčić and colleagues (2019) found that young people interpret life satisfaction as “*one's attitudes towards life in general*”, and that adolescents focus in their description of the concept “*on the sources of their satisfaction including perception of the conditions of their lives, the quality of the significant relationships, including mainly family and friends, but also teachers, as well as their achievements in school or hobbies*” (Vujčić et al. 2019: 803). The authors conclude that adolescents' interpretation of the concept of ‘*life satisfaction*’ is congruent with the theoretical conceptualisation of SWB by Diener et al. (2018).

The second argument for using the SWLS is simply its availability in the NEPS data. In the fourth starting cohort of the panel study, the scale is included in each of the first seven waves and complemented by five further items that cover students' satisfaction with specific important life domains (economic situation, health, school, family and friends). This operationalisation allowed to explore how the single SWB domains contribute to adolescents' overall life satisfaction across the different analysis groups. This revealed the interesting finding that family satisfaction was on average more important for the life satisfaction of culturally distant immigrants, compared to natives.

However, another operationalisation approach would have been to combine the six single scales into one multi-dimensional SWB measure by using the row-mean over all items

(the scale reliability coefficient Cronbach's alpha was 0.81 in the overall sample). This would have increased the internal validity of the subjective well-being assessment markedly. Nonetheless, the analytical potential of using the single SWB domains as predictor variables was more important for the goal of this study. Furthermore, this enabled usage of the specific SWB dimensions as controls for unobserved heterogeneity. The satisfaction with the economic situation, for instance, enabled to control a great share of otherwise unobservable confounder bias from family measures like the parents' socio-economic status.¹⁰

Finally, it is noteworthy that using SWB in integration research can result in potential bias due to different culture-dependent meanings of SWB concepts such as happiness and life satisfaction between migrants and natives. Oishi et al. (2013) showed based on dictionary definitions of "happiness" from 30 countries world-wide that contemporary Americans view happiness as a pleasant experience over which they have control and as something they can actively pursue. In contrast, most other cultural definitions of happiness (80%) included at least partially the concept of luck, fortune or fate. Moreover, studies suggest that respondents from European and Latin cultures score on average higher on SWB scales than respondents from Confucian cultures, due to less positive bias (Tov & Diener 2007). In line with that, self-esteem was found to have stronger effects on SWB in individualist nations than in collectivist nations (Oishi et al. 1999). On the other hand, Newland and colleagues (2019) showed in an international comparative study based on data from the Children's Worlds survey that country-level factors predict only very little variation in children's (age 8-12) life satisfaction.

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¹⁰ Socio-economic status measures are included in the parent questionnaires in the NEPS, but they have comparably high shares of missing values (more than 40% in the used sample), which would have caused selection bias and a loss of statistical significance – especially in the migrant samples.

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