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Conflict intensity in the region of birth increases religiosity among refugees

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Abstract

Do violent conflicts increase religiosity? This study draws on evidence from a large-scale survey on refugees in Germany linked with data on time-varying conflict intensity in refugees' birth regions prior to the survey interview. The results show that the greater the number of conflict-induced fatalities in the period before the interview, the more often refugees pray. The relationship between conflict and praying holds equally across demographic subgroups. Evidence suggests that both short- and long-term cumulative fatalities in refugees' birth regions affect how often they pray. Additionally, the link between conflict and praying is stronger for refugees who have family and relatives still living in their country of origin. Finally, we show that the conflicts that matter are those occurring within the refugees' specific region of birth rather than in other regions in the country. Implications for existential insecurity theory and cultural evolutionary theory are discussed.

Keywords

Religiosity, existential insecurity, refugees, praying, war

Acknowledgments

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1. Introduction

Do violent conflicts increase people's religiosity, and if so, why? Several studies found that individuals more exposed to violent conflicts where they live are more religious, even years after the conflict ended (Du & Chi, 2016; Henrich, Bauer, Cassar, Chytilová, & Purzycki, 2019; Immerzeel & Van Tubergen, 2011; Keinan, 1994; Ruiter & Van Tubergen, 2009; Schuster et al., 2001; Sosis & Handwerker, 2011). Cultural evolutionary theory (Henrich et al., 2019) argues that wars and other external threats cause people to adhere more tightly to religious beliefs and practices, and to social norms more generally, because norms foster ingroup cooperation and group survival (Boyd & Richerson, 2005; Henrich & Boyd, 2001; Norenzayan et al., 2016; Purzycki et al., 2016; Roos, Gelfand, Nau, & Lun, 2015). Relatedly, existential insecurity theory (Malinowski, 1948; Norris & Inglehart, 2004) claims that religious beliefs and practices may provide a psychological mechanism for people to cope with existential insecurities caused by violent conflicts or other threats (Malinowski, 1948; Norris & Inglehart, 2004). Belief in life after death (Jonas & Fischer, 2006; Norenzayan & Hansen, 2006), belief in supernatural powers with which one can negotiate actively (Stark & Finke, 2000), and religious rituals can alleviate anxiety and stress (Ano & Vasconcelles, 2005; Berkessel et al., 2021; Harrison, Koenig, Hays, Eme-Akwari, & Pargament, 2001; Pargament, 2001; Schnabel & Schieman, 2022).

Yet, compelling evidence for the *conflict-religiosity* hypothesis is limited due to the possibility of endogenous selection, i.e., unobserved characteristics associated with people's religiosity and exposure to violent conflicts (Cesur, Freidman, & Sabia, 2020; Henrich et al., 2019; Shai, 2022; Zussman, 2014). In addition, earlier work has paid little attention to two different mechanisms that specify under which conditions violent conflicts lead to increased adherence to religious norms and religious coping. In, what we propose to call a "weaker" version of existential insecurity theory and cultural evolutionary theory (hereafter: insecurity/evolutionary theories), it is argued that people turn to religion when they personally experience existential risks. According to this argument, so-called *egotropic threats* (Norris & Inglehart, 2004), such as the fear that one may soon die on the battlefield, explain the conflict-religiosity link.

By contrast, a "stronger" version of insecurity/evolutionary theories argues that the experience of violent conflicts can increase people's religiosity, even when people personally face no risk. This can happen when conflicts induce *sociotropic threats* (Norris & Inglehart, 2004) and

people believe that their in-group members (i.e., family, friends, acquaintances, and other people within their community) are confronted with life-threatening risks.

In this study, we provide rigorous evidence for the conflict-religiosity hypothesis and the strong version of insecurity/evolutionary theories. We test the sociotropic threat mechanism and find that violent conflicts increase religiosity, even when people themselves are not in danger. We introduce an identification strategy that relies on a natural experiment (Gangl, 2010), allowing us to perform a strict test of the impact of sociotropic threat on religiosity. We rely on nationally representative survey data among refugees who arrived in Germany between 2013 and 2016. We study their frequency of praying as a measure of religiosity and link these individual-level data on praying to time-varying contextual sources of conflict intensity in the refugees' home countries. We thereby take advantage of the exogenous variation in conflict intensity in the period preceding the interview of refugees who originate from different countries and regions and the random assignment of the period and day of the interview.

Specifically, we measure cumulative conflict-induced fatalities in respondents' regions of birth in the weeks before the interview. Because many refugees have strong connections to friends and family who are still living in their region of origin (Löbel, 2020; Löbel & Jacobsen, 2021), such existentially threatening conditions shape their feelings of anxiety and stress about their in-group (Jaschke & Kosyakova, 2021), i.e., refugees are subject to time-varying changes in sociotropic threat. Previous research indicates that periods of more intense conflicts in refugees' countries of origin are negatively related to refugees' mental health and well-being and increase their feelings of helplessness and depression (Keita & Schewe, 2021; Sønderskov, Dinesen, Hansen, Østergaard, & Danckert, 2021). Because existential threats in their regions of origin do not personally threaten refugees living in Germany (i.e., these conflicts do not constitute egotropic threats), our research design allows us to assess the impact of sociotropic threats on religiosity and thereby provides a rigorous test of the strong version of insecurity/evolutionary theories.

2. Materials and methods

2.1 Data

This study was approved by the Ethics Committee of the Faculty of Social and Behavioural Sciences at Utrecht University (22-0434). We used longitudinal data from the IAB-BAMF-

SOEP Survey of Refugees in Germany (version 1619 v1) (Bruecker, Rother, & Schupp, 2017; Liebig et al., 2021). The first wave of the survey took place in 2016, in the aftermath of the surge in the number of refugees coming into Europe in 2015. The data are representative of asylum-seekers and refugees arriving in Germany between 2013 and 2016 (Kühne, Jacobsen, & Kroh, 2019). The anchor persons in the survey were drawn from the Central Register of Foreigners, the national registry for all foreign citizens in Germany. The survey was based on the concept of household, and every adult in the targeted households was interviewed. The data collection was based on computer-assisted personal interviews (CAPIs), and questionnaires were administered in seven languages (i.e., Arabic, English, Farsi/Dari, German, Kurmanji, Pashto, and Urdu).

The original dataset included 8321 individuals who were surveyed at least once. For our analyses, we selected refugees from Afghanistan, Iraq, and Syria, as only for these origin countries were there enough cases. We pooled four waves of refugees for the survey: wave 1 (fieldwork period June – December 2016), 2 (fieldwork period June 2017 – March 2018), 3 (fieldwork period September 2018 – February 2019), and 4 (fieldwork period August 2019 – January 2020). Our analytical sample consisted of 4897 respondents and 7193 person-year observations (see Supplementary Appendix Table S1 for excluded cases).

2.2 Dependent variable

To capture religiosity, various measures have been used in previous works, most often (a) religious service attendance, (b) self-assessed religiosity, and (c) praying (Bentzen, 2021; Molteni et al., 2021; Storm, 2017). We do not analyze religious service attendance because for immigrants, including refugees, finding a place of worship can be difficult since they have recently arrived in the host country. Indeed, their level of religious attendance is affected by their opportunity to live near a church or mosque (Van Tubergen, 2013). Respondents were also asked to self-assess their religiosity through the question ‘How religious are you?’. However, this question was administered only in one specific wave (wave 2). Hence, the variation in our key dependent variable and sample size could be significantly reduced, creating problems of statistical power for our analyses.

To measure religiosity, we examine refugees’ self-assessed frequency of praying, which strongly correlates with other measures of religiosity (See Supplementary Table S5). We adopted a strategy used in earlier work (Hout & Greeley, 1998; Molteni, 2020; Molteni & van

Tubergen, 2022), and recoded the original answer categories into the probability of daily praying

We, therefore, focused on praying frequency. In Supplementary Table S15, we present data on the relationship between the proportion of refugees who pray every day and two other measures of religiosity, namely: (1) “How religious are you?” and (2) “How important is religion for your well-being?”. In 2017 and 2019, the IAB-BAMF-SOEP Survey of Refugees asked all respondents about their praying habits, and in 2018 the survey asked first-time respondents. Respondents were asked the question: “Approximately how often do you pray?”. Following earlier studies in this field (Hout & Greeley, 1998; Molteni, 2020; Molteni & van Tubergen, 2022), we recoded the original scale into the *probability of daily praying* (“Never” = 0, “Less often” = 5/365, “Monthly” = 12/365, “Weekly” = 52/365, and “Daily” = 1; See Supplementary Table S2). It should be emphasized that this variable does not capture the full range of daily praying in detail. Supplementary Appendix Figure S1 depicts the variation in the probability of daily praying during the observation period in the analytical sample.

2.3 Independent variable

To measure cumulative fatalities, we matched the IAB-BAMF-SOEP Survey of Refugees with contextual time-varying data on the intensity of conflicts in the region of birth (see Supplementary Table S3 for the 10 most common regions included in this study). To measure the intensity of conflicts in the birth region, we used data from the Armed Conflict Location and Event Data Project (ACLED) (Raleigh, Linke, Hegre, & Karlsen, 2010). The ACLED database contains information on the exact dates, locations, and a number of fatalities for various types of political violence and conflicts (battles, explosions, remote violence, riots, and violence against civilians). For each birth-regions-date observation, we calculated the number of people who were killed as a result of these conflicts.

Theoretically, one could expect that events that occurred very recently are more impactful and stressful than events that happened long ago. However, considering a short time span (e.g., with a one-day or two-day lag) would lead to many responses indicating zero fatalities. Therefore, our main analyses are based on the cumulative fatalities in the birth region one week before the interview ($t-1w$). In addition, we present the results across different temporal frames, namely, two days ($t-2d$), two weeks ($t-2w$), three weeks ($t-3w$), four weeks ($t-4w$), and eight weeks ($t-8w$) before the interview. We standardized these measures to have a mean of zero and a standard deviation of one.

2.4 Descriptive statistics

Table 1 presents information about the refugee groups in the sample. Our data span 4897 refugees from Afghanistan, Iraq, and Syria. At the time of the interview, these refugees had stayed slightly less than three years, on average, in Germany. Among refugees from each of the three origin countries, the majority of the respondents are Muslim (86-90%) and men (58-63%). On average, 42% of the Iraqi refugees in our sample pray every day, whereas this is 54% among Syrian refugees and 65% among Afghan refugees. See the Supplementary Methods for further details about the data and measures (Figure S1, Tables S1-S5).

Table 1 Descriptive information on refugee groups in the sample

Country of origin	Afghanistan	Iraq	Syria
Period of data collection	2017(6)- 2020 (1)	2017(6)- 2020 (1)	2017(6)- 2020 (1)
Sample size	730	830	3337
Number of birth regions	32	18	14
Cumulative fatalities in birth region 1 week before interview (mean and SD)	8.75 (16.94)	8.53 (21.28)	14.34 (25.88)
Female participants	37%	42%	41%
Age (mean and range)	34 (18–78)	35 (17–92)	36 (17–97)
Years of stay in Germany (mean and range)	2.9 (0–6)	2.7 (0–6)	2.9 (0–6)
Religion	Muslim 86% Christian 4%	Muslim 88% Christian 8%	Muslim 90% Christian 5%
Praying daily (mean)	0.65	0.42	0.54

Note: unweighted data. *Data source:* IAB-BAMF-SOEP Survey of Refugees, doi: 10.5684/soep.iab-bamf-soep-mig.2019, linked to the data from the ACLED.

3. Results

3.1 Main effect of fatalities in the region of birth

Table 2 presents the results of linear regression models, which estimate the effect of conflict-induced fatalities in refugees' region of birth on their frequency of praying in percentage points, i.e., coefficients are multiplied by 100 (See Supplementary Table S6 for full models). The findings show that higher levels of cumulative fatalities in the region of birth in the week prior

to the interview result in a higher probability of daily praying among refugees in Germany (Model 1). The estimates are statistically significant ($p < 0.01$, two-sided test). This effect remains after we added fixed effects for the survey year, the German federal state where the refugee resided at the time of the survey, and the refugees' country of birth (Model 2).

Table 2: Linear regression of the probability of daily praying among refugees, in percentage points

	Model 1	Model 2	Model 3
	Coef.	Coef.	Coef.
	(SE)	(SE)	(SE)
Standardized cumulative fatalities in birth region (t-1w)	1.86** (0.55)	1.40* (0.57)	1.51** (0.54)
Survey year FE	NO	YES	YES
Federal state FE	NO	YES	YES
Country of birth FE	NO	YES	YES
Individual-level controls	NO	NO	YES
Observations	7193	7193	7193
Degrees of freedom	1	20	37

Notes: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$ (two-sided tests). FE = Fixed effects. Full models are presented in Supplementary Table S6.

Data source: IAB-BAMF-SOEP Survey of Refugees, doi: 10.5684/soep.iab-bamf-soep-mig.2019, linked to the data from the ACLED.

In Model 3, we added individual-level controls: length of stay in Germany, gender, having a partner, having children below the age of 16 in the household, age, religious affiliation (differentiating between “Christian,” “Muslim-Shiite,” “Muslim-Sunni,” “Muslim-other,” “Yezidi,” and “other”) and education (See Supplementary Table S2 and S4 for details). Even after we include these controls at the individual level, the effect of cumulative fatalities on praying frequency remains (Model 3). In terms of the size of the effect, Model 3 reveals that with an increase of one standard deviation in cumulative fatalities one week before the interview in the region of birth (~50 fatalities, see Supplementary Table S4), the probability of daily praying increases by 1.5 percentage points.

Does the effect of violent conflicts in refugees' birth region depend on the time lag? Table 3 shows the results of models that use different time lags for cumulative fatalities in the region

of birth, reaching up to eight weeks before the interview (See Supplementary Table S7 for full models). All models report a statistically significant effect ($p < 0.01$, two-sided test). When combined with the results of Table 2, the evidence suggests that both short- and long-term cumulative fatalities in refugees' region of birth affect how often refugees pray.

Table 3: Linear regression of the probability of daily praying, in percentage points: different time lags for cumulative fatalities in the region of birth

	Standardized cumulative fatalities in the region of birth: Time lag before the interview	Coef. (SE)
Model 4.1	Two days lag (t-2d)	1.40** (0.50)
Model 4.2	Two weeks lag (t-2w)	1.40* (0.57)
Model 4.3	Three weeks lag (t-3w)	1.51** (0.58)
Model 4.4	Four weeks lag (t-4w)	1.58** (0.59)
Model 4.5	Eight weeks lag (t-8w)	1.88** (0.59)

Notes: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$ (two-sided tests). All models control for the same variables as in Model 3 in Table 2. Full models are presented in Supplementary Table S7.

Data source: IAB-BAMF-SOEP Survey of Refugees, doi: 10.5684/soep.iab-bamf-soep-mig.2019, linked to the data from the ACLED.

3.2 Analyses per demographic subgroup

It is possible that the effect of fatalities in the birth region on praying intensity varies across demographic subpopulations. To examine effect heterogeneity, we explored whether the influence of fatalities in the region of birth depends on key demographic characteristics, namely, gender, age, education level, and length of stay in Germany.

Figure 1 shows the results of the models that include interaction effects for these demographic variables. Presented are average marginal effects (See Supplementary Table S8 for full models). It appears that the effect of cumulative fatalities in the region of birth (1-week lag) does not vary by gender, age, education level, or duration of stay. Thus, in Germany, fatalities in the regions in which refugees were born have the same impact on how often they pray whether they

are women or men, whether they are young or old, whether they received primary, secondary, or tertiary education, and whether they have been in Germany less than 2 years or more than 3 years. Hence, the results of the main models are not driven by a subset of refugees but pertain to different demographic groups.

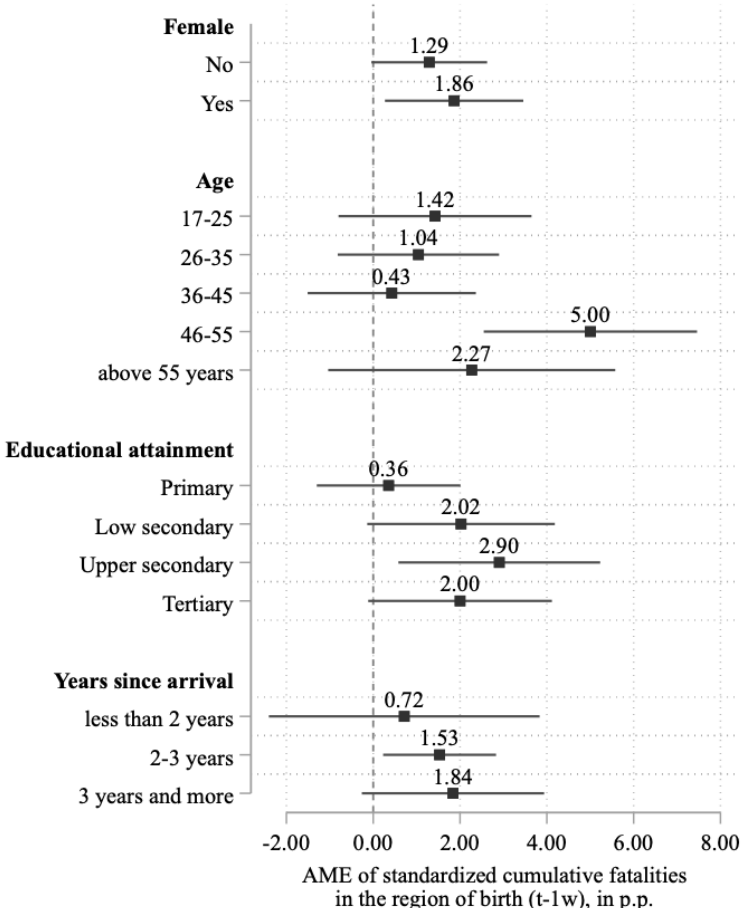


Figure 1: Average marginal effects of cumulative fatalities in the region of birth one week before the interview on the probability of daily praying among refugees, in percentage points and by sociodemographic characteristics (with 95% CIs).

Notes: Results from linear regressions. All models control for the same variables as Model 3 in Table 2. Full models are reported in Supplementary Table S8 for gender (Model 5.1), age (Model 5.2), educational attainment (Model 5.3), and years since arrival (Model 5.14).

Data source: IAB-BAMF-SOEP Survey of Refugees, doi: 10.5684/soep.iab-bamf-soep-mig.2019, linked to the data from the ACLED.

3.3 Robustness checks

We performed several robustness checks. First, we examined whether conclusions change when using different specifications of praying. We replicated our main models (Table 2), but instead of estimating linear regression models of the probability of daily praying, we estimated (1) a binary logit model of 0/1 daily prayer, (2) a linear probability model of 0/1 daily prayer, (3) an OLS model of the original measure of praying (“Never” = 1, “Less often” = 2 “Monthly” = 3, “Weekly” = 4 and “Daily” = 5), and (4) an ordered logit model of the original measure of praying. The results of these additional analyses are in line with our main conclusions. We reported the details of the full models in Supplementary Table S9.

Second, we considered alternative measures of religiosity. Earlier studies have shown strong correlations between frequency of praying and other measures of religiosity (Berkessel et al., 2021; Voas & Crockett, 2005). Nevertheless, it could be argued that praying is a religious practice that is more often used as a coping mechanism. We therefore replicated our main models (Table 2) for other measures of religiosity: (1) self-assessed religiosity (“Not at all” = 1 to “Very much” = 4), (2) self-assessed importance of religion for own well-being (“Not at all” = 1 to “Very much” = 4), and (3) daily attendance of church or religious events (“Never” = 0, “seldom” = 5/365, “at least monthly” = 12/365, “at least weekly” = 52/365 and “Daily” = 1). In line with our earlier conclusions, results show a statistically significant positive effect of cumulative fatalities in the region of birth on both the importance of religion for own well-being ($p < 0.01$, two-sided test), and daily church attendance ($p < 0.01$, two-sided test). The effect of conflict intensity on self-assessed religiosity does not reach conventional levels of statistical significance ($p = 0.141$, two-sided test). This could be a result of the drastically reduced sample size as this question – unlike the other questions on religiosity – was only surveyed in a single wave. We reported the results from these additional analyses in Supplementary Table S10.

Third, we estimated models in which we included additional characteristics for origin countries and birth regions. Since birth regions vary in population size, the absolute measure of cumulative fatalities may be subject to different “salience” in smaller and larger populations. Therefore, we controlled for population size in refugees’ birth regions based on national counts. We used data from the 2011 census in Afghanistan and Syria and the 2009 census in Iraq (Brinkhoff, 2022). In addition, we considered the religiosity of the populations in the birth regions to capture possible selectivity related to the birth region and praying frequency. Specifically, we relied on the individual-level data from the 2008-2016 Gallup World Polls, an

annual representative survey covering over 120 countries (Gallup, 2022). Gallup World Polls asked respondents the following question: “Is religion an important part of your daily life?” To construct macro-level measures of religiosity for each birth region, we took the weighted mean of individuals who responded that religion was an important part of their daily life (averaged across survey years 2008-2016) and aggregated it across regions of birth for Afghanistan, Iraq, and Syria. Results show that neither population size nor average religiosity in refugees’ region of birth is related to the frequency of prayer among refugees in Germany. The results for cumulative fatalities in the birth region remain the same as in our main models. We report the findings from these robustness analyses in Supplementary Table S11.

Fourth, instead of applying cluster correction at the person level (to correct for repeated observations among some respondents), we estimated individual-level random and fixed-effects panel regression models (See Supplementary Table S12). The individual-level random specification estimates the *between-person* effect between conflict intensity in the birth region and frequency of praying, whereas the individual-level fixed-effect model estimates the *within-person* effect between conflict intensity and praying. Hence, in the fixed-effects specification, all time-constant individual differences are dropped from the equation, and any bias associated with time-constant individual differences is taken into account. The findings from both the individual-level random and fixed effects models confirm the conclusions of the main models. The Durbin-Wu-Hausmann test, which detects endogenous regressors in a regression model, reveals that the fixed effects specification is not superior to the random effects specification ($\chi^2 = 27.38; p = 0.443$). This suggests that the independent variables in our regression models are exogenous to our outcome variable.

Together, these additional analyses are in line with the conflict-religiosity hypothesis and sociotropic threat mechanism and suggest that conflict intensity in the birth region influences praying frequency.

3.4 Direct tests of the sociotropic threat mechanism

We tested the sociotropic threat mechanism more directly in two ways. First, if the mechanism linking conflict intensity to religiosity is real, then we expect that the effect of conflict on the frequency of praying should be particularly pronounced for refugees who maintain more social connections with their country of origin. Studies have shown that some refugees are tightly

connected to their origin country, whereas others are not (Löbel, 2020; Löbel & Jacobsen, 2021).

We therefore considered the number of close connections refugees have with those living in their country of origin. We constructed a measure of close connections at the time of the survey based on refugees' reported information about the presence of their (1) partner, (2) children (up to eight), (3) father, (4) mother, (5) siblings, and (6) other "close relatives" in their country of origin. We took the sum of the presence of these six types of close ties. The survey, however, does not contain information about the presence of friends or acquaintances in the countries of origin. Additionally, it should be emphasized that this measure is based on countries of origin rather than regions. However, we assumed that many of the refugees' close ties live in their region of birth.

Using the benchmark model (Model 3 in Table 2), we included interaction effects between cumulative fatalities one week before the interview in the refugees' respective regions of birth and the measure of their close connections with their country of origin. The analyses show that there is a statistically significant effect ($p < 0.05$, two-sided test), i.e., the greater the number of family members or relatives remaining in the country of origin is, the stronger the effect of conflict intensity in the region of birth on the probability of daily praying (Supplementary Table S12, Model 10.2). Upon closer inspection, it appears that what matters is whether refugees have any family or relatives at all in their country of origin, since the number of connections has no effect (Supplementary Table S12, Model 10.4). These results are illustrated in Figure 2.

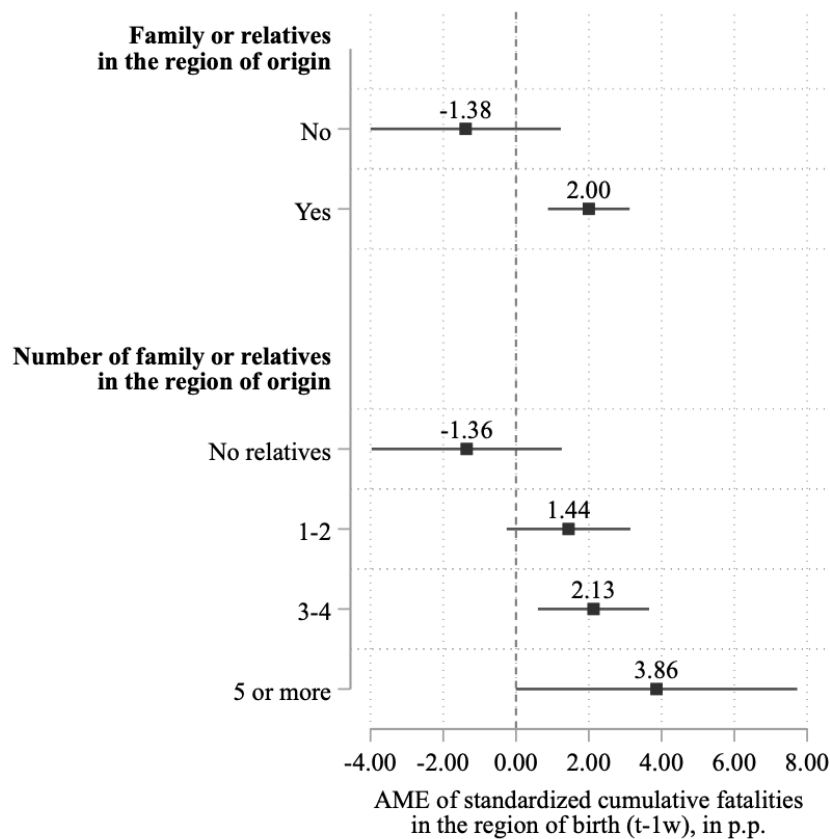


Figure 2: Average marginal effects of cumulative fatalities in the region of birth one week before the interview on the probability of refugees' daily prayer, in percentage points, by the number of families and relatives living in the origin country

Notes: Results from linear regression (Models 10.2 and 10.4). All models control for the same variables as Model 3 in Table 2. Full models are reported in Supplementary Table S12.

Data source: IAB-BAMF-SOEP Survey of Refugees, doi: 10.5684/soep.iab-bamf-soep-mig.2019, linked to the data from the ACLED.

We also tested the sociotropic threat hypothesis by comparing the intensity of conflicts in refugees' region of birth with the intensity of conflicts occurring in other regions within their country of origin. We assumed that conflicts in refugees' region of origin, where they presumably have more social connections, have a greater effect than conflicts occurring elsewhere in their country of origin. Therefore, it was expected that fatalities in the region of birth are more strongly related to praying than fatalities occurring in the rest of the country.

Table 4: Linear regression of the probability of daily praying, in percentage points: different time lags and regions of cumulative fatalities

Standardized cumulative fatalities:		Coef.
Region and time lag before the interview		(SE)
Model 11.1	Region of birth, one week lag (t-1w)	1.49** (0.54)
	Other regions, one week lag (t-1w)	-0.76 (0.60)
Model 11.2	Region of birth, two days lag (t-2d)	1.40** (0.50)
	Other regions, two days lag (t-2d)	-0.05 (0.57)
Model 11.3	Region of birth, two weeks lag (t-2w)	1.34* (0.57)
	Other regions, two weeks lag (t-2w)	-1.70** (0.61)
Model 11.4	Region of birth, three weeks lag (t-3w)	1.42* (0.58)
	Other regions, three weeks lag (t-3w)	-2.18** (0.62)
Model 11.5	Region of birth, four weeks lag (t-4w)	1.48* (0.59)
	Other regions, four weeks lag (t-4w)	-1.77** (0.62)
Model 11.6	Region of birth, eight weeks lag (t-8w)	1.81** (0.60)
	Other regions, eight weeks lag (t-8w)	-0.90 (0.63)

Notes: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$ (two-sided tests). All models control for the same variables as Model 3 in Table 2. Full models are presented in Supplementary Table S14.

Data source: IAB-BAMF-SOEP Survey of Refugees, doi: 10.5684/soep.iab-bamf-soep-mig.2019, linked to the data from the ACLED.

To test this conjecture, we used our benchmark model (Model 3 in Table 2) and included an additional variable capturing cumulative fatalities one week before the interview in *other regions* in the origin country. Table 4 presents the results (See Supplementary Table S14 for full models). In line with our expectation, the effect of cumulative fatalities in refugees' regions

of birth on praying probability is still statistically significant ($p < 0.01$, two-sided test). In contrast, conflict intensity elsewhere in the refugees' origin country has no effect. Subsequently, we estimated models with different time lags and again found that conflict intensity in refugees' regions of birth increases the probability of daily praying, whereas we did not find such an effect for conflict intensity in other regions.

4. Discussion

In conclusion, our study among recent refugees from Afghanistan, Iraq and Syria who live in Germany suggests that time-varying changes in the intensity of conflicts in their region of birth are positively related to religiosity. Specifically, the higher the number of cumulative conflict-induced fatalities in the period before the refugees were interviewed, the more often these refugees indicated that they prayed. Evidence suggests that both short- and long-term cumulative fatalities in the refugees' regions of origin affect how often they pray. The relationship between conflict and praying frequency holds equally across demographic subgroups, as we do not find significant differences by gender, age, length of stay, and education level.

What are the broader implications of this study? First, our findings directly speak to research on the hypothesized link between exposure to war-related conflicts and religiosity (Cesur et al., 2020; Du & Chi, 2016; Henrich et al., 2019; Immerzeel & Van Tubergen, 2011; Keinan, 1994; Ruiters & Van Tubergen, 2009; Schuster et al., 2001; Shai, 2022; Sosis & Handwerker, 2011; Zussman, 2014). Although earlier work provided empirical support for the conflict-religiosity hypothesis, concerns about bias from selection and omitted variables remained. Our data, which come from a natural experiment (Gangl, 2010), provided a rigorous test of this hypothesis by taking advantage of the random assignment of the date at which refugees were interviewed, and the exogenous time-varying variation in conflict intensity in refugees' birth region. Furthermore, we found that the results are robust to different measures of religiosity, model specifications, and when applying individual-level fixed-effects models, which compare the relationship between conflict intensity and praying *within* persons.

Second, we provide evidence to suggest that the conflict-religiosity relationship can hold, even when people personally face no danger. Violent conflicts can increase people's religiosity when such conflicts induce sociotropic threats, i.e., when people believe their family, friends, acquaintances, or other in-group members are exposed to existential risks. We were able to provide a strong test of the impact of sociotropic threats, as refugees were not personally

threatened at the time of the interviews. In line with this sociotropic threat mechanism, we find that the link between conflict and praying is particularly strong for refugees who maintain personal connections with their origin country and are, therefore, more affected by the conflict there. Additionally, our results exhibit that conflict intensity that occurs within refugees' regions of birth increases praying frequency rather than conflicts occurring in other regions within the birth country. Presumably, most of the refugees' personal connections still live in their birth region, which makes events unfolding there more stressful for them.

These findings shed new light on theories and findings on cultural evolution, existential insecurity, and religiosity. Studies in this field have examined how country- and regional-level contexts that are related to existential threats can be drivers of people's religiosity, such as exposure to poverty and insecure economic conditions (Ager & Ciccone, 2017; Barber, 2011; Chen, 2010; Herzer & Strulik, 2017; Höllinger & Muckenhuber, 2019; Immerzeel & Van Tubergen, 2011; Molteni, 2020; Norris & Inglehart, 2004; Ruiter & Van Tubergen, 2009; Solt, Habel, & Grant, 2011; Storm, 2017; Van Ingen & Moor, 2015), earthquakes (Belloc, Drago, & Galbiati, 2016; Bentzen, 2019; Sibley & Bulbulia, 2012), and pandemics (Bentzen, 2021; Molteni et al., 2021). A limitation of earlier work is that observed patterns can be caused by both sociotropic and egotropic threats. Country- and regional-level characteristics that serve as proxies for existential threats, such as war, poverty, earthquakes, and pandemics, capture not only sociotropic threats but also egotropic risks. Multilevel modeling, which includes individual and contextual variables, does not provide a solution to this identification problem, as an existential threat to one's social connections and community (sociotropic threats) can impose personal risks in the future (egotropic threats). When poverty hits one's country or community, even those not currently living in poverty may fear they soon will. People exposed to war and conflicts where they live can turn to religion as they are personally at risk but also because they perceive their wider social network to be threatened.

The findings of our study suggest that sociotropic threats are a sufficient condition to trigger religious coping. We thereby provide evidence against a "weaker" version of existential insecurity theory and cultural evolutionary theory, which states that only egotropic threats are associated with religiosity. Instead, we find support for a stronger version of insecurity/cultural evolutionary theories, which posits that existential threats to one's in-group are a sufficient cause for religious coping. We established this link for refugees who are deeply affected by war-related conflicts that occur in their birth region. Further research is encouraged to examine

whether sociotropic threats can also explain the impact of exposure to poverty, earthquakes, and pandemics on religiosity.

Third, the findings of this study have implications for research and policy on the integration and well-being of refugees. Specifically, our study shows that not only are conditions in the receiving country and the characteristics of refugees important but that events unfolding in the region of origin can also shape their well-being and incorporation (Keita & Schewe, 2021; Sønderskov et al., 2021). Political violence and conflict can spread fear, insecurity, and uncertainty even among those not directly affected by the violence. From a policy perspective, our results imply that policymakers should pay attention to the situation in the origin countries when designing tools to support refugees' accommodation and well-being. Since religion offers a mechanism to cope with emotional distress caused by the conditions in origin countries, policies facilitating access to religious communities and services may help refugees who have recently arrived adapt to the new context. These insights have become more pressing as the number of military conflicts in the world (e.g., the Russian-Ukrainian war, the Syrian war) and the number of refugees has peaked in the past few years (Pettersson et al., 2021; UNHCR, 2022).

Data availability

The data on conflict intensity is from the Armed Conflict Location and Event Data Project (ACLED) (Raleigh et al., 2010). To access the data, researchers are required to register through the ACLED Access Portal (<https://developer.acleddata.com/>). The individual-level data on refugees comes from the 2016-2019 IAB-BAMF-SOEP Survey of Refugees. The survey is conducted jointly by the Institute for Employment Research (IAB), the research data center of the Federal German Office for Migration and Refugees (BAMF), and the German Socio-Economic Panel (SOEP) at the German Institute for Economic Research (DIW). External researchers can apply for access to these data by submitting a user-contract application to the Research Data Centre (FDZ) of the German Federal Employment Agency (BA) at the IAB (https://fdz.iab.de/en/pd_hd/iab-bamf-soep-survey-of-refugees-version-1619-v1/) or SOEP Research Data Center (https://www.diw.de/en/diw_01.c.601584.en/data_access.html).

Code availability

All code files for a complete reproduction of the analyses herein are available at: XXX [(URL will be publicly available upon publication)].

References

- Ager, P., & Ciccone, A. (2017). Agricultural risk and the spread of religious communities. *Journal of the European Economic Association*, *16*(4), 1021-1068.
- Ano, G. G., & Vasconcelles, E. B. (2005). Religious coping and psychological adjustment to stress: A meta-analysis. *Journal of Clinical Psychology*, *61*(4), 461-480.
- Barber, N. (2011). A cross-national test of the uncertainty hypothesis of religious belief. *Cross-Cultural Research*, *45*(3), 318-333.
- Belloc, M., Drago, F., & Galbiati, R. (2016). Earthquakes, religion, and transition to self-government in Italian cities. *The Quarterly Journal of Economics*, *131*(4), 1875-1926.
- Bentzen, J. S. (2019). Acts of God? Religiosity and natural disasters across subnational world districts. *The Economic Journal*, *129*(622), 2295-2321.
- Bentzen, J. S. (2021). In crisis, we pray: Religiosity and the COVID-19 pandemic. *Journal of Economic Behavior & Organization*, *192*, 541-583.
- Berkessel, J. B., Gebauer, J. E., Joshanloo, M., Bleidorn, W., Rentfrow, P. J., Potter, J., & Gosling, S. D. (2021). National religiosity eases the psychological burden of poverty. *Proceedings of the National Academy of Sciences*, *118*(39)
- Boyd, R., & Richerson, P. J. (2005). *The origin and evolution of cultures*. Oxford, United Kingdom: Oxford University Press.
- Brinkhoff, T. (2022). City population. Retrieved from <http://www.citypopulation.de>.

- Bruecker, H., Rother, N., & Schupp, J. (2017). *IAB-BAMF-SOEP-Befragung von Geflüchteten 2016: Studiendesign, Feldergebnisse sowie Analysen zu schulischer wie beruflicher Qualifikation, Sprachkenntnissen sowie kognitiven Potenzialen*. Berlin: DIW/SOEP.
- Cesur, R., Freidman, T., & Sabia, J. J. (2020). War, traumatic health shocks, and religiosity. *Journal of Economic Behavior & Organization*, 179, 475-502.
- Chen, D. L. (2010). Club goods and group identity: Evidence from Islamic resurgence during the Indonesian financial crisis. *Journal of Political Economy*, 118(2), 300-354.
- Du, H., & Chi, P. (2016). War, worries, and religiousness. *Social Psychological and Personality Science*, 7(5), 444-451.
- Gallup. (2022). Gallup World Polls. Retrieved from <https://www.gallup.com/analytics/318875/global-research.aspx>
- Gangl, M. (2010). Causal inference in sociological research. *Annual Review of Sociology*, 36, 21-47.
- Harrison, M. O., Koenig, H. G., Hays, J. C., Eme-Akwari, A. G., & Pargament, K. I. (2001). The epidemiology of religious coping: A review of recent literature. *International Review of Psychiatry*, 13(2), 86-93.
- Henrich, J., Bauer, M., Cassar, A., Chytilová, J., & Purzycki, B. G. (2019). War increases religiosity. *Nature Human Behaviour*, 3(2), 129-135.
- Henrich, J., & Boyd, R. (2001). Why people punish defectors: Weak conformist transmission can stabilize costly enforcement of norms in cooperative dilemmas. *Journal of Theoretical Biology*, 208(1), 79-89.
- Herzer, D., & Strulik, H. (2017). Religiosity and income: A panel cointegration and causality analysis. *Applied Economics*, 49(30), 2922-2938.
- Höllinger, F., & Muckenhuber, J. (2019). Religiousness and existential insecurity: A cross-national comparative analysis on the macro-and micro-level. *International Sociology*, 34(1), 19-37.

- Hout, M., & Greeley, A. (1998). What church officials' reports don't show: Another look at church attendance data. *American Sociological Review*, 63(1), 113-119.
- Immerzeel, T., & Van Tubergen, F. (2011). Religion as reassurance? Testing the insecurity theory in 26 European countries. *European Sociological Review*, 29(2), 359-372.
- Jaschke, P., & Kosyakova, Y. (2021). Does facilitated and early access to the healthcare system improve refugees' health outcomes? Evidence from a natural experiment in Germany. *International Migration Review*, 55(3), 812-842.
- Jonas, E., & Fischer, P. (2006). Terror management and religion: evidence that intrinsic religiousness mitigates worldview defense following mortality salience. *Journal of Personality and Social Psychology*, 91(3), 553.
- Keinan, G. (1994). Effects of stress and tolerance of ambiguity on magical thinking. *Journal of Personality and Social Psychology*, 67(1), 48-55.
- Keita, S., & Schewe, P. (2021). Out of sight, out of mind? Terror in the home country, family reunification options, and the well-being of refugees. *World Development*, 146, 105562.
- Kühne, S., Jacobsen, J., & Kroh, M. (2019). Sampling in times of high immigration: the survey process of the IAB-BAMF-SOEP survey of refugees. *Survey Methods: Insights from the Field*, doi:10.13094/SMIF-2019-00005
- Liebig, S., Bruecker, H., Leistner-Rocca, R., Goebel, J., Grabka, M. M., Rother, N., . . . Petre, S. (2021). *IAB-BAMF-SOEP Survey of Refugees 2019, data 2016-2019 IAB-BAMF-SOEP Survey of Refugees – version 1619 v1*. Nuremberg: Research Data Centre of the Federal Employment Agency (BA) at the Institute for Employment Research (IAB). doi:10.5684/soep.iab-bamf-soep-mig.2019
- Löbel, L. (2020). Family separation and refugee mental health—A network perspective. *Social Networks*, 61, 20-33.
- Löbel, L., & Jacobsen, J. (2021). Waiting for kin: a longitudinal study of family reunification and refugee mental health in Germany. *Journal of Ethnic and Migration Studies*, 47(13), 2916-2937. doi:10.1080/1369183X.2021.1884538

- Malinowski, B. (1948). *Magic, science and religion and other essays*. Whitefish, MT: Kessinger Publishing.
- Molteni, F. (2020). *A need for religion: Insecurity and religiosity in the contemporary world*. Leiden and Boston: Brill.
- Molteni, F., Ladini, R., Biolcati, F., Chiesi, A. M., Dotti Sani, G. M., Guglielmi, S., . . . Vezzoni, C. (2021). Searching for comfort in religion: insecurity and religious behaviour during the COVID-19 pandemic in Italy. *European Societies*, 23(sup1), S704-S720.
- Molteni, F., & van Tubergen, F. (2022). Immigrant generation and religiosity: a study of Christian immigrant groups in 33 European countries. *European Societies*, , 1-23.
- Norenzayan, A., & Hansen, I. G. (2006). Belief in supernatural agents in the face of death. *Personality and Social Psychology Bulletin*, 32(2), 174-187.
- Norenzayan, A., Shariff, A. F., Gervais, W. M., Willard, A. K., McNamara, R. A., Slingerland, E., & Henrich, J. (2016). The cultural evolution of prosocial religions. *Behavioral and Brain Sciences*, 39
- Norris, P., & Inglehart, R. (2004). *Sacred and Secular: Religion and Politics Worldwide*. Cambridge, United Kingdom: Cambridge University Press.
- Pargament, K. I. (2001). *The psychology of religion and coping: Theory, research, practice*. New York, NY: The Guilford Press.
- Pettersson, T., Davies, S., Deniz, A., Engström, G., Hawach, N., Höglbladh, S., & Öberg, M. S. M. (2021). Organized violence 1989–2020, with a special emphasis on Syria. *Journal of Peace Research*, 58(4), 809-825.
- Purzycki, B. G., Apicella, C., Atkinson, Q. D., Cohen, E., McNamara, R. A., Willard, A. K., . . . Henrich, J. (2016). Moralistic gods, supernatural punishment and the expansion of human sociality. *Nature*, 530(7590), 327-330.
- Raleigh, C., Linke, A., Hegre, H., & Karlsen, J. (2010). Introducing ACLED: an armed conflict location and event dataset: special data feature. *Journal of Peace Research*, 47(5), 651-660.

- Roos, P., Gelfand, M., Nau, D., & Lun, J. (2015). Societal threat and cultural variation in the strength of social norms: An evolutionary basis. *Organizational Behavior and Human Decision Processes*, *129*, 14-23.
- Ruiter, S., & Van Tubergen, F. (2009). Religious attendance in cross-national perspective: A multilevel analysis of 60 countries. *American Journal of Sociology*, *115*(3), 863-895.
- Schnabel, L., & Schieman, S. (2022). Religion Protected Mental Health but Constrained Crisis Response During Crucial Early Days of the COVID-19 Pandemic. *Journal for the Scientific Study of Religion*, *61*(2), 530-543.
- Schuster, M. A., Stein, B. D., Jaycox, L. H., Collins, R. L., Marshall, G. N., Elliott, M. N., . . . Berry, S. H. (2001). A national survey of stress reactions after the September 11, 2001, terrorist attacks. *New England Journal of Medicine*, *345*(20), 1507-1512.
- Shai, O. (2022). Does armed conflict increase individuals' religiosity as a means for coping with the adverse psychological effects of wars? *Social Science & Medicine*, *296* doi:10.1080/1369183X.2021.1884538
- Sibley, C. G., & Bulbulia, J. (2012). Faith after an earthquake: A longitudinal study of religion and perceived health before and after the 2011 Christchurch New Zealand earthquake. *PLoS One*, *7*(12), e49648.
- Solt, F., Habel, P., & Grant, J. T. (2011). Economic inequality, relative power, and religiosity. *Social Science Quarterly*, *92*(2), 447-465.
- Sønderskov, K. M., Dinesen, P. T., Hansen, B. T., Østergaard, S. D., & Danckert, B. (2021). Terrorism in the country of origin is linked to deterioration in the mental health of refugees. *Nature Human Behaviour*, *5*, 1555-1561.
- Sosis, R., & Handwerker, W. P. (2011). Psalms and coping with uncertainty: religious Israeli women's responses to the 2006 Lebanon war. *American Anthropologist*, *113*(1), 40-55.
- Stark, R., & Finke, R. (2000). *Acts of faith: Explaining the human side of Religion*. Berkeley, CA: University of California Press.

- Storm, I. (2017). Does economic insecurity predict religiosity? Evidence from the European Social Survey 2002–2014. *Sociology of Religion*, 78(2), 146-172.
- UNHCR. (2022). Refugee statistics. Retrieved from <https://www.unhcr.org/refugee-statistics/>
- Van Ingen, E., & Moor, N. (2015). Explanations of changes in church attendance between 1970 and 2009. *Social Science Research*, 52, 558-569.
- Van Tubergen, F. (2013). Religious change of new immigrants in the Netherlands: The event of migration. *Social Science Research*, 42(3), 715-725.
- Voas, D., & Crockett, A. (2005). Religion in Britain: Neither believing nor belonging. *Sociology*, 39(1), 11-28.
- Zussman, A. (2014). The effect of political violence on religiosity. *Journal of Economic Behavior & Organization*, 104, 64-83.

Conflict intensity in the region of birth increases religiosity among refugees: Supplementary Appendix

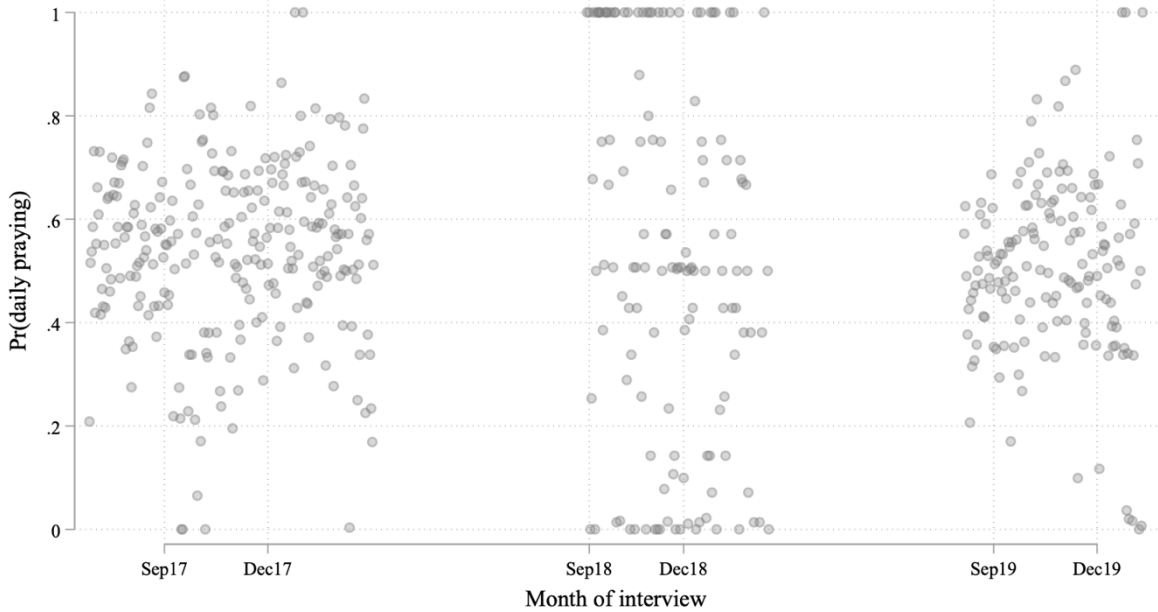
Frank van Tubergen, Yuliya Kosyakova & Agnieszka Kanas

Table of content

1. Descriptive information about the data	2
2. Estimation strategy	10
3. Main effect of fatalities in the region of origin: full models	11
4. Analyses per demographic subgroups: full models.....	15
5. Robustness checks: full models.....	17
6. Direct tests of the sociotropic threat mechanism: full models	25

1. DESCRIPTIVE INFORMATION ABOUT THE DATA

Figure S1: Observed mean of daily praying by interview date



Data source: IAB-BAMF-SOEP Survey of Refugees, doi: 10.5684/soep.iab-bamf-soep-mig.2019.

Table S1: Number of cases excluded from the original samples

	Persons	Person-years
Original sample	8321	18342
Cases excluded		
respondents who received the non-refugee questionnaire	80	107
arrived before 2013 or arrival year missing	389	683
country of birth is not Afghanistan, Iraq or Syria	1761	3657
missing region of birth	137	277
pray frequency was not surveyed	914	6099
missing on pray frequency	78	209
missing on model covariates (partner, education, religion, federal state)	65	117
= Analysis sample	4897	7193

Table S2: Variable definitions

Praying (TV)	Based on the survey question on praying frequency. We recoded the original scale to probability of daily praying, i.e., 0 “Never” 5/365 “Less often” 12/365 “Monthly” 52/365 “Weekly” and 1 “Daily”.
Cumulated fatalities in the region of birth (t-2d)	For each birth region–date observation, we calculated political violence and protest intensity as the number of people killed on a given day and considered the cumulative fatalities in the birth region in the following periods before the interview: - two days, - one week, - two weeks, - three weeks, - four weeks, - eight weeks. We standardized this measure to have a mean of zero and a standard deviation of one. Higher values indicate a higher conflict intensity, i.e., higher number of persons killed. To define political violence and protest intensity, we used data from the Armed Conflict Location and Event Data Project (ACLED).
Cumulated fatalities in the region of birth (t-1w)	
Cumulated fatalities in the region of birth (t-2w)	
Cumulated fatalities in the region of birth (t-3w)	
Cumulated fatalities in the region of birth (t-4w)	
Cumulated fatalities in the region of birth (t-8w)	
Cumulated fatalities in other regions in birth country (t-2d)	For each birth region–date observation, we calculated political violence and protest intensity as the number of people killed on a given day and considered the cumulative fatalities in all birth-country regions except the birth region in the following periods before the interview: - two days, - one week, - two weeks, - three weeks, - four weeks, - eight weeks. We standardize this measure to have a mean of zero and a standard deviation of one. Higher values indicate a higher conflict intensity, i.e., higher number of persons killed. To define political violence and protest intensity, we used data from the Armed Conflict Location and Event Data Project (ACLED).
Cumulated fatalities in other regions in birth country (t-1w)	
Cumulated fatalities in other regions in birth country (t-2w)	
Cumulated fatalities in other regions in birth country (t-3w)	
Cumulated fatalities in other regions in birth country (t-4w)	
Cumulated fatalities in other regions in birth country (t-8w)	
Duration of stay (TV)	Difference in years between the survey year and the year of arrival
Female	Variable indicating whether respondents are female (1) or male (0).
Child (TV)	Variable indicating whether respondents have children below the age of 16 who live in the household.
Partner (TV)	Variable indicating whether respondents have a partner (1), or no partner (0).
Age (TV)	Difference between the survey year and the year of birth. Min = 17, Max = 97.
Education (TV)	Based on a modified version of the <i>International Standard Classification of Education</i> with 1 “primary”, 2 “lower secondary”, 3 “upper secondary/postsecondary nontertiary”, and 5 “tertiary” (Brücker et al. 2017, pp. 34–36).
Religion	Based on a first reported religious affiliation with 1 “Christian”, 2 “Muslim-Shiite”, 3 “Muslim-Sunni”, 3 “Muslim-other”, 4 “Yezidi”, 5 and 6 “Other”.
Country of birth	Variable indicating whether respondents were born in 1 “Afghanistan”, 2 “Iraq” or 3 “Syria”.
Number of family or relatives in the origin country (TV)	Count measure for residence of partner, children (information on up to eight were surveyed), mother, father, siblings or other close relatives in origin country (=1) or otherwise (=0). Note, that residence of children was surveyed in the first interview, residence of partner is available

each year, residence of parents was surveyed in the first and second interview, residence of siblings or other relatives was surveyed in the first interview. We considered 1st reported values and transferred it to the following waves.

Notes: TV indicates “time varying”; variables without this indication refer to time-invariant measures.

Table S3: Ten most common regions of birth

Region of birth	Frequency	Percentage frequency	Cumulative percentages
Afghanistan (AFG)			
Kabul	141	19.32	19.32
Herat	116	15.89	35.21
Ghazni	74	10.14	45.34
Baghlan	53	7.26	52.6
Kunduz	48	6.58	59.18
Wardak	44	6.03	65.21
Balkh	38	5.21	70.41
Parwan	25	3.42	73.84
Daykundi	24	3.29	77.12
Bamyan	20	2.74	79.86
Iraq (IRQ)			
Nineveh	399	48.07	48.07
Baghdad	161	19.4	67.47
Dohuk	67	8.07	75.54
Sulaymaniyah	32	3.86	79.4
Erbil	27	3.25	82.65
Basra	26	3.13	85.78
Kirkuk	23	2.77	88.55
Al Anbar	22	2.65	91.2
Diyala	20	2.41	93.61
Dhi Qar	13	1.57	95.18
Syria (SYR)			
Aleppo	822	24.63	24.63
Damascus	790	23.67	48.31
Al-Hasakah	671	20.11	68.41
Daraa	181	5.42	73.84
Homs	178	5.33	79.17
Idlib	166	4.97	84.15
Deir ez-Zor	152	4.55	88.7
Hama	116	3.48	92.18
Latakia	78	2.34	94.52
Ar-Raqqah	70	2.10	96.61

Data source: IAB-BAMF-SOEP Survey of Refugees, doi: 10.5684/soep.iab-bamf-soep-mig.2019.

Table S4: Summary statistics

Variable	N	Mean	SD	Min/Max
Cum. fatalities in the birth region (t-2d)	7193	12.59	24.22	0–483
Cum. fatalities in the birth region (t-1w)	7193	31.13	50.18	0–510
Cum. fatalities in the birth region (t-2w)	7193	75.53	107.67	0–959
Cum. fatalities in the birth region (t-3w)	7193	119.27	160.49	0–1329
Cum. fatalities in the birth region (t-4w)	7193	177.85	235.21	0–2621
Cum. fatalities in the birth region (t-8w)	7193	387.88	568.46	0–5097
Cum. fatalities in other regions in birth country (t-2d)	7193	855.04	205.15	395–1558
Cum. fatalities in other regions in birth country (t-1w)	7193	2127.48	406.62	1206–3141
Cum. fatalities in other regions in birth country (t-2w)	7193	5127.33	831.39	3216–7089
Cum. fatalities in other regions in birth country (t-3w)	7193	8148.37	1189.90	5055–10457
Cum. fatalities in other regions in birth country (t-4w)	7193	12072.27	1634.46	7732–15176
Cum. fatalities in other regions in birth country (t-8w)	7193	25631.01	3212.99	17584–33345
Birth country:	7193			
Afghanistan		0.14	-	0/1
Iraq		0.16	-	0/1
Syria		0.69	-	0/1
Female	7193	0.40	-	0/1
Partner (TV)	7193	0.72	-	0/1
Child < age 16 (TV)	7193	0.70	-	0/1
Age (TV)	7193			
17–25		0.24	-	0/1
26–35		0.32	-	0/1
36–45		0.26	-	0/1
46–55		0.14	-	0/1
Over 55		0.05	-	0/1
Years since arrival (TV)	7193			
< 2 years		0.10	-	0/1
2–3 years		0.54	-	0/1
> 3 years		0.36	-	0/1
Educational attainment	7193			
Primary		0.44	-	0/1
Low secondary		0.21	-	0/1
Upper secondary/post- secondary nontertiary		0.18	-	0/1
Tertiary		0.17	-	0/1
Religious affiliation	7193			
Christian		0.05	-	0/1
Muslim-Shiite		0.07	-	0/1
Muslim-Sunni		0.69	-	0/1
Muslim-other		0.05	-	0/1
Yezidi		0.09	-	0/1
Other		0.06	-	0/1
Number of family or relatives in the origin country (TV)	7193			
No relatives		0.15	-	0/1
1–2		0.40	-	0/1
3–4		0.41	-	0/1
5 or more		0.04	-	0/1
Survey year (TV)	7193			
2017		0.56	-	0/1
2018		0.05	-	0/1
2019		0.40	-	0/1
Federal state:	7193			
Schleswig-Holstein		0.06	-	0/1
Hamburg		0.03	-	0/1
Lower Saxony		0.12	-	0/1
Bremen		0.01	-	0/1
North Rhine-Westphalia		0.24	-	0/1
Hesse		0.10	-	0/1

Rhineland-Palatinate	0.04	-	0/1
Baden-Wuerttemberg	0.12	-	0/1
Bavaria	0.12	-	0/1
Saarland	0.02	-	0/1
Berlin	0.03	-	0/1
Brandenburg	0.03	-	0/1
Mecklenburg-Hither Pomerania	0.01	-	0/1
Saxony	0.03	-	0/1
Saxony-Anhalt	0.02	-	0/1
Thuringia	0.02	-	0/1

Notes: TV indicates “time varying”; variables without this addition refer to time-invariant measures. Variation in the sample size (column 2) is due to the differences in missing data across variables. In the multivariate model, we control for missing values in the variables of interest.

Data source: IAB-BAMF-SOEP Survey of Refugees, doi: 10.5684/soep.iab-bamf-soep-mig.2019.

Table S5: Relationship between praying frequency and self-assessed religiosity

	Share of those praying daily
How religious are you? (Survey year 2017)	
1 = Not at all	10.64
2	44.58
3	77.97
4 = very much	91.21
N	1822
Importance of religion for well-being? (Survey years 2017-2019)	
1 = Not important at all	18.85
2	32.14
3	68.28
4 = very important	86.85
N	7074
How often do you go to church, attend religious events? (Survey years 2017, 2019)	
1 = Never	49.88
2 = Seldom	69.42
3 = At least monthly	80.36
4 = At least weekly	94.86
5 = Daily	89.29
N	6629

2. ESTIMATION STRATEGY

To study how the intensity of conflict in the region of birth influences how often refugees pray, we estimated the following model:

$$Y_{irst} = \alpha_0 + \alpha_1 \text{Cum. Fatalities}_{ir(s-1w)} + \alpha_2 X_i + \alpha_3 X_{it} + \lambda_t + \lambda_f + \lambda_c + \varepsilon_{irst}, \quad (1)$$

where Y_{irst} denotes the praying variable of respondent i from the region of birth r on the date of the interview s in survey year t . $\text{Cum. Fatalities}_{r(s-1w)}$ denotes the cumulative fatalities in the birth region one week (w) before the interview date. Moreover, the vector X_i denotes time-invariant individual-level characteristics, and the vector X_{it} denotes time-variant individual-level characteristics in year t . λ_t are fixed effects for the year of the interview t . λ_f are fixed effects for the initial federal state f . λ_c are fixed effects for the country of birth o . ε_{irst} is the error term. We applied cluster correction (Abadie, Athey, Imbens, & Wooldridge, 2017), as standard errors are clustered at the person level (i.e., some refugees were surveyed two or three times).

3. MAIN EFFECT OF FATALITIES IN THE REGION OF ORIGIN: FULL MODELS

Table S6 Linear regression of the probability of daily praying among refugees, in percentage points. Full models

	Model 1 Coef. (SE)	Model 2 Coef. (SE)	Model 3 Coef. (SE)
Std. cum. fatalities in the region of birth (t-1w)	1.86** (0.55)	1.40* (0.57)	1.51** (0.54)
Female			16.32** (1.28)
Partner			4.62** (1.68)
Children in household			3.75* (1.51)
Age: Ref. 17–25			
26–35			3.22+ (1.75)
36–45			10.73** (1.97)
45–55			10.41** (2.24)
Over 55			10.41** (2.24)
Years since arrival: Ref. < 2 years			
2–3 years			-0.32 (1.91)
> 3 years			-3.75 (2.82)
Educational attainment: Ref. Primary			
Low secondary			2.21 (1.63)
Upper secondary/post- secondary nontertiary			3.75* (1.73)
Tertiary			3.60+ (1.84)
Religious affiliation: Ref. Muslim-Sunni			
Christian			-7.05* (2.83)
Muslim-Shiite			-2.62 (2.70)
Muslim-other			-19.62** (3.01)
Yezidi			-25.50** (2.44)
Other			-31.55** (2.43)
Constant	53.65** (0.66)	71.47** (3.14)	60.22** (3.87)
Survey year FE	NO	YES	YES
Federal state FE	NO	YES	YES

Country of birth FE	NO	YES	YES
Observations	7193	7193	7193
Degrees of freedom	1	20	37

Notes: + p<0.10, * p<0.05, ** p<0.01 (two-sided tests). FE = Fixed effects. Standard errors are clustered at the person level.

Data source: IAB-BAMF-SOEP Survey of Refugees, doi: 10.5684/soep.iab-bamf-soep-mig.2019, linked to the data from the ACLED.

Table S7 Linear regression of the probability of daily praying, in percentage points: different time lags for cumulative fatalities in the region of birth. Full models

	Model 4.1	Model 4.2	Model 4.3	Model 4.3	Model 4.4
	Coef.	Coef.	Coef.	Coef.	Coef.
	(SE)	(SE)	(SE)	(SE)	(SE)
Std. cum. fatalities in the region of birth (t-2d)	1.40** (0.50)				
Std. cum. fatalities in the region of birth (t-2w)		1.40* (0.57)			
Std. cum. fatalities in the region of birth (t-3w)			1.51** (0.58)		
Std. cum. fatalities in the region of birth (t-4w)				1.58** (0.59)	
Std. cum. fatalities in the region of birth (t-8w)					1.88** (0.59)
Female	16.28** (1.28)	16.32** (1.28)	16.32** (1.28)	16.30** (1.28)	16.33** (1.28)
Partner	4.58** (1.68)	4.60** (1.68)	4.62** (1.68)	4.64** (1.68)	4.67** (1.68)
Children in household	3.78* (1.51)	3.77* (1.51)	3.79* (1.51)	3.78* (1.51)	3.76* (1.51)
Age: Ref. 17–25					
26–35	3.25+ (1.75)	3.24+ (1.75)	3.24+ (1.75)	3.25+ (1.75)	3.30+ (1.75)
36–45	10.78** (1.97)	10.73** (1.97)	10.73** (1.97)	10.74** (1.97)	10.83** (1.97)
45–55	10.38** (2.24)	10.45** (2.24)	10.45** (2.24)	10.47** (2.24)	10.51** (2.24)
Over 55	26.14** (2.83)	26.23** (2.83)	26.20** (2.83)	26.20** (2.83)	26.25** (2.83)
Years since arrival: Ref. < 2 years					
2–3 years	-0.29 (1.91)	-0.32 (1.91)	-0.28 (1.91)	-0.27 (1.91)	-0.13 (1.91)
> 3 years	-3.73 (2.82)	-3.70 (2.82)	-3.63 (2.82)	-3.62 (2.82)	-3.49 (2.82)
Educational attainment: Ref. Primary.					
Low secondary	2.20 (1.63)	2.25 (1.63)	2.26 (1.63)	2.27 (1.63)	2.31 (1.63)
Upper secondary/post- secondary nontertiary	3.79* (1.73)	3.74* (1.73)	3.72* (1.73)	3.71* (1.73)	3.72* (1.73)
Tertiary	3.67* (1.84)	3.64* (1.84)	3.65* (1.84)	3.67* (1.84)	3.68* (1.84)
Religious affiliation: Ref. Muslim-Sunni					
Christian	-7.01* (2.83)	-7.11* (2.83)	-7.14* (2.83)	-7.13* (2.83)	-7.16* (2.83)
Muslim-Shiite	-2.66 (2.69)	-2.64 (2.70)	-2.68 (2.70)	-2.69 (2.70)	-2.62 (2.70)
Muslim-other	-19.70** (3.02)	-19.69** (3.02)	-19.73** (3.02)	-19.73** (3.02)	-19.72** (3.02)
Yezidi	-25.39** (2.44)	-25.60** (2.45)	-25.76** (2.45)	-25.84** (2.45)	-26.21** (2.45)
Other	-31.67** (2.43)	-31.58** (2.43)	-31.58** (2.43)	-31.59** (2.43)	-31.61** (2.43)

Constant	60.16** (3.87)	60.15** (3.87)	60.09** (3.87)	60.03** (3.87)	59.82** (3.87)
Survey year FE	YES	YES	YES	YES	YES
Federal state FE	YES	YES	YES	YES	YES
Country of birth FE	YES	YES	YES	YES	YES
Observations	7193	7193	7193	7193	7193
Degrees of freedom	37	37	37	37	37

Notes: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$ (two-sided tests). FE = Fixed effects. Standard errors are clustered at the person level.

Data source: IAB-BAMF-SOEP Survey of Refugees, doi: 10.5684/soep.iab-bamf-soep-mig.2019, linked to the data from the ACLED.

4. ANALYSES PER DEMOGRAPHIC SUBGROUPS: FULL MODELS

Table S8 Linear regression of the probability of daily praying among refugees, in percentage points: tests of effect heterogeneity by sociodemographic characteristics. Full models.

	Model 5.1	Model 5.2	Model 5.3	Model 5.4
	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)
Std. cum. fatalities in the region of birth (t-1w)	1.29+ (0.68)	1.42 (1.13)	0.36 (0.84)	0.72 (1.59)
Female	16.33** (1.28)	16.34** (1.28)	16.30** (1.28)	16.31** (1.28)
# Std. cum. fatalities in the region of birth (t-1w)	0.57 (1.03)			
Partner	4.61** (1.68)	4.64** (1.68)	4.59** (1.68)	4.60** (1.68)
Children in household	3.74* (1.51)	3.72* (1.51)	3.78* (1.51)	3.74* (1.51)
Age: Ref. 17–25				
26–35	3.22+ (1.75)	3.21+ (1.75)	3.24+ (1.75)	3.22+ (1.76)
# Std. cum. fatalities in the region of birth (t-1w)		-0.38 (1.46)		
36–45	10.74** (1.97)	10.75** (1.97)	10.73** (1.97)	10.74** (1.97)
# Std. cum. fatalities in the region of birth (t-1w)		-1.00 (1.49)		
45–55	10.41** (2.24)	10.62** (2.23)	10.37** (2.24)	10.42** (2.24)
# Std. cum. fatalities in the region of birth (t-1w)		3.58* (1.67)		
Over 55	26.21** (2.83)	26.27** (2.82)	26.10** (2.83)	26.20** (2.83)
# Std. cum. fatalities in the region of birth (t-1w)		0.85 (2.02)		
Years since arrival: Ref. < 2 years				
2–3 years	-0.30 (1.91)	-0.27 (1.91)	-0.39 (1.91)	-0.52 (1.95)
# Std. cum. fatalities in the region of birth (t-1w)				0.81 (1.72)
> 3 years	-3.76 (2.82)	-3.65 (2.82)	-3.76 (2.82)	-3.87 (2.85)
# Std. cum. fatalities in the region of birth (t-1w)				1.12 (1.92)
Educational attainment: Ref. Primary.				
Low secondary	2.22 (1.63)	2.25 (1.63)	2.24 (1.63)	2.21 (1.63)
# Std. cum. fatalities in the region of birth (t-1w)			1.67 (1.37)	
Upper secondary/post- secondary nontertiary	3.73* (1.73)	3.67* (1.73)	3.79* (1.73)	3.77* (1.73)
# Std. cum. fatalities in the region of birth (t-1w)			2.55+ (1.44)	

Tertiary	3.61*	3.57+	3.58+	3.60*
	(1.84)	(1.84)	(1.84)	(1.84)
# Std. cum. fatalities in the region of birth (t-1w)			1.65	
			(1.35)	
Religious affiliation: Ref. Muslim-Sunni				
Christian	-7.06*	-7.12*	-7.06*	-7.02*
	(2.83)	(2.84)	(2.83)	(2.83)
Muslim-Shiite	-2.60	-2.63	-2.66	-2.63
	(2.70)	(2.70)	(2.70)	(2.70)
Muslim-other	-19.62**	-19.58**	-19.58**	-19.62**
	(3.01)	(3.01)	(3.01)	(3.02)
Yezidi	-25.49**	-25.50**	-25.47**	-25.42**
	(2.44)	(2.44)	(2.45)	(2.45)
Other	-31.56**	-31.53**	-31.57**	-31.57**
	(2.43)	(2.44)	(2.43)	(2.44)
Constant	60.22**	60.19**	60.16**	60.39**
	(3.87)	(3.88)	(3.87)	(3.89)
Survey year FE	YES	YES	YES	YES
Federal state FE	YES	YES	YES	YES
Country of birth FE	YES	YES	YES	YES
Observations	7193	7193	7193	7193
Degrees of freedom	38	41	40	39

Notes: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$ (two-sided tests). All models control for the same set of variables as Model 3 in Table 2. Standard errors are clustered at the person level.

Data source: IAB-BAMF-SOEP Survey of Refugees, doi: 10.5684/soep.iab-bamf-soep-mig.2019, linked to the data from the ACLED.

5. ROBUSTNESS CHECKS: FULL MODELS

Table S9 Regression models of daily praying among refugees: different model specifications and measurement of praying

	Model 6.1	Model 6.2	Model 6.3	Model 6.4
	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)
Std. cum. fatalities in the region of birth (t-1w)	0.05+ (0.03)	0.01+ (0.01)	0.05* (0.02)	0.06* (0.02)
Female	0.64** (0.06)	0.13** (0.01)	0.53** (0.04)	0.72** (0.06)
Partner	0.22** (0.08)	0.05** (0.02)	0.16** (0.06)	0.15* (0.07)
Children in household	0.17* (0.07)	0.04* (0.02)	0.14** (0.05)	0.17** (0.06)
Age: Ref. 17–25				
26–35	0.10 (0.08)	0.02 (0.02)	0.07 (0.06)	0.13+ (0.07)
36–45	0.38** (0.09)	0.08** (0.02)	0.29** (0.07)	0.41** (0.09)
45–55	0.38** (0.11)	0.08** (0.02)	0.28** (0.08)	0.40** (0.10)
Over 55	1.18** (0.16)	0.23** (0.03)	0.84** (0.09)	1.16** (0.14)
Years since arrival: Ref. < 2 years				
2–3 years	0.06 (0.09)	0.01 (0.02)	0.03 (0.07)	0.04 (0.09)
> 3 years	-0.12 (0.13)	-0.03 (0.03)	-0.12 (0.10)	-0.15 (0.13)
Educational attainment: Ref. Primary.				
Low secondary	0.15* (0.08)	0.03+ (0.02)	0.12* (0.06)	0.13+ (0.07)
Upper secondary/post- secondary nontertiary	0.35** (0.09)	0.07** (0.02)	0.21** (0.06)	0.22** (0.08)
Tertiary	0.27** (0.09)	0.06** (0.02)	0.18** (0.06)	0.19* (0.08)
Religious affiliation: Ref. Muslim-Sunni				
Christian	0.28+ (0.15)	0.06* (0.03)	0.11 (0.09)	-0.10 (0.10)
Muslim-Shiite	-0.32* (0.14)	-0.07* (0.03)	-0.18* (0.09)	-0.16 (0.12)
Muslim-other	-1.05** (0.14)	-0.24** (0.03)	-0.88** (0.11)	-1.03** (0.13)
Yezidi	-1.16** (0.12)	-0.27** (0.03)	-1.03** (0.09)	-1.22** (0.11)
Other	-1.62** (0.13)	-0.35** (0.03)	-1.36** (0.09)	-1.61** (0.12)
Constant	1.07** (0.20)	0.72** (0.04)	4.00** (0.13)	
Cutpoint 1				-1.84** (0.17)
Cutpoint 2				-1.19**

Cutpoint 3				(0.17)
				-1.03**
Cutpoint 4				(0.17)
				-0.54**
				(0.17)
Survey year FE	YES	YES	YES	YES
Federal state FE	YES	YES	YES	YES
Country of birth FE	YES	YES	YES	YES
Observations	7193	7193	7193	7193
Degrees of freedom	37	37	37	37

Notes: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$ (two-sided tests). All models control for the same set of variables as Model 3 in Table 2. Standard errors are clustered at the person level. Model 6.1: binary logit model of 0/1 daily prayer. Model 6.2: linear probability model of 0/1 daily prayer. Model 6.3: OLS model of original measure of praying (“Never” = 1, “Less often” = 2 “Monthly” = 3, “Weekly” = 4 and “Daily” = 5. Model 6.4: ordered logit model of original measure of praying.

Data source: IAB-BAMF-SOEP Survey of Refugees, doi: 10.5684/soep.iab-bamf-soep-mig.2019, linked to the data from the ACLED.

Table S10 Regression models of self-assessed religiosity, the importance of religion for well-being and daily attendance of church or religious events among refugees: different model specifications and dependent variables

	Model 7.1	Model 7.2	Model 7.3
	Coef. (SE)	Coef. (SE)	Coef. (SE)
Std. cum. fatalities in the region of birth (t-1w)	0.03 (0.02)	0.04** (0.01)	0.00** (0.00)
Female	0.34** (0.04)	0.22** (0.03)	-0.03** (0.00)
Partner	0.04 (0.06)	0.00 (0.04)	0.00 (0.00)
Children in household	0.11* (0.06)	0.04 (0.03)	-0.00 (0.00)
Age: Ref. 17–25			
26–35	-0.04 (0.07)	-0.05 (0.04)	-0.00 (0.00)
36–45	-0.03 (0.07)	-0.04 (0.04)	0.00 (0.00)
45–55	0.07 (0.08)	-0.00 (0.05)	0.00 (0.00)
Over 55	0.37** (0.10)	0.21** (0.06)	0.02* (0.01)
Years since arrival: Ref. < 2 years			
2–3 years	0.01 (0.10)	-0.02 (0.04)	0.00 (0.00)
> 3 years	-0.02 (0.13)	-0.08 (0.06)	0.01 (0.01)
Educational attainment: Ref. Primary.			
Low secondary	0.10+ (0.06)	-0.03 (0.04)	0.00 (0.00)
Upper secondary/post- secondary nontertiary	0.03 (0.06)	-0.01 (0.04)	0.01* (0.00)
Tertiary	-0.02 (0.06)	-0.07+ (0.04)	0.00 (0.00)
Religious affiliation: Ref. Muslim-Sunni			
Christian	0.09 (0.09)	0.11+ (0.06)	0.05** (0.01)
Muslim-Shiite	-0.15+ (0.09)	-0.24** (0.06)	-0.02** (0.00)
Muslim-other	-0.31** (0.11)	-0.54** (0.06)	-0.02** (0.00)
Yezidi	-0.31** (0.10)	-0.21** (0.06)	-0.02** (0.00)
Other	-0.69** (0.09)	-0.89** (0.06)	-0.02** (0.00)
Constant	3.05** (0.15)	3.41** (0.08)	0.07** (0.01)
Survey year FE	YES	YES	YES
Federal state FE	YES	YES	YES
Country of birth FE	YES	YES	YES
Observations	1822	7074	6629
Degrees of freedom	35	37	36

Notes: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$ (two-sided tests). All models control for the same set of variables as Model 3 in Table 2. Standard errors are clustered at the person level. Standard errors are clustered at the person level. Model 7.1: OLS model of the self-assessed religiosity (“Not at all” = 1 to “Very much” = 4). Model 7.2: OLS Model for the self-assessed importance of religion for own well-being (“Not at all” = 1 to “Very much” = 4). Model 7.3: linear probability model of daily attendance of church or religious events (“Never” = 0, “seldom” = 5/365, “at least monthly” = 12/365, “at least weekly” = 52/365 and “Daily” = 1).
Data source: IAB-BAMF-SOEP Survey of Refugees, doi: 10.5684/soep.iab-bamf-soep-mig.2019, linked to the data from the ACLED.

Table S11 Linear regression of the probability of daily praying among refugees, in percentage points: controls for religiosity and population size in birth regions

	Model 8.1	Model 8.2
	Coef. (SE)	Coef. (SE)
Std. cum. fatalities in the region of birth (t-1w)	1.50** (0.54)	1.51** (0.54)
Religiosity of the populations in the birth regions	-1.55 (21.06)	
Population size in the region of birth		-0.34 (0.81)
Female	16.27** (1.28)	16.30** (1.28)
Partner	4.65** (1.68)	4.60** (1.68)
Children in household	3.63* (1.52)	3.64* (1.53)
Age: Ref. 17–25		
26–35	3.24+ (1.76)	3.22+ (1.75)
36–45	10.81** (1.98)	10.72** (1.97)
45–55	10.46** (2.24)	10.38** (2.24)
Over 55	26.37** (2.83)	26.16** (2.83)
Years since arrival: Ref. < 2 years		
2–3 years	-0.33 (1.91)	-0.40 (1.92)
> 3 years	-3.80 (2.83)	-3.89 (2.84)
Educational attainment: Ref. Primary.		
Low secondary	2.11 (1.63)	2.19 (1.63)
Upper secondary/post- secondary nontertiary	3.86* (1.74)	3.71* (1.74)
Tertiary	3.51+ (1.84)	3.54+ (1.84)
Religious affiliation: Ref. Muslim-Sunni		
Christian	-7.06* (2.83)	-7.09* (2.83)
Muslim-Shiite	-2.49 (2.71)	-2.59 (2.70)
Muslim-other	-19.31** (3.04)	-19.62** (3.02)
Yezidi	-25.39** (2.46)	-25.54** (2.45)
Other	-31.29** (2.45)	-31.56** (2.43)
Constant	61.63** (20.74)	61.30** (4.67)
Survey year FE	YES	YES
Federal state FE	YES	YES
Country of birth FE	YES	YES

Observations	7193	7193
Degrees of freedom	38	38

Notes: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$ (two-sided tests). FE = Fixed effects. Standard errors are clustered at the person level.

Data source: IAB-BAMF-SOEP Survey of Refugees, doi: 10.5684/soep.iab-bamf-soep-mig.2019, linked to the data from the ACLED, Gallup World Polls (2008-2016), CENSUS 2011 for Afghanistan, CENSUS 2011 for Syria, CENSUS 2009 for Iraq.

Table S12 Regression models of daily praying among refugees, in percentage points: random and fixed effects

	Model 9.1	Model 9.2
	Coef. (SE)	Coef. (SE)
Std. cum. fatalities in the region of birth (t-1w)	1.95** (0.65)	1.55* (0.76)
Female	16.51** (1.74)	
Partner	3.71+ (2.22)	-5.29 (5.53)
Children in household	5.45** (1.92)	4.87 (3.28)
Age: Ref. 17–25		
26–35	1.95 (2.29)	-3.51 (4.53)
36–45	9.30** (2.55)	-1.16 (6.25)
45–55	6.87* (2.91)	-12.36 (8.41)
Over 55	23.24** (3.91)	-2.14 (11.72)
Years since arrival: Ref. < 2 years		
2–3 years	2.57 (2.55)	0.91 (4.80)
> 3 years	-0.43 (3.85)	-2.87 (8.52)
Educational attainment: Ref. Primary.		
Low secondary	1.63 (2.17)	-5.03 (8.45)
Upper secondary/post- secondary nontertiary	3.44 (2.30)	-24.05+ (13.49)
Tertiary	4.88* (2.39)	-16.58 (49.58)
Religious affiliation: Ref. Muslim-Sunni		
Christian	-8.11* (3.79)	
Muslim-Shiite	-4.99 (3.82)	
Muslim-other	-19.30** (3.67)	
Yezidi	-28.63** (3.72)	
Other	-30.98** (3.65)	
Constant	57.32** (5.16)	59.97** (20.49)
Survey year FE	YES	YES
Federal state FE	YES	YES
Country of birth FE	YES	NO
Observations	4592	4592
Degrees of freedom	37	2323

Notes: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$ (two-sided tests). All models control for the same set of variables as Model 3 in Table 2. Standard errors are clustered at the person level. Model 9.1: random effects model of daily

praying. Model 9.2: fixed effects model of daily praying. Note that Models 9.1 and 9.2 were restricted to respondents with at least two observations.

Data source: IAB-BAMF-SOEP Survey of Refugees, doi: 10.5684/soep.iab-bamf-soep-mig.2019, linked to the data from the ACLED.

6. DIRECT TESTS OF THE SOCIOTROPIC THREAT MECHANISM: FULL MODELS

Table S13 Linear regression of the probability of daily praying among refugees, in percentage points: test of connections to family in country of origin. Full models.

	Model 10.1	Model 10.2	Model 10.3	Model 10.4
	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)
Std. cum. fatalities in the region of birth (t-1w)	1.50** (0.53)	-1.38 (1.33)	1.46** (0.53)	-1.36 (1.33)
Family or relatives in origin	2.43 (1.75)	2.53 (1.75)		
# Std. cum. fatalities in the region of birth (t-1w)		3.38* (1.44)		
Number of family or relatives in origin: Ref. No relatives in origin				
1–2 relatives in origin			0.05 (1.86)	0.16 (1.86)
# Std. cum. fatalities in the region of birth (t-1w)				2.80+ (1.58)
3–4 relatives in origin			4.86* (1.90)	4.94** (1.90)
# Std. cum. fatalities in the region of birth (t-1w)				3.49* (1.53)
5 or more relatives in origin			7.24* (3.47)	7.15* (3.48)
# Std. cum. fatalities in the region of birth (t-1w)				5.22* (2.37)
Female	16.37** (1.28)	16.42** (1.28)	16.36** (1.28)	16.38** (1.28)
Partner	4.31* (1.69)	4.36** (1.69)	3.47* (1.71)	3.47* (1.71)
Children in household	3.99** (1.52)	3.97** (1.52)	4.83** (1.54)	4.85** (1.54)
Age: Ref. 17–25				
26–35	3.00+ (1.76)	2.97+ (1.76)	2.78 (1.76)	2.77 (1.76)
36–45	10.44** (1.98)	10.42** (1.98)	10.53** (1.98)	10.53** (1.98)
45–55	10.10** (2.25)	10.07** (2.25)	10.33** (2.26)	10.31** (2.26)
Over 55	26.14** (2.83)	26.00** (2.82)	26.95** (2.83)	26.82** (2.83)
Years since arrival: Ref. < 2 years				
2–3 years	-0.26 (1.91)	-0.18 (1.91)	-0.38 (1.91)	-0.33 (1.91)
> 3 years	-3.61 (2.82)	-3.56 (2.82)	-3.57 (2.83)	-3.51 (2.83)
Educational attainment: Ref. Primary.				
Low secondary	2.21 (1.63)	2.26 (1.63)	2.09 (1.63)	2.13 (1.63)
Upper secondary/post- secondary nontertiary	3.64* (1.63)	3.61* (1.63)	3.44* (1.63)	3.41* (1.63)

	(1.73)	(1.74)	(1.73)	(1.73)
Tertiary	3.46+	3.49+	3.17+	3.20+
	(1.84)	(1.84)	(1.84)	(1.84)
Religious affiliation: Ref. Muslim-Sunni				
Christian	-6.76*	-6.92*	-6.50*	-6.73*
	(2.84)	(2.85)	(2.83)	(2.84)
Muslim-Shiite	-2.35	-2.52	-2.45	-2.59
	(2.71)	(2.71)	(2.71)	(2.71)
Muslim-other	-19.59**	-19.53**	-19.48**	-19.41**
	(3.01)	(3.02)	(3.02)	(3.03)
Yezidi	-25.34**	-25.47**	-25.42**	-25.51**
	(2.45)	(2.45)	(2.44)	(2.44)
Other	-31.34**	-31.39**	-31.48**	-31.55**
	(2.44)	(2.43)	(2.44)	(2.44)
Constant	58.49**	58.16**	58.74**	58.43**
	(4.07)	(4.07)	(4.07)	(4.07)
Survey year FE	YES	YES	YES	YES
Federal state FE	YES	YES	YES	YES
Country of birth FE	YES	YES	YES	YES
Observations	7193	7193	7193	7193
Degrees of freedom	38	39	40	43

Notes: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$ (two-sided tests). All models control for the same set of variables as Model 3 in Table 2. Standard errors are clustered at the person level.

Data source: IAB-BAMF-SOEP Survey of Refugees, doi: 10.5684/soep.iab-bamf-soep-mig.2019, linked to the data from the ACLED.

Table S14 Linear regression of the probability of daily praying, in percentage points: different time lags and regions of cumulative fatalities. Full models

	Model 11.1	Model 11.2	Model 11.3	Model 11.4	Model 11.5	Model 11.6
	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)
Std. cum. fatalities in the region of birth (t-1w)	1.49** (0.54)					
Std. cum. fatalities in other regions in birth country (t-1w)	-0.76 (0.60)					
Std. cum. fatalities in the region of birth (t-2d)		1.40** (0.50)				
Std. cum. fatalities in other regions in birth country (t-2d)		-0.05 (0.57)				
Std. cum. fatalities in the region of birth (t-2w)			1.34* (0.57)			
Std. cum. fatalities in other regions in birth country (t-2w)			-1.70** (0.61)			
Std. cum. fatalities in the region of birth (t-3w)				1.42* (0.58)		
Std. cum. fatalities in other regions in birth country (t-3w)				-2.18** (0.62)		
Std. cum. fatalities in the region of birth (t-4w)					1.48* (0.59)	
Std. cum. fatalities in other regions in birth country (t-4w)					-1.77** (0.62)	
Std. cum. fatalities in the region of birth (t-8w)						1.81** (0.60)
Std. cum. fatalities in other regions in birth country (t-8w)						-0.90 (0.63)
Female	16.31** (1.28)	16.28** (1.28)	16.30** (1.28)	16.31** (1.28)	16.30** (1.28)	16.32** (1.28)
Partner	4.58** (1.68)	4.58** (1.68)	4.54** (1.68)	4.55** (1.68)	4.63** (1.68)	4.65** (1.68)
Children in household	3.78* (1.51)	3.78* (1.51)	3.77* (1.51)	3.70* (1.51)	3.69* (1.51)	3.71* (1.51)
Age: Ref. 17–25						

26–35	3.18+	3.25+	3.11+	3.07+	3.10+	3.22+
	(1.75)	(1.76)	(1.76)	(1.76)	(1.76)	(1.76)
36–45	10.65**	10.78**	10.53**	10.51**	10.54**	10.72**
	(1.97)	(1.97)	(1.97)	(1.97)	(1.97)	(1.97)
45–55	10.39**	10.38**	10.40**	10.37**	10.35**	10.43**
	(2.24)	(2.24)	(2.24)	(2.24)	(2.24)	(2.24)
Over 55	26.18**	26.14**	26.25**	26.25**	26.19**	26.23**
	(2.83)	(2.83)	(2.82)	(2.82)	(2.82)	(2.82)
Years since arrival: Ref. < 2 years						
2–3 years	-0.57	-0.31	-0.96	-1.17	-1.09	-0.65
	(1.92)	(1.91)	(1.92)	(1.92)	(1.93)	(1.95)
> 3 years	-4.07	-3.74	-4.52	-4.79+	-4.66	-4.17
	(2.83)	(2.82)	(2.83)	(2.84)	(2.84)	(2.86)
Educational attainment: Ref. Primary.						
Low secondary	2.18	2.20	2.20	2.21	2.19	2.27
	(1.63)	(1.63)	(1.63)	(1.63)	(1.63)	(1.63)
Upper secondary/post- secondary nontertiary	3.71*	3.79*	3.63*	3.62*	3.64*	3.68*
	(1.73)	(1.73)	(1.73)	(1.73)	(1.73)	(1.73)
Tertiary	3.59+	3.68*	3.63*	3.60*	3.64*	3.66*
	(1.83)	(1.84)	(1.84)	(1.84)	(1.84)	(1.84)
Religious affiliation: Ref. Muslim-Sunni						
Christian	-7.13*	-7.02*	-7.34**	-7.45**	-7.37**	-7.26*
	(2.83)	(2.83)	(2.82)	(2.82)	(2.82)	(2.83)
Muslim-Shiite	-2.67	-2.66	-2.79	-2.79	-2.75	-2.65
	(2.70)	(2.69)	(2.70)	(2.70)	(2.70)	(2.70)
Muslim-other	-19.65**	-19.70**	-19.74**	-19.79**	-19.79**	-19.77**
	(3.01)	(3.02)	(3.01)	(3.01)	(3.01)	(3.02)
Yezidi	-25.56**	-25.39**	-25.73**	-25.92**	-25.99**	-26.32**
	(2.45)	(2.44)	(2.45)	(2.45)	(2.45)	(2.46)
Other	-31.63**	-31.67**	-31.77**	-31.85**	-31.83**	-31.72**
	(2.43)	(2.43)	(2.42)	(2.42)	(2.42)	(2.42)
Constant	60.79**	60.19**	61.61**	61.99**	61.62**	60.72**
	(3.91)	(3.89)	(3.93)	(3.94)	(3.94)	(3.94)
Survey year FE	YES	YES	YES	YES	YES	YES
Federal state FE	YES	YES	YES	YES	YES	YES
Country of birth FE	YES	YES	YES	YES	YES	YES

Observations	7193	7193	7193	7193	7193	7193
Degrees of freedom	38	38	38	38	38	38

Notes: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$ (two-sided tests). FE = Fixed effects. Standard errors are clustered at the person level.

Data source: IAB-BAMF-SOEP Survey of Refugees, doi: 10.5684/soep.iab-bamf-soep-mig.2019, linked to the data from the ACLED.