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Evidence from a large-scale German survey

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Abstract

The mental health and well-being of refugees are both prerequisites for and indicators of social integration. Using data from the first wave of a representative prospective panel of refugees living in Germany, we investigated how different living conditions, especially those subject to integration policies, are associated with experienced distress and life satisfaction in newly-arrived adult refugees. In particular, we investigated how the outcome of the asylum process, family reunification, housing conditions, participation in integration and language courses, being in education or working, social interaction with the native population, and language skills are related to mental health and well-being. Our findings show that negative and pending outcomes of the asylum process and separation from family are related to higher levels of distress and lower levels of life satisfaction. Living in communal instead of private housing is also associated with greater distress and lower life satisfaction. Being employed, by contrast, is related to reduced distress. Contact to members of the host society and better host country language skills are also related to lower levels of distress and higher levels of life satisfaction. Our findings offer insights into correlates of refugees' well-being in the first years after arrival in a host country, a dimension of integration often overlooked in existing studies, thus having the potential to inform decision-making in a highly contested policy area.

Introduction

The social, cultural and structural integration of refugees is a pressing challenge for host societies worldwide, in particular because forced migration has been steeply on the rise globally over recent years, 65.6 million individuals having being forcibly displaced by the end of 2016, compared to 33.9 million in 1997 (1). Aside from ongoing debates over different forms of integration and the state and non-state actors as well as integration policies that should be involved (e.g., 2, 3, 4), research has predominantly focused on select individual and social characteristics of immigrants in studying integration into a host society.

In particular, one line of research has focused on immigrants' human capital and its link to integration outcomes. This research investigates how factors such as educational and occupational attainment and language skills relate to measures of socioeconomic success, in particular labor market participation, income, occupational status, and job tenure (e.g., 5, 6, 7, 8). Human capital and related factors are key constituents of structural integration (9) and may owe their central position in research to the idea that structural integration, in turn, is the prerequisite for almost all other forms of social integration (10).

A complementary line of research explores the role of social capital in integration processes (see 11, 12). Social capital represents the contacts, social relationships, and networks through which resources (e.g., jobs, information) that confer economic and social benefits become available. Research has primarily examined how social contacts within migrant communities and bridges between these communities and the native population affect immigrants' socioeconomic success (e.g., 13, 14).

This focus on objective factors such as human and social capital and socioeconomic success has repeatedly been criticized as too narrow a view on the integration process since it neglects important subjective and experiential dimensions, in particular cognitive and affective well-being (e.g., 15, 16, 17). Addressing these concerns, research has recently suggested that these factors are

important integration outcome indicators relevant for immigrants' abilities to adjust to novel living conditions in a host society (e.g., 18). Some have argued that subjective well-being (SWB), broadly understood as "people's multidimensional evaluations of their lives, including cognitive judgments of life satisfaction as well as affective evaluations of moods and emotions" (19, p. 245), should be considered a main outcome of immigrant integration (e.g., 20). Others have suggested that above and beyond general well-being, mental health, and in particular its affective dimension, plays a decisive role for integration processes (21, 22).

Mental health and well-being represent important dimensions of the integration process primarily because of the specific vulnerabilities of migrant groups, in particular refugees. Studies based on large-scale survey data have shown substantially lower levels of SWB amongst immigrant populations compared to natives (20, 23), and that these differences do not seem to attenuate with time or across generations (23). Even when migration leads to economic prosperity, it may remain associated with lower levels of well-being (24, 25).

While there seems to be a SWB gap between immigrants and natives, studies present a mixed picture on the relationship between voluntary migration and mental health. They suggest that immigrants may or may not be at an increased risk of mental health issues depending on specific characteristics such as race, socioeconomic status, and the overall migration trajectory (26, 27, 28, 29, 30). The association between forced migration and mental health, however, is more straightforward. Research has consistently shown that refugees are at a particular risk of facing mental health issues (reviewed in e.g. 21, 27, 31, 32, 33). Despite a substantial between-study heterogeneity in refugees' mental illness prevalence rates, forced migration has persistently been linked to increased rates of mental illnesses, chiefly, post-traumatic stress disorder (PTSD), depression and anxiety disorder (e.g. 33, 34, 35). A meta-analysis (33) indicates that refugees may be roughly up to 14 times more likely to have depression and 15 times more likely to have PTSD compared to the general Western adult population.

Refugees are particularly at risk of facing psychological distress as sequelae of traumatic experiences (32, 36). There is a general consensus that refugee populations are disproportionately affected by traumatic experiences (e.g., 37). A recent study (38) estimated that up to 80% of refugees who fled from civil wars to Europe have been exposed to traumatic experiences. However, studies also indicate that the refugee mental health burden has more far-reaching roots than discrete traumatic experiences or the experience of displacement. A review of studies on refugee mental health and its predictors shows that the psychological burden of the refugee experience is substantially elevated even when refugee mental health is compared to the mental health of other groups exposed to war and violence (39).

Importantly, well-being and mental health are not just outcomes of past experiences, but equally of present social, cultural, and economic circumstances (40). While research on the effects of pre-migration stressors on mental health dominates the literature, post-migration stressors seem to have an equally substantial impact. In addition to migration-related acculturative stress (see 41, 42), factors associated with refugees' mental health and well-being include uncertainty related to legal proceedings, detainment in refugee camps, discrimination, social isolation, financial problems, unemployment, separation from family, safety concerns, and uncertainty about the country of origin's future (reviewed in 33, 37, 39, 43). Further studies show that the well-being of migrants in general is associated with host country language proficiency and identification (44) and that it is linked to the quality of public goods, the climate of immigrant reception, and the extent of economic inequality after migration (45).

Unlike past (traumatic) experiences, some of these post-migratory stressors are directly affected by integration policies and measures in a hosting country. Certainly, housing programs, social support, and integration measures such as language courses, education, and vocational training all aim to foster long-term integration, but they are also likely to impact refugees' immediate mental health and well-being. This line of argument has been explored in one of the few representative studies (46) which considers mental health to be both an outcome of host country

policies and a personal resource. As a personal resource, mental health can be conceived of as a precondition for (re-)gaining human and social capital and, by extension, a precondition for integration. This study shows that by influencing mental health, policy-dependent living conditions in the host society can indirectly impact socioeconomic integration (employment and occupational status, type of job contract, dependence on benefits). Another study specifically addressing the relationship between refugee well-being and integration argues that integration requires high levels of functioning that refugees with mental health issues may struggle to meet (43). The result is a vicious cycle between poor mental health as a consequence of traumatic experiences and post-migratory stress, functional impairments, and the exacerbation of post-migration stressors.

In summary, while most integration research in the social sciences has focused on objective factors such as human and social capital, there has been an increasing interest in the role of well-being and mental health, especially when it comes to refugees. Most research in this area, however, has focused on (a) mental health and well-being as outcomes of pre-migratory experiences, and (b) used rather small convenience or clinical samples. Nonetheless, some of these studies have begun to show the importance of the conditions of arrival in a host society in influencing well-being and mental health. They also point out the importance of looking at mental health in representative non-clinical samples and of paying specific attention to the affective and emotional dimensions of mental health. Furthermore, we know little about how mental health and well-being may differently respond to post-migration stressors. Understanding how immigration policies and integration measures can attenuate or amplify these stressors in the years following arrival is not just an important end in itself, but also crucial for developing policy interventions and for successful integration in the long run.

The present study therefore investigates how the mental health and subjective well-being of a sample of 4,325 recently arrived refugees in Germany is associated with different integration measures designed to promote integration and with other general post-flight living conditions. Germany in this respect is a model case because it has adopted the largest number of refugees in the

European Union. By the end of 2016, the population of refugees reached 1.3 million people, with 441.900 new asylum applications submitted in 2015 and 722.400 claims made in 2016 (1). Given the existing research, this study specifically looks at psychological distress as an important affective facet of mental health, and at life satisfaction as the more cognitive component of well-being. Addressing gaps in the literature regarding the role of integration measures and living conditions for these experiential facets of migration and integration, we are particularly interested in the following factors: (a) the outcome of the asylum process, (b) separation from spouses and children and seeking family reunification, (c) type of housing, (d) being in education, (e) being employed, (f) attendance of integration and language courses, (g) time spent with persons from country of origin, with German nationals, and with persons from other countries, and (h) German language ability.

Results

We calculated and pooled ten multiple, multivariate, hierarchical linear regressions to estimate associations between psychological distress, measured using the 4-item PHQ-4, and life satisfaction, measured using a single-item global life satisfaction measure, and variables reflecting integration measures and refugees' post-migratory living conditions (see Tables S3, S4, S5, and S6 in the SI Appendix for details). We did not weight our regression, but included the factors that went into the sampling design (47 pg. 57, 48). Robustness checks using unimputed data can be found in the SI Appendix.

The baseline models (1a, 1b in Figure 1) predict psychological distress and life satisfaction from control variables age, sex, level of education, nationality, and time since arrival in Germany. Subsequent models (2a, 2b in Figure 1) include a variable representing negative experiences during flight. For the full models (3a, 3b in Figure 1), we added all key predictors (a-h) mentioned above (see Table S3, Table S4, Table S5 and Table S6 in the SI Appendix for details).

Control variables

Figure 1 shows that females refugees are worse off than males in terms of psychological distress, but report higher levels of current life satisfaction across all three models, as has been observed in

other populations as well (49, 50). Older respondents report greater distress than younger respondents, possibly due to the additional risk factors associated with old age (51). Higher levels of education are associated with lower life satisfaction, which is likely due to the higher expectations of life among the better educated, but have no effect on psychological distress. Afghans exhibit greater levels of distress than Syrians in Models 1a-3a and higher levels of life satisfaction in models 2b and 3b (see SI Appendix Table S2 for nationalities beyond Afghan and Iraqi, which were omitted from Figure 1 for clarity). Finally, time since arrival in Germany is related to reduced distress and increased life satisfaction when the factors included in models 3a and 3b, which are also related to the duration of stay in Germany, are not considered. Negative experiences during flight, as well as explicitly not wanting to answer questions on the details of the flight experiences, are related to lower life satisfaction. Negative experiences are also related to enhanced distress.

These findings are in accordance with the literature on the relationship between traumatic experiences related to flight on well-being (e.g., 33).

Integration measures and post-migratory living conditions

The legal outcome of the asylum procedure is most notably associated with psychological distress and life satisfaction. Protection and suspension of deportation, both of which grant a mere one-year right to stay, are linked to elevated levels of psychological distress compared to the positive outcome of being granted the legal status of refugee or asylee. However, both are not linked to life satisfaction, demonstrating how classic SWB measures can miss the emotional toll of certain circumstances (52). Crucially, awaiting the outcome of the legal proceedings, either for the initial asylum application or after an appeal to a negative decision has been submitted, is associated with significantly higher levels of psychological distress and lower life satisfaction compared to the positive response of having a refugee or asylum status. This is consistent with previous studies indicating the detrimental consequences of lengthy asylum procedures for mental health (e.g., 53).
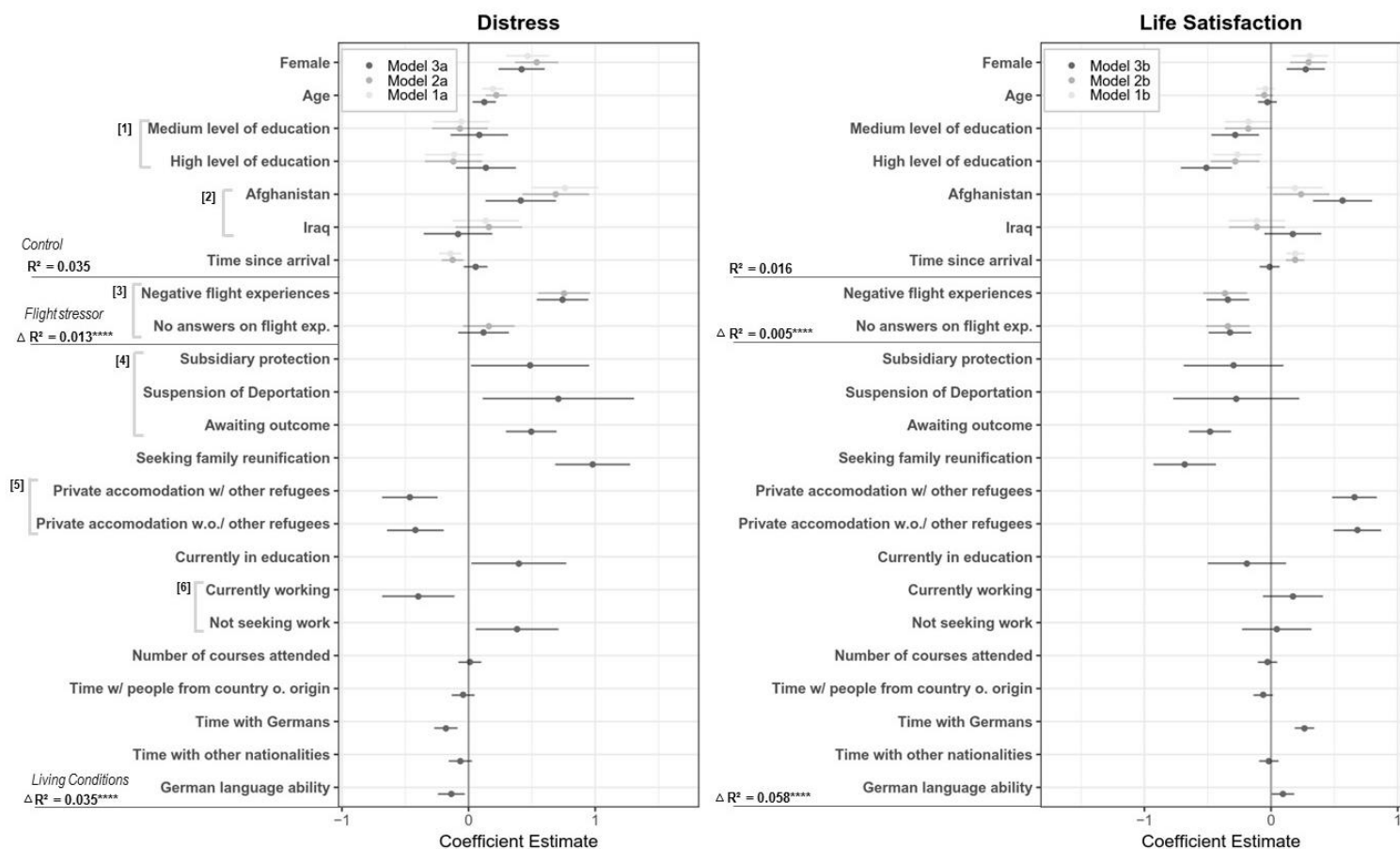
Figure 1. Plotted estimated regression coefficients with error bars (95% CI). Hierarchical regressions comprising three models each. Regression coefficient estimates pooled across 10 imputed datasets. Predictor variables are standardized for comparison purposes. [1] Reference category is low level of education, [2] reference category is Syria, [3] is no negative experiences during flight, [4] reference category is status refugee or asylum, [5] reference category is collective refugee accommodation, [6] reference category is currently not working. Reference categories for the categorical predictors: sex: male; family reunification: not seeking reunification with a spouse or an underaged child; currently in education: currently not in education; *p<.05, **p<0.01, ***p<0.001, ***p<0.0001 for model comparisons. Source: IAB-BAMF-SOEP data, own calculations, unweighted.

Those seeking to reunite with underage children or with a spouse living outside Germany are more distressed and less satisfied with life than those not seeking family reunification. This is likely due to a combination of stressors we cannot directly observe in the data: the pain of separation, concerns for safety, and the trepidations and uncertainties involved in facing another legal process.

In line with the existing literature (2), housing conditions are significantly associated with our outcome measures. Both private housing with and without other refugees sharing the accommodation is related to lower levels of psychological distress and higher levels of life satisfaction compared to communal housing and housing as a whole is a significant predictor of both outcome variables. Currently being in education is significantly related to elevated levels of distress. Furthermore, refugees' current employment status is related to psychological distress. Being in the workforce is associated with reduced levels of distress, as other studies have found (e.g., 54). Interestingly, however, employment does not improve life satisfaction according to our analysis. Finally, and in line with existing research (55), more time spent with the native German population and better German language skills are associated with lower levels of distress and increased life satisfaction. The addition of these post-migratory contextual factors again constitutes a significant improvement in model fit, with a greater increase in R^2 in the life satisfaction model than in the distress model.

Discussion

Overall, our results support and specify previous claims linking refugees' mental health and well-being in the first years after arrival to post-migratory living conditions, many of which are subject to integration policies. In particular, our study shows that the legal hurdles refugees face while securing their future life in the host country are related to higher levels of distress. Policy makers should thus consider the potentially negative impact of an uncertain legal status, acknowledging that a large proportion of refugees who are granted a less secure status (mostly cases of subsidiary protection) end up having this status renewed and remain in their host country for several years (56). This is further corroborated by our finding that refugees who are awaiting the outcome of the asylum process exhibit lower levels of mental health and well-being compared to those with a relatively secure legal status. Our results suggest that policies facilitating family reunification could enhance well-being and reduce psychological distress among refugees. While the UN Refugee Convention states that family unity is among the essential rights of refugees, and Article 8 of the

European Convention on Human Rights calls for flexible and prompt decision making, many European countries have restricted the options for reunification since 2015 (57).

Looking beyond these legal aspects, we find that staying in collective rather than in private accommodation is associated with poorer mental health and well-being. Although self-selection might play an important role here, it seems plausible that collective accommodation, which often means living in crowded quarters with limited privacy, restricted autonomy, and isolation from the local community, in fact causes or exacerbates health issues. Residing in collective accommodation may also come with safety concerns, for example in light of the frequency of attacks on refugee accommodation in many host countries (58). This is especially so for women (e.g., 59, 60), who in our sample exhibit notably higher levels of distress (but also higher levels of life satisfaction). Since collective accommodation is also designed to be temporary, this additional dimension of uncertainty could also play into the association we found.

Looking at human capital factors, our results are partially inconsistent with the existing literature. Although being employed is associated with reduced psychological distress, it is not linked to higher levels of satisfaction as in most studies using general population samples (62). This might be due to the expectations of refugees regarding the norm of being employed. In contrast to the native population, where being part of the workforce is socially expected, refugees might have, and face, different expectations and legal hurdles to employment. The surprising finding that being in education is linked to greater distress calls for research on the mental health and well-being of refugees in host country education programs.

Finally, our study shows that the human capital factor of greater host country language ability and host country social capital, namely, contact with the native population, are associated with better mental health and well-being. The causal direction of these relationships is just as likely one or the other, however. Theoretically, it is equally plausible that refugees suffering from low levels of well-being struggle to engage in language learning and seeking out social contacts and that the absence of both is detrimental to well-being. Accounting for these possibilities, our results

speak in favor of efforts to ease access to integration measures that facilitate language learning and contact between refugees and members of the host society, for example by connecting these to psychosocial services. This conjecture is also supported by the finding that time spent with Germans is positively associated with both mental health and well-being, while time spent with non-relatives from the country of origin and time spent with people from other countries is related to neither. This suggests that it is not social connections per se that are most important to refugees, but connections to the host society specifically.

The overall implications of our study are, first, that the mental health and well-being of refugees should be taken seriously as both correlates of integration measures and living conditions in host societies and as preconditions for successful long-term integration. In summary, the study finds that greater certainty and stability, in the form of a secure legal status, non-temporary housing, family reunification, and social anchoring in the host society through language abilities and contacts are linked to better mental health and well-being in the early years after arrival. Future research should investigate how these associations develop over time and which factors are central to well-being in later phases of integration.

Materials and Methods

All statistical analyses were conducted using R version 3.5.0 (61). The data used in this study come from the first wave (2016) of the IAB-BAMF-SOEP dataset, an annual, representative survey of 4,465 adults (at least 18 years of age), predominantly refugees and asylum seekers who arrived in Germany between January 1, 2013 and January 31, 2016 and applied for refugee or asylum status by June 30, 2016 or were hosted by Germany through a humanitarian or other program. These individuals were drawn from the German Central Register of Foreign Nationals. Additionally, the sample consists of all other adult family members living in the sampled persons' 3,336 households (see 48 for details, and 62 for general information about SOEP data). The survey was conducted by the Institute for Employment Research (IAB) of the German Federal Employment Agency, the Research Centre on Migration, Integration, and Asylum of the Federal Office of Migration and

Refugees (BAMF-FZ), and the Socio-Economic Panel (SOEP) at the German Institute for Economic Research (DIW Berlin) (63). The survey covers a broad range of topics, including demographic and socioeconomic indicators, details on the migratory process, current living conditions, health, personality, and values. Respondents completed the survey in computer-assisted face-to-face interviews by trained interviewers using audio files in five different languages. Participation was voluntary. The version of the data used in this study is: Socio-Economic Panel (SOEP), data for years 1984-2017, version 34, SOEP, 2019, doi:10.5684/soep.v34.

A total of 119 respondents were excluded from our analysis (see the SI Appendix for details). We imputed missing data (except in cases of explicit refusal to answer on a topic) in all of the variables used for analysis through multivariate imputation (see Table S3 and Table S5 in the SI Appendix for details). We calculated hierarchical, linear OLS regressions using standardized predictor variables. We assessed the statistical significance of the difference between Models 1 and 2 and Models 2 and 3, respectively, using Wald-tests (see Table S3, Table S4, Table S5 and Table S6 in the SI Appendix for details).

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Supplementary Information for

Living conditions and the mental health and well-being of refugees:
Evidence from a representative German survey

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This PDF file includes:

Data Access

All data used in this study is provided for scientific purposes to the international research community via the SOEP Research Data Center (RDC) at the German Institute for Economic Research (DIW Berlin), Germany (see 1). Signing a data distribution contract is a precondition for getting access to the SOEP data. The scientific use file of the SOEP with anonymous microdata is made available free of charge to universities and research institutes for research and teaching purposes.

Exclusion of observations

We excluded 27 respondents from analysis on the basis that they were mandated to leave Germany within the coming month because in these cases, self-reported measures of mental health and well-being at the time of completing the survey is a priori unlikely to reflect the integration measures and living conditions we are interested in evaluating. We excluded 92 further respondents form our analysis on the basis that they were members of the sampled asylum seekers' household who were not themselves refugees who had arrived in Germany between 2013 and 2016, resulting in an analysis sample size of 4,325 respondents.

Study variables

Outcome variables. In keeping with standard practice, we treated 'ordinal' answers as representative of underlying continuous measures (2). To measure mental health, we use a well-validated indicator of psychological distress, the PHQ-4. This 4-item battery uses a 4-point Likert-type scale (scores 0-3) to screen for depression and anxiety with two separate scores or to yield a single overall measure of the degree of general psychological distress ranging from 0 (no distress) to 12 (severe distress) (3). Here, we used the PHQ-4 as a measure of overall psychological distress (scores from 0 to 12), in accordance with most widely used definition of psychological distress as a state of emotional suffering characterized by symptoms of depression (depressed mood and anhedonia) and anxiety (such as uncontrollable worrying and feeling nervous) (4). The reliability and the validity of the PHQ-4 have been repeatedly established (3, 5, 7), as has the cross-cultural validity of the PHQ-4 in Arab-speaking refugees in Germany (7, 8). The internal consistency of the scale was acceptable in our sample (Cronbach's alphas = 0.77). Life satisfaction, understood as the cognitive-evaluative dimension of subjective well-being, was measured using a well validated standard single-item measure (e.g. 9, 10).

Control variables. Levels of education were aggregated according to ISCED standards as follows: low level of education (early childhood education, primary education, lower secondary education), medium level of education (upper secondary, post-secondary non-tertiary education, short-cycle tertiary education), high level of education (bachelor's or master's degree or equivalent, doctoral or equivalent degree). Nationality was reduced to categories with at least 100 observations: Syrian, Afghan, Iraqi, Eritrean, Other. Time in Germany was measured in months passed between arrival in Germany and the time of the interview.

Negative flight experiences were coded as 'yes' if any of a list of seven possible negative experiences (financial scams or exploitation, sexual assault, physical assault, shipwreck, robbery, extortion, imprisonment), as 'no' if non of these experiences were reported and 'wished not to report' if the respondent chose not to answer the section on flight experiences.

Predictors: Integration measures and post-migratory living conditions. The status variable was created by combining the report of a received refugee or asylum status into one category, and counting both reports of awaiting the outcome of the initial asylum procedure and reports of awaiting the outcome of a repeal of the initial asylum procedure as 'awaiting outcome'. As stated above, those who reported that they were forced to leave Germany within the coming month were excluded from our analyses. The family reunification variable was conceived as a binary variable assigning a 'yes'-value to reports of having either a spouse or any number of children born prior to 1998 *and* planning to bring these family members to Germany. Currently in education includes any kind of education (school, university or doctoral studies, vocational training, professional development course). Our employment status variable comprises a 'yes' category for any form of employment reported (full or part time, marginally employed, internships or traineeships), a 'no' category for a report of no current employment but seeking employment and a 'not seeking employment' category for reports of unlikely or definitely not seeking employment. Course participation was measured as the total number of courses attended out of five integration courses or general language courses. Social contacts are measured as amount of times spent with members of different communities, ranging from 'never' to 'daily'. Language ability was measured as summed self-reported speaking, reading, and writing ability of the German language.

Variable composition details

In this section we break down exactly how all of the variables that were used in this study were coded, the IAB-BAMF-SOEP questionnaire wording of the items underlying each variable, as well as the IAB-BAMF-SOEP-given variable name ('bgprXZY' for questions from the Individual and Biography Questionnaire; 'bghrXYZ' for questions from the Household Questionnaire) .

Outcome Variables
Distress. Measured as the total score of the four-item PHQ-4 scale. The wording of the overall scale question in the IAB-BAMF-SOEP questionnaire reads "Now let's talk about the last two weeks. How often have you felt negatively affected by the following complaints in the last two weeks?" Wording of scale item #1: "Little interest or pleasure in your activities" (bgpr312, part of two-item depression subscale); wording of scale item #2: "Low spirits, melancholy or hopelessness?" (bgpr313, part of two-item depression subscale); wording of scale item #3: "Nervousness, anxiety or tension?" (bgpr314, part of two-item anxiety subscale); wording of scale item #4: "Unable to stop or control worrying?" (bgpr315, part of two-item anxiety subscale). We coded the responses to these items as numeric values between 0 ('not at all') and 3 ('(almost) every day') or missing values. We coded the composite distress variable as missing if one or more of the four constituting items were missing.

Life Satisfaction. Measured as the score of a single-item global life satisfaction scale. The wording of the scale in the IAB-BAMF-SOEP questionnaire reads "How satisfied are you currently with your life in general?" (bgpr457). We coded the responses to this scale as numeric values between 0 ('totally dissatisfied') and 10 ('totally satisfied') or missing values.

Independent Variables

Sex. Measured as a binary categorical variable. The wording of the scale in the IAB-BAMF-SOEP questionnaire reads "Your gender" (bgpr_l_0101). We coded the responses to this item as factor levels 'female', 'male' or missing values.

Age. Measured in years as the birth year (bgpr_l_0103) subtracted from the year of the survey interview (2016). Implausible values were defined as missing values.

Level of education. Measured using the composite variable created by the SOEP (isced11_16) on the basis of the International Standard Classification of Education of 2011. We combined the categories 'in school', 'primary education' and 'lower secondary education' into the category 'low'; the categories 'upper secondary education', 'post-secondary non-tertiary education' and 'short-cycle tertiary education' into the category 'medium' and the categories 'Bachelors or equivalent level', 'masters or equivalent level' and 'doctoral or equivalent level' into the category 'high'.

Nationality. Measured using generated variable created by the SOEP (nation16).

Time in Germany. Measured in years as the year of arrival (bgpr_l_3401) plus the month of arrival (bgpr_l_3402) represented as a numeric value between 1 and 12 divided by 12 subtracted from the year of the survey interview (2016) plus the month of the interview (bgprmonin) represented as a numeric value between 1 and 12 divided by 12. The time in Germany variable was coded as missing in cases where either the item measuring the year of arrival or the item measuring the month of arrival was a missing value. There were no missing values in the variable measuring the month of the interview.

Legal status. The categorical legal status variable was created based on the IAB-BAMF-SOEP survey question reading "Has your application for asylum been approved by the Federal Office for Migration and Refugees?" (bgpr47). We combined the first two categories ("Yes, I have been assigned refugee status" and "Yes, my entitlement to asylum has been recognized") into 'refugee or asylum status'. We added another category for those respondents who were still awaiting an outcome from the application process – whose response to the question "Has an official decision regarding your application for asylum been made yet by the Federal Office for Migration and Refugees?" (bgpr45) was "no". We excluded all 76 respondents who reported "No, my application was rejected and I was asked to leave Germany", except those 49 who reported that they were still awaiting the outcome of their appeal to the decision of the Federal Office (Q: "Was your court action against the German Federal Office for Migration and Refugees successful", A: "No, a decision is yet to be made regarding my court action", bgpr49). These respondents were also included in the 'awaiting outcome' category. We furthermore added those 141 respondents who reported that they did not go through the asylum procedure ("This does not apply to me because I did not go through an asylum procedure (e.g. resettlement or entry on humanitarian grounds" in response to "When were your personal details recorded and when were you issued with an asylum seeker registration certificate (BÜMA) or

proof of arrival?" (bgpr3903)) to the safest status category, 'refugee or asylum status'. We assigned missing values to those 99 individuals who did not respond to bgpr45, i.e. whether an official decision regarding their application for asylum had been made, who subsequently ended up in the 'not applicable' category in bgpr47.

Family reunification. The categorical family reunification variable was created by ascertaining whether any of the eight eldest children of respondents that the IAB-BAMF-SOEP questionnaire asks about were born after the year 1998 ("In what year was your nth child born?", bgpr_l_403, 407, 411, 415, 419, 423, 427, 431) *and* whether the respondent is planning to bring at least one of these children born after 1998 to Germany ("Are you planning to bring this child to Germany?", bgpr_l_406, 410, 414, 418, 422, 426, 430, 434) *or* whether the respondent is planning to bring his/ her spouse/registered partner to Germany ("Are you planning to bring you spouse/registered partner to Germany?", bgpr_l_392). The resulting binary family reunification variable assigns a 'yes'-value to reports of having either a spouse or any number of children born prior to 1998 whose relocation to Germany is planned, 'no'-values to reports of having neither and missing values for all respondents with missing responses in either any of the constituent variables on reunification with children or any of the constituent variables on reunification with a spouse/registered life partner.

Type of accommodation. Determined by bringing together two questions from the household questionnaire, the one reading "In what type of accommodation does the interviewee live?" (bghr01), the other reading "Are there further apartments in this building in which refugees live?" (bghr02). We created a new composite variable with one category for those respondents who reported living in shared accommodation, another category for those respondents who reported living in private accommodation (private apartment or private house) with one or more other apartments inhabited by refugees in their building and a third category for those respondents who reported living in private accommodation without other refugees in their building.

Currently in education. Currently in education is a binary categorical variable based on answers to the survey question reading "Are you currently in training? This means: Are you attending a school or college / university (including doctoral studies), are you taking vocational training or are you taking a continuing professional development course?" (bgpr292).

Currently working. Currently working is a three-level categorical variable that we created based on answers to the survey questions reading "Are you currently working?" (bgpr161) and "Are you planning to work (again) in the future?" (bgpr162). We counted anyone reporting working in any capacity (including full-time and part-time employment, minimal or irregular employment, in-company training / apprenticeship or occupational retraining, internships) as working and the rest as not working. We then added a third level, putting those who currently are not working and reported that it's unlikely or ruled out that they will work in the future in their category, resulting in the categories 'no', 'yes', 'likely or certainly will not work'.

Course participation. Course participation is a numeric variable that we created counting the total number of language and integration courses respondents reported having attended. The courses asked about were an integration course organized by the German Federal Ministry for Migration and Refugees (BAMF) (bgpr94), an ESF BAMF course to learn vocational German (bgpr100), an entry course for German language skills organized by the German Federal Employment Agency (bgpr106), the "Perspectives for Refugees" course organized by the German Federal Employment Agency (bgpr112), the "Perspectives for Young Refugees" course organized by the German Federal

Employment Agency (bgpr118) and any other German language courses (bgpr124). We assigned the numeric value '1' to reports of having attending each course, '0' to reports of not having attending, and missing values. We then summed these six numeric variables. Only those respondents who had missing values on all six courses were assigned missing values in the composite variable.

Time with people from respondents' country of origin, Germans and people from another country. The three variables on amount of time spend with three different groups are numeric variables on a scale from 1 ('never') to 6 ('every day') that represent responses to the questions "How often do you spend time with people from your country of origin who are not related to you?" (bgpr210), "How often do you spend time with German people?" (bgpr211) and "How often do you spend time with people from other countries?" (bgpr212).

German language ability. Measured as the mean scores of the 1 ('not at all') through 5 ('very well') responses to the questions "How well can you speak German?" (bgpr87), "How well can you write in German?" (bgpr88) and "How well can you read in German?". If any of these three responses are missing, the composite variable 'German language ability' is also a missing value.

<div align="center">

Auxiliary Variables

</div>

Responses to the following questions were added into our imputation model as auxiliary variables with only minor transformations (for example, from a categorical into a numeric variable, missing value category added):

Questions on country of origin background
- "Which country were you born in?" (bgpr_l_0201)
- "And how strongly do you feel connected with your country of origin?" (bgpr325)

Questions related to level of education
- "How well can you write in your native language?" (bgpr_l_74)
- "How well can you read in your native language?" (bgpr_l_75)
- "Were you in vocational training in a country other than Germany or did you study (at higher education level) in a country other than Germany?" (bgpr_l_231)

Questions on flight
- "Did you arrive in Germany alone or with family members or friends/ acquaintances?" (bgpr_l_3501, bgpr_l_3504)
- "What were the main reasons that made you leave your country of origin?" (bgpr_l_3601-11)
- "Did any relatives or acquaintances who already lived in Germany help you move to Germany?" (bgpr_l_3801-3)
- "When were your personal details recorded and when were you issued with an asylum seeker registration certificate (BÜMA) or proof of arrival?" (bgpr3901)

Questions on level of awareness of German services and institutions
- "Do you know about the refugee and asylum advice services available?" (bgpr140)
- "Do you know the Migration Advice Service for Adult Immigrants (MBE)?" (bgpr141)
- "Do you know the Youth Migration Services (JMD)?" (bgpr142)
- "Do you know the general employment market advisory service at the German Federal Employment Agency [Bundesagentur für Arbeit], the Jobcenter?" (bgpr143)

- "Do you know about the job advisory service at the German Federal Employment Agency [Bundesagentur für Arbeit], the Jobcenter?" (bgpr144)

Questions related to experience of Germany
- "How often have you personally experienced being disadvantaged in Germany because of your origin?" (bgpr67)
- "Would you like to stay in Germany permanently?" (bgpr68)
- "And how is it now: Do you feel welcome in Germany now?" (bgpr327)

Questions related to health (mostly from the 12-Item Short Form Health Questionnaire)
- "How satisfied are you with your current health?" (bgpr298)
- "How would you describe your current state of health?" (bgpr299)
- "And what about other strenuous activities in everyday life, e.g. when you have to lift something heavy or need to be mobile: Does your state of health restrict you a lot, a little or not at all?" (bgpr301)
- "How often in the last four weeks did you feel rushed or under time pressure?" (bgpr302)
- "How often in the last four weeks did you feel in low spirits and melancholy?" (bgpr303)
- "How often in the last four weeks did you feel calm and balanced?" (bgpr304)
- "How often in the last four weeks did you feel full of energy?" (bgpr305)
- "How often in the last four weeks did you suffer from severe physical pain?" (bgpr306)
- "How often in the last four weeks, due to health problems of a physical nature, did you achieve less in your work or everyday activities than you actually intended?" (bgpr307)
- "How often in the last four weeks, due to health problems of a physical nature, have you been restricted in the type of tasks you can perform in your work or everyday activities?" (bgpr308) • "How often in the last four weeks, due to psychological or emotional problems, did you achieve less in your work or everyday activities than you actually intended?" (bgpr309)
- "How often in the last four weeks, due to psychological or emotional problems, did you perform your work or everyday activities less carefully than usual?" (bgpr310)
- "How often in the last four weeks, due to health or psychological problems, have you been restricted in terms of your social contact to for example friends, acquaintances or relatives?" (bgpr311)
- **Resilience.** Measured as the total score of the four-item Brief Resilience Scale (bgpr345, bgpr346, bgpr347, bgpr347).

Questions related to personality and attitude toward self
- "I have a positive attitude about myself." (bgpr344)
- "How do your rate yourself personally? In general, are you someone who is ready to take risks or do you try to avoid risks?" (bgpr349)

Questions related to feelings of social isolation
- "How often do you feel that you miss the company of others?" (bgpr321)
- "How often do you feel like an outsider?" (bgpr322)
- "How often do you feel socially isolated?" (bgpr323)
- "How often do you feel that you miss people from your country of origin?" (bgpr324)

- "Are you worried that you will be unable to stay in Germany?" (bgpr358)
- "Are you worried that you will be unable to return to your country of origin?" (bgpr359)

Analysis Variable Descriptives

Weights for Descriptives. The descriptives (Table S1) were weighted using the weights supplied by the Socioeconomic Panel of the DIW Berlin. Please refer to Kroh et al. (13) for details on the calculation of these weights.

Missing Values Imputation

We used visual inspection of the data to rule out that observations of our various variables were missing completely at random (see Table S2 for percent non-response per analysis variable), rendering imputation unnecessary. In particular, we used the VIM package (12) to plot the distribution of observed data in one variable of interest given missingness of another variable of interest.
We imputed missing data in all of the variables used for analysis through multivariate imputation using chained equations using the mice R package (ten imputed datasets created, ten iterations, seed = 41) (11). We imputed with unscaled predictor variables to produce the descriptives and again with scaled predictor variables for the regression analysis.

To improve the accuracy of the imputation, we used a range of auxiliary variables selected for their theoretical relatedness to the to-be-imputed variables (see the list of auxiliary variables below). Of these theoretically selected potential auxiliary variables, those that had a minimum correlation of $r = 0.1$ with to-be-imputed variables were used in the imputation of these variables (14). We also specified the relationship between variables involved in the imputation in our imputation predictor matrix as necessary to avoid circularity (e.g. between individual depression and anxiety scale item scores predicting missing values of scale total scores and vice versa) and improve accuracy.

Regression Analysis Results Details

In this section, we briefly cover how we compared regression models, present the numeric values of the regression coefficients plotted in the main text and show the same models calculated on the basis of unimputed data (complete cases only).

Comparison of models. For the models based on imputed data, we assessed the statistical significance of the difference between Models 1 and 2 and Models 2 and 3, respectively, using Wald-tests implemented using a function for the comparison of nested models fitted to imputed data based on a publication by Meng and Rubin (13, 15).

For the models based on unimputed data also shown below, we assessed statistical significance of the difference between Models 1 and 2 and Models 2 and 3, respectively, using F-tests. To make this comparison possible, only the complete cases in Model 3 were used to calculate Models 1 and 2.

Numeric values of regression coefficients and SEs. Tables S3 and S5 present the estimated regression coefficients plotted in Figure 1 in the main text with standard errors. These regression coefficient estimates were pooled across 10 imputed datasets. Tables S4 and S6 present the estimated

regression coefficients for the same models calculated using unimputed data, i.e. using complete cases only, as a robustness check. Predictor variables were standardized for comparison purposes in all of the models pre-sented below. [1] Reference category is low level of education, [2] reference category is no negative experiences during flight, [3] reference category is status refugee or asylum, [4] reference category is collective refugee accommodation, [5] reference category is currently not working. Reference categories for the binary categorical predictors: sex – male, family reunification – not seeking reuni-fication with a spouse or an underaged child, currently in education – currently not in education. *p<.05, **p<0.01, ***p<0.001 for coefficients as well as model comparison.

Differences in regression models based on imputed versus unimputed data: living condition variables. On the whole, the regression models based on unimputed data tells the same story as the models based on imputed data. The relative magnitude of the coefficients is similar, and the directions of the relationships be-tween regressors and outcome variables is the same. In the case of both distress and life satisfaction, the specifics of which insecure legal statuses are related to well-being differ between models based on complete cases and models based on imputed datasets. In the model based on imputed datasets, only awaiting an outcome is related to lower levels of life satisfaction. In the complete cases-based model, on the other hand, subsidiary protection is also weakly significantly related to reduce life satisfaction. In the model based on imputed datasets, all other legal status outcomes relate to distress; in the model based on complete cases only, only awaiting an outcome is linked to distress. Secondly, being in education is associated with elevated distress in the imputed data model, but not in the complete cases only model. Finally, German language ability is not significantly related to either distress or life satisfaction in the complete-cases-only models, it is significantly related to both in the imputed datasets. Based on a prio-ri considerations, namely, the loss of 664 to 928 cases in the complete cases only analyses and the non-MCAR nature of the missingness established through visual inspection (16), we presented the results based on imputed datasets in the main text.

Table S1. Analysis Variable Descriptives

Variable Name	Unweighted Mean (SE) or Prop.	Weighted Mean (SE) or Prop. (SE)	Weighted, Imputed Mean (SE) or Prop. (SE)	Range
Distress	3.1 (0.04)	3.34 (0.07)	3.38 (0.07)	0-12
Life satisfaction	7.26 (0.04)	6.89 (0.06)	6.9 (0.06)	0-10
Male	62.13%	73.5% (1%)	73.5% (1%)	
Female	37.87%	26.5% (1%)	26.5% (1%)	
Age	33.57 (0.16)	30.94 (0.25)	30.94 (0.25)	18-76 yrs
Low level of education	60%	57.1% (1.3%)	58.7% (1.2%)	
Medium level of education	21.4%	24.4% (1.2%)	24.1% (1.2%)	
High level of education	18.6%	18.5% (0.9%)	17.3% (0.9%)	
Syria	49.9%	41.2% (1.1%)	41.2% (1.1%)	
Afghanistan	13.9%	17.3% (0.9%)	17.3% (0.9%)	
Iraq	12.4%	8.8 % (0.5%)	8.8 % (0.5%)	
Eritrea	5.5%	4.8% (0.4%)	4.8% (0.4%)	
Other	19.3%	31.2% (1.3%)	31.2% (1.3%)	
Time since arrival	1.58 (0.01)	1.34 (0.02)	1.35 (0.02)	0 - 3.92 yrs
No Negative experiences	33.5%	29.8% (1.1%)	30.1% (1.1%)	
Negative experiences	33.9%	36.4% (1.2%)	36.4% (1.1%)	
No answer on flight experiences	32.6%	33.8% (1.2%)	33.5% (1.1%)	
Refugee or asylum status	55.2%	45.4% (1.2%)	45.2 % (1.2%)	
Subsidiary protection	3.2%	2.4% (0.3%)	2.4% (0.3%)	
Suspension of deportation	2%	1.8% (0.3%)	1.8% (0.3%)	
Awaiting outcome	39.6%	50.4% (1.2%)	50.5% (1.2%)	
Family reunification plans	9%	12.4% (0.8%)	12.5% (0.8%)	
Collective accommodation	34%	48% (1.2%)	47.6% (1.2%)	
Private accommodation w/ other refugees	32.3%	27.3% (1%)	27.4% (1%)	
Private accommodation w/o other refugees	33.6%	24.7% (0.9%)	24.9% (0.9%)	
Currently in education	5.5%	6.1% (0.6%)	6.1% (0.6%)	
Currently working	10.4%	11.9% (0.8%)	11.9% (0.8%)	
Currently not working	82%	82.3% (0.9%)	82.3% (0.9%)	
Not seeking work	7.6%	5.8% (0.6%)	5.8% (0.6%)	
Number of courses attended	0.85 (0.01)	0.85 (0.02)	0.85(0.02)	0-5
Time with people from country o. origin	3.87 (0.03)	4.17 (0.04)	4.17 (0.04)	1-6
Time with Germans	3.68 (0.03)	3.7 (0.05)	3.7 (0.05)	1-6
Time with others	2.88 (0.03)	3.23 (0.05)	3.23 (0.05)	1-6
German language ability	2.58 (0.01)	2.59 (0.02)	2.59 (0.02)	1-5

Table S2. Percentage of Missing Values in the Analysis Variables

Variable	Percent missing
Distress	9.39
Life satisfaction	0.97
Sex	0
Age	0.05
Education level	7.54
Nationality	0
Time since arrival	3.65
Negative flight experiences	0.81
Legal status	0.92
Family reunification plans	1.41
Accommodation	1.92
Currently in education	0.51
Currently working	0
Course participation	0.23
Contact to others from country o. origin	1.09
Contact to Germans	0.79
Contact to other nationals	1.04
German language skills	0.09

Table S3. Regression Coefficients Predicting Distress, Imputed Variables

	Model 1a	Model 2a	Model 3a
Intercept	2.78***	2.45***	2.55***
	(0.08)	(0.10)	(0.13)
Female	0.47***	0.54***	0.42***
	(0.09)	(0.09)	(0.09)
Age	0.19***	0.22***	0.12**
	(0.04)	(0.04)	(0.05)
Medium level of education	−0.06	−0.07	0.08
	(0.11)	(0.11)	(0.12)
High level of education	−0.11	−0.12	0.14
	(0.12)	(0.12)	(0.12)
Afghanistan	0.76***	0.69***	0.41**
	(0.14)	(0.13)	(0.14)
Iraq	0.14	0.16	−0.08
	(0.14)	(0.13)	(0.14)
Eritrea	−0.86***	−0.95***	−1.18***
	(0.20)	(0.20)	(0.20)
Other	0.74***	0.80***	0.45**
	(0.12)	(0.12)	(0.13)
Time since arrival	−0.14**	−0.13**	0.06
	(0.04)	(0.04)	(0.05)
Negative flight experiences		0.75***	0.74***
		(0.10)	(0.10)
No answers on flight experience		0.16	0.12
		(0.10)	(0.10)
Subsidiary protection			0.49*
			(0.24)
Suspension of deportation			0.71*
			(0.30)
Awaiting outcome			0.50***
			(0.10)
Seeking family reunification			0.98***
			(0.15)
Private accom. w/ other refugees			−0.46***
			(0.11)
Private accom. w/o other refugees			−0.42***
			(0.11)
Currently in education			0.40*
			(0.19)
Currently working			−0.40**
			(0.15)
Not seeking work			0.38*
			(0.17)
Number of courses attended			0.01
			(0.05)
Time with people from count. o. origin			−0.04
			(0.05)
Time with Germans			−0.18***
			(0.05)
Time with others			−0.06
			(0.05)
German language ability			−0.14*
			(0.05)
Adj. R^2	0.035	0.048	0.083
$\triangle R^2$		0.013***	0.035***

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table S4. Regression Coefficients Predicting Distress, Complete Cases Only

	Model 1a	Model 2a	Model 3a
Intercept	2.80***	2.47***	2.67***
	(0.09)	(0.11)	(0.14)
Female	0.45***	0.53***	0.41***
	(0.10)	(0.10)	(0.10)
Age	0.23***	0.26***	0.17**
	(0.05)	(0.05)	(0.05)
Medium level of education	−0.11	−0.12	0.06
	(0.12)	(0.12)	(0.12)
High level of education	−0.12	−0.12	0.12
	(0.12)	(0.12)	(0.13)
Afghanistan	0.71***	0.64***	0.39*
	(0.15)	(0.15)	(0.16)
Iraq	0.17	0.19	−0.05
	(0.15)	(0.15)	(0.15)
Eritrea	−0.99***	−1.08***	−1.30***
	(0.22)	(0.22)	(0.22)
Other	0.80***	0.87***	0.56***
	(0.13)	(0.13)	(0.15)
Time since arrival	−0.15**	−0.14**	0.07
	(0.05)	(0.05)	(0.05)
Negative flight experiences		0.72***	0.72***
		(0.11)	(0.11)
No answers on flight experience		0.13	0.09
		(0.12)	(0.12)
Subsidiary protection			0.49
			(0.27)
Suspension of deportation			0.60
			(0.34)
Awaiting outcome			0.45***
			(0.11)
Seeking family reunification			1.03***
			(0.16)
Private accom. w/ other refugees			−0.54***
			(0.12)
Private accom. w/o other refugees			−0.56***
			(0.13)
Currently in education			0.31
			(0.21)
Currently working			−0.49**
			(0.16)
Not seeking work			0.38*
			(0.19)
Number of courses attended			0.00
			(0.05)
Time with people from count. o. origin			−0.06
			(0.05)
Time with Germans			−0.20***
			(0.05)
Time with others			−0.06
			(0.05)
German language ability			−0.10
			(0.06)
Adj. R²	0.04	0.05	0.09
Num. obs.	3397	3397	3397
ΔR^2		0.01***	0.04***

***$p < 0.001$, **$p < 0.01$, *$p < 0.05$

Table S5. Regression Coefficients Predicting Life Satisfaction, Imputed Variables

	Model 1b	Model 2b	Model 3b
Intercept	7.27***	7.51***	7.21***
	(0.07)	(0.08)	(0.11)
Female	0.31***	0.30***	0.27***
	(0.07)	(0.07)	(0.08)
Age	−0.04	−0.05	−0.03
	(0.04)	(0.04)	(0.04)
Medium level of education	−0.18	−0.18	−0.28**
	(0.10)	(0.10)	(0.10)
High level of education	−0.26**	−0.28**	−0.51***
	(0.10)	(0.10)	(0.10)
Afghanistan	0.19	0.24*	0.56***
	(0.11)	(0.11)	(0.12)
Iraq	−0.11	−0.11	0.17
	(0.11)	(0.11)	(0.12)
Eritrea	−0.10	−0.04	0.31
	(0.16)	(0.16)	(0.16)
Other	−0.27**	−0.30**	0.10
	(0.10)	(0.10)	(0.11)
Time since arrival	0.19***	0.19***	−0.01
	(0.04)	(0.04)	(0.04)
Negative flight experiences		−0.36***	−0.34***
		(0.09)	(0.09)
No answers on flight experience		−0.34***	−0.32***
		(0.09)	(0.09)
Subsidiary protection			−0.30
			(0.20)
Suspension of deportation			−0.28
			(0.25)
Awaiting outcome			−0.48***
			(0.08)
Seeking family reunification			−0.68***
			(0.13)
Private accom. w/ other refugees			0.66***
			(0.09)
Private accom. w/o other refugees			0.68***
			(0.10)
Currently in education			−0.19
			(0.16)
Currently working			0.17
			(0.12)
Not seeking work			0.04
			(0.14)
Number of courses attended			−0.03
			(0.04)
Time with people from count. o. origin			−0.06
			(0.04)
Time with Germans			0.26***
			(0.04)
Time with others			−0.02
			(0.04)
German language ability			0.09*
			(0.04)
Adj. R^2	0.016	0.021	0.079
ΔR^2		0.005***	0.058***

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$

Table S6. Regression Coefficients Predicting Life Satisfaction, Complete Cases Only

	Model 1b	Model 2b	Model 3b
Intercept	7.31***	7.55***	7.28***
	(0.07)	(0.09)	(0.12)
Female	0.30***	0.28***	0.26**
	(0.08)	(0.08)	(0.08)
Age	−0.00	−0.02	0.00
	(0.04)	(0.04)	(0.04)
Medium level of education	−0.22*	−0.21*	−0.30**
	(0.10)	(0.10)	(0.10)
High level of education	−0.30**	−0.31**	−0.50***
	(0.10)	(0.10)	(0.11)
Afghanistan	0.23	0.28*	0.61***
	(0.12)	(0.12)	(0.13)
Iraq	−0.02	−0.02	0.27*
	(0.12)	(0.12)	(0.12)
Eritrea	−0.12	−0.06	0.29
	(0.17)	(0.18)	(0.17)
Other	−0.30**	−0.33**	0.07
	(0.11)	(0.11)	(0.12)
Time since arrival	0.19***	0.19***	−0.02
	(0.04)	(0.04)	(0.04)
Negative flight experiences		−0.38***	−0.36***
		(0.09)	(0.09)
No answers on flight experience		−0.32***	−0.32***
		(0.10)	(0.09)
Subsidiary protection			−0.47*
			(0.22)
Suspension of deportation			−0.38
			(0.28)
Awaiting outcome			−0.54***
			(0.09)
Seeking family reunification			−0.70***
			(0.13)
Private accom. w/ other refugees			0.61***
			(0.10)
Private accom. w/o other refugees			0.68***
			(0.10)
Currently in education			−0.18
			(0.17)
Currently working			0.15
			(0.13)
Not seeking work			0.03
			(0.15)
Number of courses attended			−0.05
			(0.04)
Time with people from count. o. origin			−0.06
			(0.04)
Time with Germans			0.27***
			(0.04)
Time with others			−0.01
			(0.04)
German language ability			0.08
			(0.05)
Adj. R^2	0.01	0.02	0.07
Num. obs.	3661	3661	3661
$\triangle R^2$		0.01**	0.05***

***$p < 0.001$, **$p < 0.01$, *$p < 0.05$

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