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Shared suffering predicts prosocial commitment among Turkish earthquake survivors

Sevgi Demiroglu[1]✉, Claire White[2], Dimitris Xygalatas[1,3], Danielle Morales[4], Andrew Ainsworth[5] & Harvey Whitehouse[6]

Previous research suggests that the perception of shared emotion associated with personally transformative events can foster a strong form of social bonding known as 'identity fusion', which motivates pro-group action. Here we test predictions from this model among Turkish citizens and Syrian refugees following the catastrophic earthquakes in Turkey on February 6th, 2023. The lead researcher administered surveys in person to 120 Turkish earthquake survivors in the most heavily affected areas. In line with our predictions, mean levels of identity fusion significantly increased with perceived shared suffering for both Turkish and Syrian groups. Further, identity fusion predicted prosocial commitment, measured by the expressed willingness of earthquake survivors to volunteer assistance to disaster victims. Remarkably, participants were as likely to pledge help to other Turkish earthquake survivors as they were to their own families. This study contributes to a growing understanding of how shared suffering facilitates group bonding and cooperation, both within and across social groups.

Keywords Identity fusion, Earthquake, Prosociality, Turkey, Syria

On February 6th, 2023, two major earthquakes measuring 7.7 and 7.6 on the Richter scale struck Turkey near the Southern border with Syria. These seismic events, now recognized as one of the deadliest natural disasters in modern history, had devastating consequences, especially for Turkish residents close to the epicenter and surrounding settlements[1]. The toll in Turkey included the loss of over 50 thousand lives[2], more than 5 million people displaced, and a trail of destruction across 11 Turkish Provinces[3]. News coverage of the aftermath of the earthquakes highlighted new social dimensions to interpersonal relations in Turkey. Poignant images showing local Turkish Citizens comforting or assisting one another amidst the debris circulated on media outlets[4]. Heightened feelings of cohesion among Turkish communities were also underscored by slogans such as "from the disaster of the century to the solidarity of the century" (Turkish: *Asrın Felaketinden Yüzyılın Dayanışmasına*), as observed by the lead author outside displaced communities in Nurdağı, Gaziantep.

Concurrently, reports of Turkish Nationalism and a precipitous surge in antagonism towards the 3.5 million registered Syrian refugees residing in Turkey circulated widely, reportedly fueled by growing competition for scarce resources following the disaster[5]. The tenor of Turkish-Syrian relations was further underscored by reports indicating that nearly 60,000 Syrians felt compelled to return to Syria when borders temporarily opened[6]. Amidst the dominant media narrative of anti-Syrian sentiment in Turkey[7,8], however, there were also reports of quiet coexistence and acts of kindness between groups at the Turkish border[9]. A 2023 report by the American think tank "Washington Institute for Near East Policy" further highlighted the potential underreporting of positive relations between the groups, concluding that Turkish social media depictions of Syrian resentment were unreliable and that their dissemination was influenced by the 2022 censorship laws against mainstream news, leading Turks to rely on alternative platforms that frequently promoted hateful language, bigotry, and racism against Syrians[10].

The goal of our study is to better understand the impact of the catastrophic events of February 2023 on group bonding and cooperation in Turkey. Our research agenda is informed by evolving evidence that perceptions of shared emotion during personally transformative events—such as natural disasters— can foster identity fusion, a visceral feeling of oneness with the group that predicts extreme forms of pro-group behavior[11–13] including collective action[14], see Fig. 1[15–17].

[1]Department of Anthropology, University of Connecticut, Storrs, USA. [2]Department of Religious Studies, California State University, Northridge, USA. [3]Department of Psychological Sciences, University of Connecticut, Storrs, USA. [4]Department of Sociology, California State University, Northridge, USA. [5]Department of Psychology, California State University, Northridge, USA. [6]School of Anthropology & Museum Ethnography, University of Oxford, Oxford, England, UK. ✉email: sevgi.demiroglu@uconn.edu

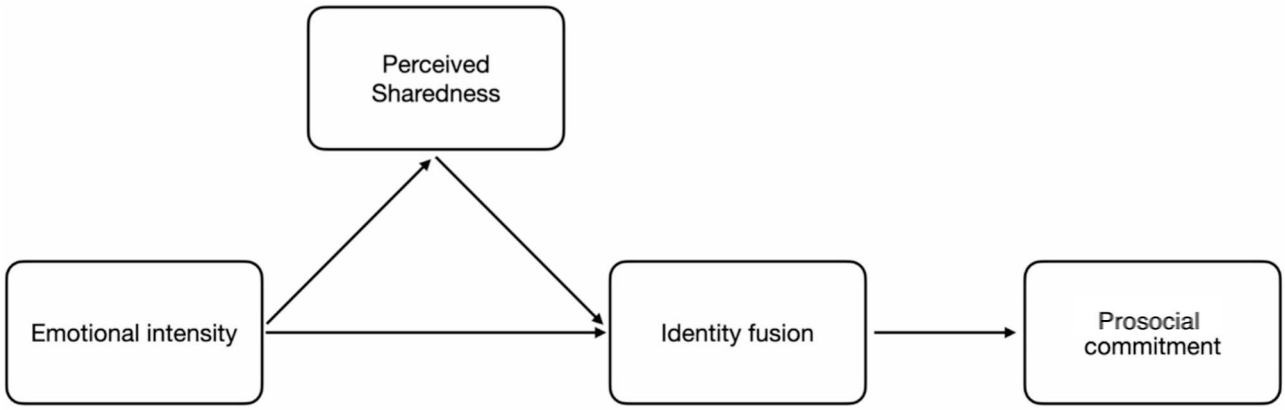

Fig. 1. Theoretical model of the shared emotions pathway to prosocial commitment.

To empirically explore the possibility that the experiences of the Turkish earthquakes contributed to fusion, the lead author, a Turkish Citizen, immersed herself in areas close to fault lines in Southern Turkey to survey Turks directly affected by the tremors. In line with the shared emotions pathway to fusion and prosocial commitment (Fig. 1) and based on previous research[18,19], we predicted that (hypothesis 1) perceived sharedness of emotional intensity at the time of the earthquake would mediate the relationship between emotional intensity and identity fusion for both fellow Turks and Syrians. We also probed the relative contribution of social relationships and perceptions of shared experiences of the disaster on these outcomes by asking participants to make judgments about five target groups: (a) Family members present with the participant when the earthquake happened; Turks who were (b) directly impacted; or (c) not directly impacted by the earthquake; and Syrians who were (d) directly impacted; or (e) not directly impacted by the earthquake. Here, we expected that (hypothesis 2) mean fusion scores for Turks and Syrians impacted by the earthquake would be significantly higher than these groups when not impacted (i.e., impacted Turks would be significantly higher than non-impacted Turks). We also explored whether fusion scores for family members present during the disaster would be significantly higher than all other groups, given previous research suggesting that fusion is closely associated with familial ties and bonds of kinship[11–13,15]. Finally, we predicted that (hypothesis 3) identity fusion would be associated with prosocial commitment for all groups.

Results

Emotional intensity, identity fusion, and perceived shared emotional intensity during the earthquakes

Our first hypothesis predicted that the level of perceived emotional intensity within the five target groups would mediate the relationship between emotional intensity and identity fusion. A mediation analysis showed that this was indeed the case for Turkish earthquake survivors. There was a positive relationship between the level of emotional intensity and the perceived emotional sharedness of the event (estimate = 0.128, SE = 0.040, Z = 3.207, $p = 0.001$). A similar relationship was found between perceived sharedness of emotional intensity and identity fusion (estimate = 0.413, SE = 0.095, Z = 4.361, $p < 0.001$), suggesting that greater shared experiences enhanced group identity fusion. This indirect effect was significant (estimate = 0.053, SE = 0.020, Z = 2.583, $p = 0.01$), indicating that 33.548% of the effect of emotional intensity on identity fusion was mediated through perceptions of shared experience. However, no significant indirect effects were found for the other four groups, which was likely due to a ceiling effect of emotional intensity.

Perceived sharedness of emotional intensity and identity fusion

We further investigated the relationship between the perception of emotional sharedness and identity fusion for each of the five target groups. Ordinal Logistic Regression analyses revealed that perceived emotional sharedness predicted identity fusion with all five groups. Specifically, perceived emotional sharedness with family members present during the earthquakes predicted identity fusion with that group (estimate = 0.350, SE = 0.156, Z = 2.243, $p = 0.025$); and similarly for Turks impacted by the earthquake (estimate = 0.677, SE = 0.183, Z = 3.704, $p < 0.001$); non-impacted Turks (estimate = 0.478, SE = 0.137, Z = 3.496, $p < 0.001$); impacted Syrians (estimate = 0.662, SE = 0.112, Z = 5.907, $p < 0.001$); and non-impacted Syrians (estimate = 0.595, SE = 0.125, Z = 4.778, $p < 0.001$).

In addition, we examined the relative contribution of shared social relationships and perceptions of shared experiences of the disaster on identity fusion and prosocial commitment.

Identity fusion by target groups

We expected that mean fusion scores for those impacted by the earthquake would be significantly higher than matching groups not impacted (hypothesis 2), and that fusion scores for family members co-present during the disaster would be the highest overall, based on preexisting relationships and a perceived shared experience of the earthquake. To test this hypothesis, we used a repeated measures ANOVA and post-hoc tests with Tukey correction for pairwise comparisons. Hypothesis 2 was confirmed. That is, participants felt more fused to

impacted Turks compared to non-impacted Turks, and more fused to Syrian earthquake survivors compared to Syrians not impacted by the earthquake. Unsurprisingly, the highest fusion levels were reported for co-present family members. The post-hoc comparisons showed that fusion levels were significantly different between all pairs (all $p_{Tukey} < 0.006$), except for groups 1 and 2. Remarkably, we found no significant difference in fusion towards family members present during the disaster and other Turkish survivors ($p_{Tukey} < 0.467$) (Fig. 2).

Identity fusion and prosocial commitment

According to hypothesis 3, fusion levels would predict prosocial commitment for target groups. We tested this prediction through Ordinal Logistic Regression models to explore how fusion with a target group relates to prosocial commitment with the same group. Results confirmed that identity fusion predicted levels of prosocial commitment across all three groups tested (i.e., only those who were directly impacted by the earthquake, to mitigate the confound of the extent to which groups needed help). Specifically, fusion with co-present family members was related to commitment to that group (estimate = 0.405, SE = 0.159, Z = 2.539, $p = 0.011$); fusion with Turks directly impacted by the earthquake was related to prosocial commitment towards fellow Turks (estimate = 0.860, SE = 0.211, Z = 4.076, $p < 0.001$); and fusion with impacted Syrians also predicted offering support to the same group (estimate = 0.653, SE = 0.143, Z = 4.581, $p < 0.001$).

Prosocial commitment by target groups

We expected that levels of prosocial commitment would increase based on social affinity and shared history. Thus, commitment levels to family members who were physically present with participants during the earthquake should be higher than to Turkish people, which in turn should be higher than to Syrians. A repeated measures ANOVA and post-hoc tests with Tukey correction for pairwise comparisons confirmed these predictions. However, while the difference between commitment to Turks was significantly higher than to Syrians ($p_{Tukey} < 0.001$), commitment to co-present family members was not significantly higher than to other Turks ($p_{Tukey} = 0.217$).

Discussion

Our results validate the three hypotheses proposed in this study, supporting the shared emotions pathway to prosocial commitment in the aftermath of a natural disaster. More broadly, our findings also provide insight into post-earthquake interpersonal relations amongst Turks in the most heavily impacted areas in Turkey. First, our data reinforce media depictions of heightened social bonding amongst Turkish Citizens, united in tragedy following the 2023 earthquakes. In fact, the Turks we surveyed represented themselves as bonded to fellow Turkish earthquake survivors like family[20]. Second, these attitudes extended to prosocial intentions: even though most of our participants' lives had been decimated by the disaster and many resided in temporary mobile homes, they were as willing to pledge help to fellow Turkish survivors as they were to their own families. Third, our data challenge mainstream perceptions of extensively negative relationships between Syrian and Turkish survivors, characterized by intergroup hostility and mistrust. Our data suggest that Turkish earthquake survivors who were traumatized by their shared experiences felt social affinity with Syrian refugees who likewise suffered.

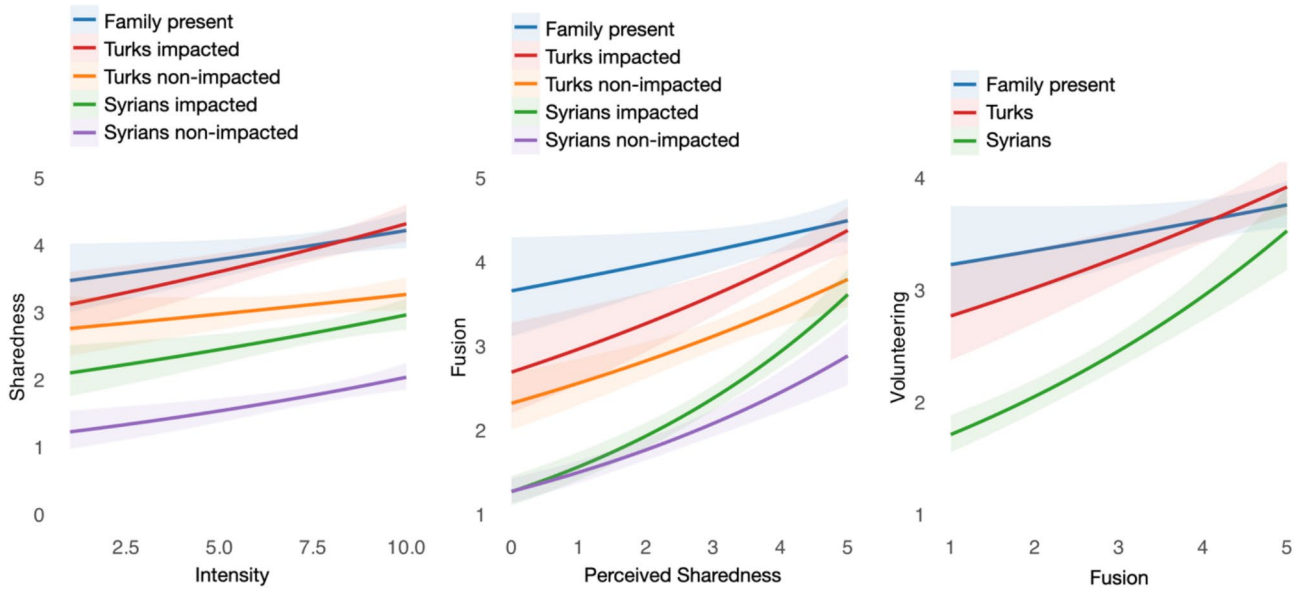

Fig. 2. Estimate plots showing that across all target groups, emotional intensity predicted perceived emotional sharedness; perceived emotional sharedness predicted identity fusion; and identity fusion predicted prosocial commitment. All three outcomes (perceived sharedness, fusion, and prosocial commitment) were stronger for more socially proximal groups based on their shared history (family present during the earthquakes and other Turks) and shared suffering (other survivors).

Importantly, sharing personally transformative experiences of the earthquakes was not only associated with higher levels of identity fusion but also with greater willingness to support other Syrian earthquake survivors.

These findings should be considered in light of the limitations of our study. One is that the relationships observed here between shared suffering, fusion, and pro-group action are correlational. To explore whether it is indeed the shared emotional intensity or experiences that is driving the effects of group bonding and cooperation in the wake of natural disasters, longitudinal designs may be particularly useful. Such an approach might also allow researchers to explore the longevity of any effects of shared experience on fusion and prosocial behavior. Another limitation of the present research is that it focused mainly on the effects of the earthquakes on those most directly affected rather than on the general populations in Turkey and Syria, whose responses to the disaster both psychologically and behaviorally are not well understood. Again, further research is needed to compare the effects of directly versus vicariously shared experiences on natural disasters on fusion and helping behaviors in the wake of natural disasters.

Overall, our findings provide a more nuanced picture of the relationship between Turkish citizens and Syrian refugees than media accounts in which hatred among Turks towards Syrians peaked in the wake of the earthquakes. These findings also have important implications for public policy relating to disaster management and to the work of NGOs directly involved in providing support on the ground. If shared experiences of natural disasters increase fusion and prosocial commitment, then this is a valuable resource that could be more effectively harnessed by governments and relief agencies alike.

Methods

The study was approved by the Institutional Review Board of the University of Connecticut, and all research was performed in accordance with the Declaration of Helsinki. All questions were optional, and some participants chose not to answer some of the questions. As the proportion of missing data was low (3.96% missingness), we applied complete case analysis without any imputation.

Participants

122 participants were recruited for the study between May 10th –June 9th, 2023. Two participants were excluded from the analyses because they completed less than 10% of the survey. The final sample included 120 Turkish earthquake survivors (60 male and 60 female) between the ages of 18 and 68 ($M = 32.9$, $SD = 12.2$). Among them, 79.4% had completed high school, while 47.1% also had some tertiary education. All but two participants identified as Muslim (one Christian and one Atheist).

When the earthquakes struck on 6th February 2023, 54.2% of the sample were near the first earthquake's epicenter in Gaziantep, with others in the second earthquake's epicenter in Kahramanmaraş (14.4%) or other heavily impacted areas in Southern Turkey (31.4%). Almost all participants reported being with immediate family (90.8%) when the major earthquakes struck.

As expected, the lives of our participants were drastically impacted by the catastrophe. Almost half (42.5%) of our sample had experienced the death of a loved one because of the earthquake and 28.3% had sustained injury to themselves or their family members. Just under one-third (30.8%) had lost their homes, and 23.3% had been relocated to another town. Over half (53.3%) reported losing their job or experiencing some other serious financial hardship. Previous research suggests that reflection on shared emotional experiences over time gradually contributes to processes of identity formation contributing to the fusion process[21–23].

Levels of distress

The prevalence of probable post-traumatic stress disorder (PTSD) among survivors was alarmingly high at 85.2%, with scores on the Revised Impact of Events Scale (IES-R, 24) ranging widely from 9 to 85 ($M = 52.6$, $SD = 17.3$) (Fig. 3). Mean levels reflect our sampling and data collection methods; namely, we solicited volunteers in person and conducted surveys with survivors from the most severely impacted areas. By contrast, another study, using online surveys sent to Turkish hospital patients and their families also in May 2023 reported 51.4% probable PTSD[24]. This may be because more impacted areas and individuals were less likely to have internet access. To the best of our knowledge, we found the highest prevalence of post-earthquake PTSD in our sample[25,26].

Social support

Participants rated their perceived level of social support since the earthquakes on a 5-point scale from 0 – "Completely Unsupported" to 4 – "Completely Supported" across six groups: family; friends; religious community; government; NGOs and aid; and world. Mean scores for each group ranged from 3.3 for family—closely followed by friends (3.2), to 1.6 for members of the religious community.

Procedure

In May 2024, the interviewer (lead author), a native Turkish Citizen, traveled across eight of the most impacted areas (i.e., cities and surrounding villages) in Turkey (Fig. 4) over a one-month period to survey earthquake survivors.

To minimize sampling bias, we adopted two recruitment strategies across each of the eight impacted areas. First, based on convenience sampling, the interviewer solicited volunteers in public places, such as outdoor markets and public parks. Second, we sought to recruit the most impacted individuals by inviting dwellers on the outskirts of temporary settlements (e.g., mobile cities) to participate. The interviewer approached people congregating in public areas (e.g., selling items, gathering for coffee) around settlements to participate in the study. For all potential participants, the interviewer explained in Turkish that she was studying peoples' experiences of the earthquake and seeking volunteers to complete a digital survey in private. Potential participants were also provided with a paper copy of the information sheet and walked to a nearby location to ensure privacy while

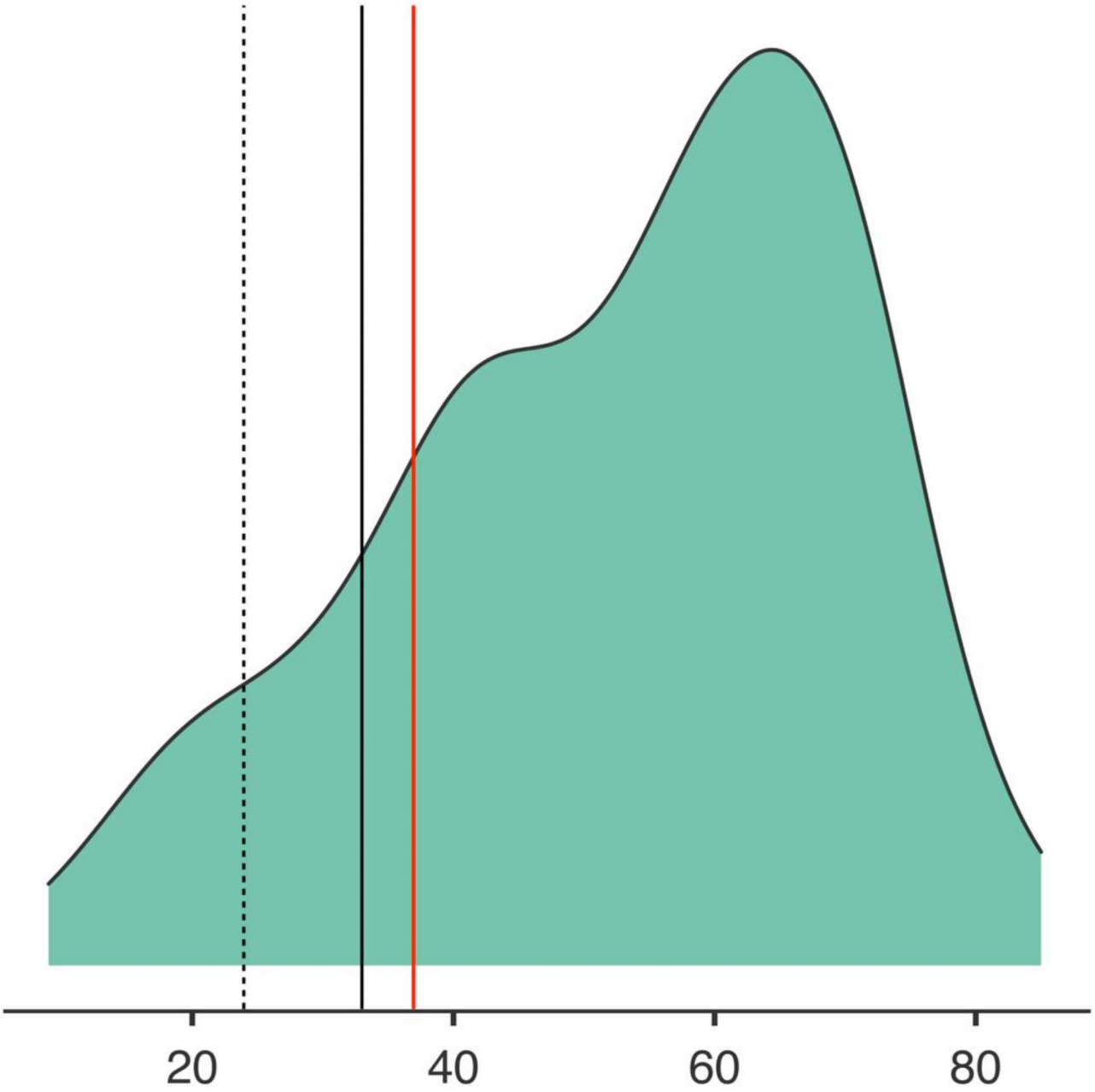

Fig. 3. Density plot showing the frequency distribution of IES-R scores against clinical thresholds. The first vertical dotted line from the left represents the threshold for clinical concern; the second vertical line (middle) represents the cutoff for a probable diagnosis of PTSD; and the red vertical line on the right marks what is considered high enough to suppress immune functioning for 10 years after an impact event. 82.6% of respondents in our sample were above this latter threshold.

they read it. Due to cultural sensitivities towards signing documents—particularly those that could be perceived as mechanisms for tracing identity or forms of criticism against the Turkish government, and to allow for a more interactive discussion, consent was obtained verbally by the interviewer.

Participants were provided with a tablet computer running Qualtrics. The survey was displayed in Turkish on the screen and the interviewer addressed any questions or clarifications. Demographics and details about perceived social support were completed at the end of the study to minimize priming before the main questions. At the end of the interview, participants were thanked for their assistance and reminded that the information sheet contained the details of two free hotlines for psychological counseling for earthquake trauma in Turkey. At the conclusion of the study, the interviewer translated the survey responses from Turkish to English.

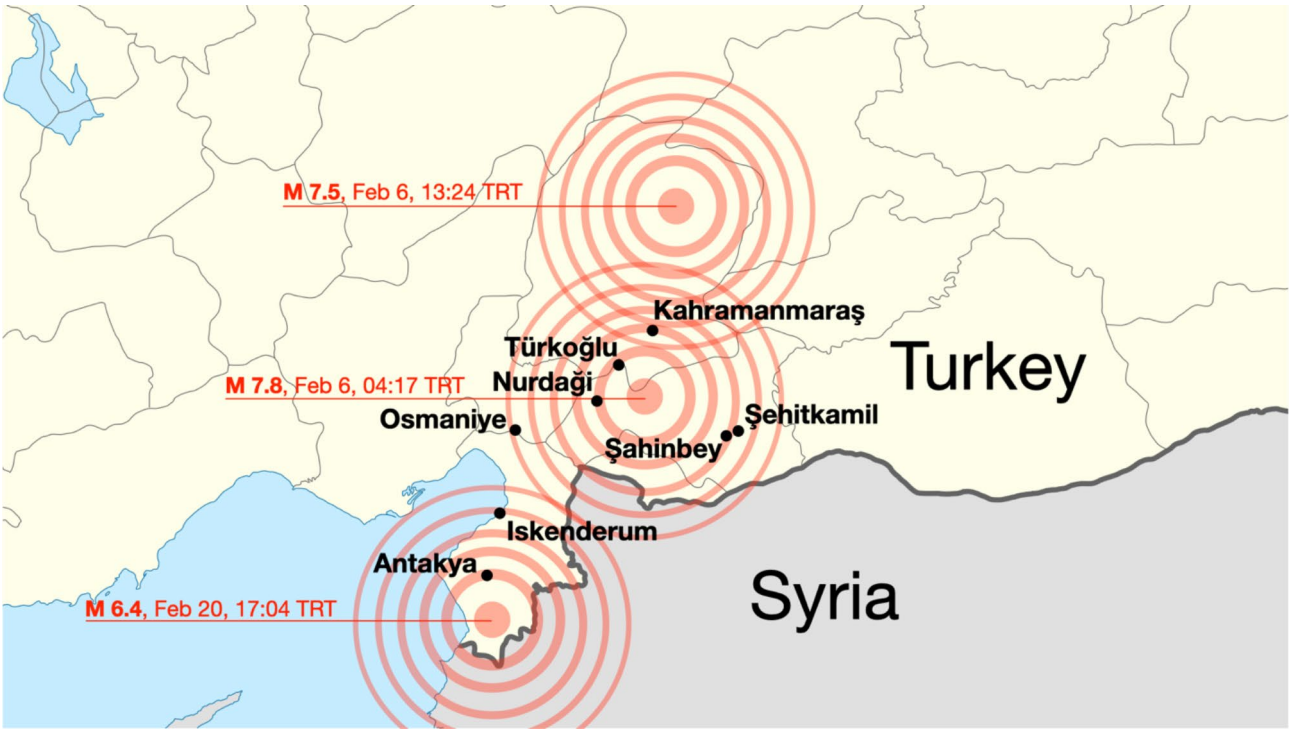

Fig. 4. Eight Areas in Turkey (designated by black dots) where the lead researcher conducted interviews. Earthquake epicenters are marked by red concentric circles. Map adapted from Wikipedia commons.

Measures

Post-traumatic stress levels

We assessed PTSD levels with The Impact of Event Scale – Revised (IES-R)[18], a self-report measure of post-traumatic stress disorder symptoms, previously used with survivors of earthquake disasters[27]. The revised scale consists of 22 items (7 were added to the original IES[27,28] to better capture the Diagnostic and Statistical Manual of Mental Disorders (DSM) criteria for PTSD, assessing distress produced by a specific traumatic event (e.g., "Images about the event popped into my mind"). Respondents rated the extent to which the statements applied to them since the earthquake on a 5-point scale (0 = "Not at All"; 1 = "A Little Bit", 2 = "Moderately"; 3 = "Quite a Bit"; 4 = "Extremely"). We added scores and then computed the sums of all 22 items (Cronbach's $\alpha = 0.901$). Scores for 8 subjects who did not answer between one and three items were prorated, while scores for five subjects who skipped more than three questions were removed.

The IES-R yields a total score ranging from 0 to 88, and scores have the following associations: at 24 or more PTSD is a clinical concern[29]; 33 and above represents the cutoff for a probable diagnosis of PTSD[30] and 37 or more is high enough to suppress immune functioning 10 years after an impact event[31].

Social support

Participants rated how supported they felt since the earthquake, on a 5-point scale from 0 ("Completely Unsupported") to 4 ("Completely Supported") for 5 groups:[1] immediate family and relatives;[2] friends or members of my community, acquaintances;[3] members of my religious community;[4] the government[5] people who provided aid (e.g., NGOs, international aid);[6] people around the world.

Emotional intensity

Participants rated the intensity of their emotions after the earthquakes struck on February 6th, 2023, by moving the cursor on a visual sliding scale. The scale ranged from 1 "Not Intense at All", with a mid-point of 5 "Intense" to an end-point of 10 "Extremely Intense".

Perceived sharedness

Participants were instructed to first "consider the answer you provided to the last question about the overall intensity of your emotions after the earthquakes struck on February 6th, 2023". Then, they rated the extent to which they thought each of 5 target groups would share the same experience as them, from a scale of 0 = "Not Shared at all" to 5 = "Completely Shared". The five groups were (1) Family members who experienced the earthquake with the participant; (2) Turkish people directly impacted by the earthquake; (3) Turkish people who were not directly impacted by the earthquake; (4) Syrian people directly impacted by the earthquake; and (5) Syrian people who were not directly impacted by the earthquake.

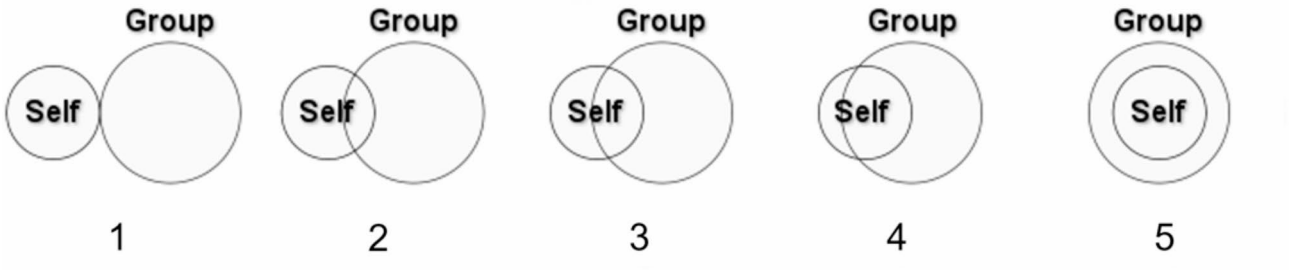

Fig. 5. Pictorial measure of fusion, adapted from Swann et al.[12]

Identity fusion
Identity fusion with the 5 target groups was measured using a pictorial measure[12] as displayed in Fig. 5. The self is depicted as a small circle and the group by a larger circle. The two circles overlap to varying degrees, and participants select which image among five options best characterizes their relationship with the group. The images correspond to five incremental levels of fusion, with the last image[5], where the small circle (personal self) is entirely enclosed by the big circle (group) represents the highest degree of fusion.

Prosocial commitment
We operationalized prosocial commitment towards three target groups directly impacted by the earthquake (family members who were present with the participant during the earthquake; Turkish earthquake survivors; and Syrian earthquake survivors) based on pledging to volunteer time to help each group. Since many earthquake survivors had been deprived of their fundamental possessions, we operationalized prosocial commitment as the willingness to donate time to help the target group, since time was one of the only resources comparably available to all participants. Participants read "If you had the means to do so, how likely would you be to volunteer your time to help other earthquake survivors in the future?" Participants responded on a 5-point scale (0 = "Extremely Unlikely", 1 = "Unlikely", 2 = "Maybe", 3 = "Likely", 4 = "Extremely Likely").

Data availability
Data and transcripts are publicly available: https://osf.io/6ejbw/?view_only=b28c132405bb4d1792fc029222839893.

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Author contributions

SD, CW, DX, and HW developed the study concept and methodology. SD created the electronic version of the study on Qualtrics. SD collected the data. SD, DX, DM, and AA analyzed and interpreted the data. CW and SD wrote the initial draft of the article. All authors provided critical revisions to the manuscript. All authors approved the final version of the article for submission.

Declarations

Competing interests

The authors declare no competing interests.

Ethics approval and consent to participate

This study was approved by the Institutional Review board of the University of Connecticut (#X23-0124) and was conducted in accordance with the Global Code of Conduct for Research in Resource-Poor Settings (TRUST Code) to ensure ethical, inclusive, and equitable collaboration. The study was led by a local researcher and with input from local experts and stakeholders. To protect the anonymity of our subjects, no identifying data were collected, and informed consent was obtained verbally. Findings were shared with local stakeholders to promote transparency and potential policy impact. We only acknowledge here those who chose to identify themselves, according to their wishes.

Additional information

Correspondence and requests for materials should be addressed to S.D.