War-induced insecurity, religiosity, and social support among Ukrainian refugee mothers in the Czech Republic

1. Overview

Cultural evolutionary theories propose that insecurities arising from violent intergroup conflicts boost religiosity, which in turn, may help overcome adversities through increased social bonding and social support (Bauer et al., 2016; Henrich et al., 2019; Lang et al., 2024). However, currently there is little data to address the short- and long-term relationships between war-induced insecurity, religiosity, and social support. **The aim of this project is to provide insights into how refugees from conflict areas deal with war-induced insecurity, focusing on the role of religion in fostering cooperation, trust, and social capital.**

The project will utilize the ongoing situation in Eastern Europe as an empirical source. In February 2022, the Russian invasion of Ukraine initiated a war, marked by systematic targeting of civilian structures. The conflict has displaced over six million Ukrainian refugees, who are grappling with economic challenges and heightened uncertainties. We will use mixed methods that involve collection of primary qualitative and quantitative data including focus group discussions and detailed quantitative survey; and secondary data on war-induced insecurity. Overall, we will test the immediate and potential multi-generational impact of the war-induced insecurity on religiosity and the role of religiosity in building supportive networks and promoting social support among people who are especially dependent on others, namely refugee mothers with young children.

The research findings will be disseminated through three J_{imp} papers, two conferences and social media, effectively communicating the findings to experts and public. Furthermore, we will publish final dataset for other researchers to build on our findings or test novel predictions.

The PI is in an excellent position to address the project's research questions. During his Ph.D. at Masaryk University, he extensively studied the impact of religion on human cooperation (Chvaja et al., 2020, 2022, 2023). During his post-doctoral fellowship at University of Otago, Dr. Chvaja is investigating the role of religion in social support provided to mothers (Shaver et al., under review) and as a researcher at European Research University (ERUNI), he is studying how crises and conflicts may affect religiosity and cooperation (Chvaja et al., 2024; Lang et al., 2024).

2. Literature review

Cooperation stands as a fundamental pillar in the human capacity to surmount local socioecological challenges (Purzycki et al., 2022). Group living has empowered our species to tackle larger prey, defend against adversaries, share and develop complex ideas, and specialize in labor—all contributing to cumulative economic growth and well-being (Henrich, 2016). However, the very essence of cooperation poses a challenge, as groups are perennially threatened by the prospect of free-riding—individuals benefiting from collective efforts without contribution (Dunbar, 1999). While free-riding is advantageous for individuals under circumstances when their share of collective action surpasses individual efforts, its prevalence across the group can lead to disintegration (McElreath & Boyd, 2007), a societal state of anomy (Durkheim, 1984). In smaller human communities, cooperation thrives on reciprocal and reputational relations, ensuring long-term benefits as free-riders face exclusion from further cooperative interactions (Nowak & Highfield, 2012). Yet, the landscape of modern societies is characterized by complexity and anonymity, necessitating additional institutional mechanisms like social norms and punishments to secure cooperation (Fehr & Gächter, 2000). Religion, historically and in many contemporary societies, emerges as a significant force in addressing cooperative dilemmas—an association that has long captivated scholarly interests (Collins, 2005; Durkheim, 2008; Purzycki & Sosis, 2022; Rappaport, 1999). Research drawing upon extensive national and cross-national datasets and field studies, indicates that individuals who adhere to religious doctrines tend to uphold cooperative norms and standards more extensively than those who are less religious (Ahmed, 2009; Chvaja et al., 2022; Stark, 2001) and think of their coreligionists as being more moral and trustworthy (Gervais et al., 2017) creating environments of mutual trust (Ahmed & Salas, 2013).

Theories of religious cooperation emphasize the importance of religious norms rooted in supernatural orders verifiable only through ritual-generated emotions (Rappaport, 1999). In turn, these emotions bond individuals to norms and the broader religious community (Durkheim, 2008; Whitehouse & Lanman,

2014). Concurrently, religious participation entails costly entrance fees, which enable members to access informal insurance within close-knit religious groups by signaling acceptance (Rappaport, 1999) and commitment to group norms (Chvaja & Řezníček, 2019; Iannaccone, 1992; Sosis, 2003). Consequently, religious behaviors, such as observing taboos, fasting, or engaging in collective rituals, serve as signals of trustworthiness to fellow community members. Extensive research, employing observational, survey, and experimental methodologies, consistently supports the claim that signaling decisions are grounded in cooperative intentions and that religious signaling is linked to increased cooperation among signalers, along with enhanced trustworthiness as perceived by other believers (Chvaja et al., 2023; Lang, Chvaja, et al., 2022; Power, 2017; Soler, 2012; Sosis & Ruffle, 2003). Notably, religious signaling extends its positive influence on support provided to mothers and their children among co-religionists in both market-integrated (Shaver et al., 2019, 2020) and non-integrated societies (Shaver et al., under review).

When societies navigate through insecurity shocks, following challenging times, such as during wars or natural disasters, cooperation is needed more and strategies fostering social cohesion, and a trusted cooperative environment become crucial. Notably, societies have historically developed institutions like marital law, frequently declared during wars, to secure cooperation. Indeed, research shows that both real-world wars and economic games simulating intergroup conflicts increase a costly punishment of non-cooperators (Gneezy & Fessler, 2012; Sääksvuori et al., 2011). Similarly, religious participation and adherence to religiously anchored social norms are expected to intensify during wars. Cross-sectional studies reveal a positive association between religiosity and various forms of existential insecurity, including state-sponsored violence (Carreras & Verghese, 2020) and war (Immerzeel & Van Tubergen, 2013). Recent natural experiments further demonstrate that wars and violent events worldwide increase religiosity, sometimes persisting even years after a ceasefire (Cesur et al., 2020; Henrich et al., 2019; Shai, 2022; van Tubergen et al., 2022).

Simultaneously, the benefits of being religious become particularly pronounced among war refugees, owing to the imperative of heightened cooperation. Refugees face the daunting task of rebuilding their lives with diminished material and social capital. In this context, religion plays a vital role in aiding the accumulation of social capital through an additional layer of social networks comprised of coreligionists, either from the local population or the country of origin (Ensminger, 1997). Native residents, encountering newcomers as strangers, seek cues indicating newcomers' trustworthiness and it is exactly in such a scenario where religious signals may serve as a reliable indicator of trustworthiness (Chvaja et al., 2023; McCullough et al., 2016). Notably, immigrants frequently exhibit increased religiosity compared to previous generations (Aleksynska & Chiswick, 2013), and use religion to increase their social capital (Cheung & Phillimore, 2014; Wilkinson et al., 2017). Our recent experimental evidence further suggests that during intergroup conflict, groups displaying such signals tend to be more cooperative and outcompete groups without signals (Lang et al., 2024).

An alternative view of the association between war and religion considers religiosity a coping strategy to deal with the stress and anxieties resulting from the war (Pargament, 1997; Pargament et al., 1994). We have recently proposed (Lang & Chvaja, 2022) that individual rituals create predictable environments when people find themselves in uncertain and anxious situations. It has been shown that participants spontaneously ritualize more when they are stressed by public speech (compared to control condition) and that performing individual ritualized behaviors (Lang et al., 2020; Lang, Krátký, et al., 2022) releases anxiety faster than non-ritualized behaviors. Moreover, Israeli women affected by Second Palestinian Intifada recited psalms more often than non-affected women (Sosis, 2007). The overwhelming literature suggests that war refugees are exceptionally prone to experience depressions, anxieties, and post-traumatic stress (El Baba & Colucci, 2018; Henkelmann et al., 2020; Lindert et al., 2009) and individual rituals may help them to cope with these negative psychological states (Sosis & Handwerker, 2011).

In summary, cooperation is a necessity for addressing socioecological challenges, yet it poses a challenge itself. Some evidence suggests that religion emerges as a strategy to surmount the hurdles of cooperation and flourishes in the aftermath of intergroup conflicts to help individuals to rebuild the community and cope with psychological stressors that the war brings. However, several gaps persist in our understanding of the complex relationship between warfare and religiosity.

3. Research questions and contributions of the project

First, a systematic exploration into the short- and long-term effects of war-induced insecurity on religiosity is lacking. While some evidence suggests that people who experienced war are more religious than people who did not experience war, even one decade after the conflict (Henrich et al., 2019), other research concludes that these effects might be temporal (Uecker, 2008). Thus, our first question is **'what is the relationship between war and religiosity in the short- and long-term (RQ1)?'** For example, religiosity may increase rapidly at the beginning of a conflict but then return to the initial levels. Alternatively, religiosity may increase and persist, eventually passing to another generation as those directly affected by the war may be more likely to socialize their children in religious faith. Formal models (Henrich, 2009) and empirical evidence both suggest that early exposure to religious behavior is associated with higher religiosity later in life (Willard & Cingl, 2017).

Second, religion is a complex and multifaceted institution, and some facets of religiosity, but not all, may be increased during the war due to different reasons. As suggested above, collective religiosity may serve as a mechanism to secure needed cooperation and sense of belonging while individual religiosity and especially individual rituals may serve as a psychological coping strategy. While both of these approaches have generated some supportive evidence, the field currently lacks data to separate and estimate their relative contributions. Therefore, we ask '**what are the key factors driving the effects of wars on individual and collective facet of religiosity (RQ2)?'** Based on the reviewed literature, we hypothesize that war-induced anxiety and psychological discomfort will be associated with higher individual religiosity while the need to belong and need for support will be associated with collective religiosity.

Third, although the evidence reviewed above suggests that war induces religiosity, the field lacks data to conclude whether the uptake in religiosity associates with theorized benefits, namely higher social capital, and support among individuals affected by war—represented by war refugees in our project. Consequently, our last question is: **'Does religiosity provide war refugees with benefits in terms of higher social capital and associated support received from their other people around (RQ3)?'**

4. Methods

To answer our research questions, we will conduct a unique quantitative study among refugee mothers located in the Czech Republic. Prior to the quantitative survey, we will run focus groups to understand the specific needs and problems of our targeted population. Moreover, we will pair our primary survey data with the secondary data on geocoded violent events in Ukraine serving as an exogenous proxy for war exposure.

4.1. Population

All of the data will be collected from the population of Ukrainian refugee mothers with at least one child younger than six years who is in the Czech Republic with the mother. This specific sub-population is selected, first, because most refugees are mothers and, second, due to mothers' increased necessity to rely on support provided by others. As of January 2024, the Czech government registers nearly 380,000 refugees, with women between 18 and 65 years constituting 45% of the population, and children under 15 accounting for 19%. A significant challenge faced by these refugees is income poverty, particularly evident in households led by a single parent with two or more children. Of noteworthy concern is the gender disparity in employment, with women being more likely than men to take on multiple jobs (37% vs 16%). This challenge is exacerbated by the need for women to juggle work, learning language, and childcare (Jirka et al., 2023; Šafářová et al., 2023). However, if we can fail to recruit 2000 mothers who meet our criteria, we will include questions on children in a screening survey and, eventually, increase the child's age as criteria and adapt questions on childcare. E.g., we would create a different set of questions for children younger and older six. Since the major Christian denomination in Ukraine is the Orthodox Church (~72%) while the Czech Republic is mostly non-religious (only ~10% of Catholics and ~1% Orthodox Christians), we need to understand how Ukrainian refugee mothers live their religion in the Czech Republic.

4.2. Focus groups

The central questions of our group qualitative discussions will be whether women visit local churches together with Czech believers, build their own religious communities, or attend some of the scarce Orthodox churches in their new residential area. Next, we will ask women about the sources of their

anxieties and fears either resulting from the Russian oppression or economic deprivation in the Czech Republic and their own reflection upon the effects of war on their religiosity. A key topic will be obstacles to juggling work and childcare. We will conduct four focus groups, with 6-8 women each, to vary age in order to separate their specific problems.

4.3. Quantitative survey

We will survey around 2000 respondents currently living in the Czech Republic carefully sampled to show diversity in their regions of origin (variance in exposure to war). The sample size represents a compromise. On the one hand, it is enough to secure variation in the main independent and dependent variables. Specifically, social support provided to mothers may be zero-inflated, requiring a larger sample size to observe variation. We also need a variation on war exposure within individual Ukrainian regions because the regional differences in religiosity. On the other hand, the specific subpopulation of mothers in the Czech Republic who meet our criteria is small compared to the whole nation and reaching a larger sample may be financially and organizationally problematic.

First, we will advertise the study utilizing the PI's contacts within the community of volunteers helping refugees in Ostrava, social media (PI has administrative access to the Facebook groups where refugees look for accommodation) and contacting other organizations working with refugees. Mothers willing to participate will fill an online screening questionnaire that will be used to sample geographically diverse sample and evaluate participation criteria. Sampled mothers will fill the main survey online (both screening and main survey will be translated to Ukrainian language).

The main modules of the survey and examples of associated potential items are described in Table 1. To design the specific questions on religiosity, war exposure, and social support, we will use insights from the focus groups. The survey will be piloted in several rounds to ensure that respondents understand questions and are able to fill it on their own. To pilot the survey, research assistants will assist respondents with completing the piloted version of the survey. Next, participants will be able to immediately comment and discuss problematic items and give feedback. This procedure proved effective in a project with similar survey design where PI is employed (Spake et al., in press).

Table 1. Overview of survey modules.

Module	Rationale	Example
Perceived religious change	immediate effects of war on religiosity.	Would you say that February 24 affected you in your religiosity? (negatively -2, -1, 0, +1, +2 positively)
Current collective and individual religiosity	Middle-term effects of war on religiosity.	How many times did you visit mass/pray outside of mass in the past two months?
Over-generational religiosity	Potential over-generational effects of war on religiosity.	Do you teach your children about the God?
War-exposure	Creating index serving as independent variable exogenous to religiosity.	ZIP code to pair with ACLED data/ Is your husband/partner serving in the military?
Economic deprivation	Separating war-insecurity from economic insecurity.	Have you experienced situation when you do not have enough money for your basic needs?
Supportive networks	Understanding potential benefits of being religious for refugees.	In last two months, list all people who helped you with childcare/supported you emotionally/ financially /helped you find a job.
Maternal support		How often did person X wash/play with/supervised/take care when you worked
Need to belong, anxiety, depression and post-traumatic stress	Hypothetical predictors of collective and individual religiosity	Need to belong scale (Leary et al., 2013) and The Refugee Health Screener (Hollifield et al., 2013)

4.4.Secondary data

To create an index of war exposure, we will utilize secondary data set called 'The Armed Conflict Location & Event Data Project (ACLED)'. ACLED includes all war-related events in Ukraine from 2018 to current date, coded for locations, sides, types (including code for civilian targeting), and casualties. We will calculate a war exposure index (e.g., by summing all civilian casualties) for a given location and pair the index with participant's original location. We will check the war exposure using items from the survey on self-reported war-induced insecurity. Moreover, we will add questions asking about the presence of property and close people in the affected territories to weight the objective index of war exposure. As such, we will obtain nuanced exogenous measure of war-induced insecurity sensitive to individual situation of all participants.

4.5.Models

We will estimate three models answering three research questions.

The first model tests whether war exposure is positively associated with religiosity measured as self-reported religious change immediately after the invasion, current religiosity, and intentional introduction of the child to the mother's religion. Importantly, we will include covariate of economic deprivation to separate the effects of the two insecurity types.

The second model tests whether need to belong/ war-induced anxiety associates positively with the current collective/ individual religiosity.

The third model tests the association between current religiosity and size of supportive networks/ maternal and social support that mothers received from (and provided to) their supportive networks.

For all tests, we will carefully choose appropriate generalized models such as Poisson/negative binomial for count data (e.g., number of people who helped with childcare) or ordered categorical models for ordinal variables. Selection of covariates will be based on causal modelling framework utilizing Directed Acyclic Graphs (Bulbulia et al., 2021) that will allow causally relevant interpretations.

4.6.Interpretation, data, and ethics

Interpretation and contingency are inherently characterized by independent nature of our studies. Each model addresses the primary research question, contributing cumulatively to the overall understanding of the relationship between war-induced insecurity and religiosity. Consequently, the outcomes of individual studies do not hinge on the results of preceding ones. For example, if we fail to discern the anticipated relationship in model 1, we are still capable of testing models 2 and 3. While objective exposure to war do not need to predict religiosity, war-induced anxiety and need to belong may still be positively associated with religiosity.

Given our engagement with a vulnerable population, we are committed to upholding the most stringent ethical standards throughout our research endeavor. We will renumerate all respondents' time financially and fairly, and ensure them that they can freely leave the study. Under all circumstances, personally identifiable data will be exclusively known to the PI, who will possess the sole access to such data. Researchers conducting focus groups will be provided only with a list of first names and codes, previously shared with the participants. In both focus groups and surveys, women will not communicate using their actual names. The same protocol will be applied to the screening and main survey. The screening survey, inclusive of GDPR consent and basic demographics, will assign each woman a random code to serve as her study ID for the main survey. Notably, the data from the main survey will be segregated from the screening survey, with only the PI having access to both datasets, securing a link between research and personal data. The data in spreadsheet format (survey) and audio and text format (focus groups) will be stored at secured servers. All individual studies will be discussed with Institutional Review Board regarding the potential ethical issues.

5. Feasibility

5.1.Team and facilities

ERUNI stands as a well-equipped and supportive environment, providing essential resources for the team to effectively execute the project. ERUNI commits to furnishing standard office spaces and administrative support for the team and will supply iPads for potential in person data collection. Legal aspects will be managed by ERUNI's legal team, ensuring all necessary documents for remunerating

participants and GDPR contracts, enabling the research team to safely store and manage personal data. ERUNI was granted the HR Award after the approval of the Action Plan (link here) by EC.

The core team's background will mirror the interdisciplinarity of the project methodology, consisting of a scholar of religion (the PI), an anthropologist (Anushé Hassan), and a sociologist (Světlana Nedvědová). The team will also consult with two external experts and employ several Ukrainian speaking research assistants.

Radim Chvaja (PI). Dr. Chvaja obtained his Ph.D. in the study of religions at LEVYNA (Laboratory for the Experimental Research of Religion) at Masaryk University in 2023, where he was trained in experimental and field-survey methods. As a first author on several projects, he has experience with leading international teams (Chvaja et al., 2023, 2024). From 2021, Dr. Chvaja is affiliated with ERUNI where he has leveraged natural experiments to test effects of crises on religiosity (Chvaja et al., 2024). Currently he is also a post-doctoral fellow at the Religion Programme, University of Otago, New Zealand, where he collaborates with a large international team to study how religiosity associates with maternal support. Dr. Chvaja pursues his own systematic research line centered along the basic question–Does religion come with collective and individual benefit? So far, his published work has appeared in top journals of various social sciences such as *Evolution and Human Behavior (Q1), Social Science Research (Q2), European Journal of Social Psychology (Q2),* or *Royal Society Open Science (Q2).*

Anushé Hassan (AH, researcher). AH is an anthropologist with a Ph.D. from the Department of Population Health at London School of Hygiene and Tropical Medicine. Her research utilizes qualitative and quantitative methods to study women's supportive networks, childcare, and well-being, and has appeared in top behavioral journals such as *Nature Human Behaviour (Q1)* and *Philosophical Transactions of the Royal Society B (Q1).*

Světlana Nedvědová (SN, student researcher). SN is a Ph.D. candidate at the Department of Sociology at Masaryk University. In her dissertation, she investigates various forms of mourning in the Czech Republic using qualitative methods. Her role in the project will be to run focus groups and analyze data from them. Although she speaks Russian, she will closely collaborate with Ukrainian research assistants who will assist in cases of language barriers. The project will help SN at the beginning of her academic career by co-authoring publications and supervision by the PI and AH.

Research assistants. We will hire a team of native Ukrainian speakers and students of Ukrainian translation led by Alisa Lapyhina, a master student at ERUNI. Their tasks will be to back translate our survey and focus groups into Ukrainian, assist during focus groups, and assist during pilot survey interviews.

Rebecca Sear (external expert). Prof. Sear is a world-leading expert in anthropology of families, childrearing, and woman's well-being. We will leverage her expertise in designing survey and writing up the results.

John Shaver (external expert). Associate prof. Shaver is an expert on religion and cooperation. We will consult our findings and potential interpretations with him.

5.2.Deliverables and workplan

The answers to three research questions will be published as three independent academic papers in recognized behavioral and sociological journals. Our general strategy will be to first target journals with which we have experience. Thus, the studies on RQ1 and RQ2 will be aimed at sociological journals such as *Journal for the Scientific Study of Religion (Q2)* or *Social Science Research (Q2).* The study on RQ3 will be submitted to behavioral journal such as *Evolution and Human Behavior (Q1).* Our aim is to publish at least one paper in Q1 journal, and the others in Q2 journals. On top of journal papers, we will communicate our findings to general public by creating an official website of the project that will outline projects' aims at the beginning of 2025. This website will be updated with new findings throughout the project period and at the end of the project, we will publish final report. Furthermore, we will publish finalized dataset with description, notes, and codebook on trusted permanent repository such as osf.io.

During the first year, PI will work extensively towards organizing a survey cohort. In the meantime, AH and SN, in consultation with the PI will design focus groups and SN will run focus groups in the second

half of the first year. Once a cohort is built and the final sample drawn, we will collect data. Before data collection, a team will preregister predictions and analysis plans at trusted repository. After all data are collected, the PI will analyze data, write up the drafts, and receive comments from all team members. We plan to draft manuscripts during the second and third year of the project with the third year being planned almost solely for publications.

In the second and third year of the project, we will present key results of the project at sociological (e.g., *Association for the Sociology of Religion*) and behavioral science conferences (e.g., *European Human Behaviour and Evolution Association*) to obtain feedback from experts with various backgrounds.

5.3. Risk assessment

The risks are linked to the evolving dynamics of the conflict. As of January 2024, experts posit that the conflict might either reach a state of freezing or, in the case of insufficient ammunition supplies from western allies, Ukraine could be compelled to enter into an asymmetric peace treaty. This would likely trigger another wave of migration. In anticipation of these potential shifts, we must be prepared to adapt our research approach. We would incorporate nuanced modules into the preliminary questionnaire to measure reasons behind the decision to migrate. It would be crucial to distinguish individuals whose primary motivation is linked to the war itself, rather than a broader loss of political freedom. In the face of new reasons for migration, we can operationalize these factors as a distinct type of insecurity. If, on the other hand, Ukraine achieves a decisive victory over Russia, potentially resulting in the portion of refugees returning home, we acknowledge the likely decrease in our target population. However, this situation offers an opportunity to explore whether the effects of war persist even after its conclusion, presenting a valuable avenue for enriching the theoretical discussion.

6. Impact

The question on how cooperation evolved is one of the most important research questions as noted by *Science* journal (Pennisi, 2005). The project will significantly enrich the current academic debates about evolution of cooperation in relation to religious systems as it studies flourishing of religion in conditions of violent intergroup conflicts and other types of insecurity–socioecological context present during the most of our history. As such, this project will also contribute to the debate about existential insecurity and secularization (Norris & Inglehart, 2004), providing data on over-generational effects of insecurity on religiosity. Last but not least, the findings of this project could be utilized by policymakers to understand informal routes of support among refugees in the Czech Republic.

7. References

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