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# Empathy-Mediated Altruism in Intergroup Contexts: The Role of Posttraumatic Stress and Posttraumatic Growth

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## Abstract

Exposure to war-related violence is associated with greater pro-social behavior. Although researchers point to empathy and individual differences in posttraumatic growth to explain this relationship, there is no direct empirical evidence of the psychological process by which exposure to wartime violence leads to pro-sociality. In this investigation, we propose and test a comprehensive model of empathy-mediated altruism that addresses both how and when exposure to violence may be associated with pro-sociality. Results from a large-scale survey experiment conducted in a naturalistic field setting (1660 refugees from the wars in Syria and Iraq residing in Turkey) indicate that participants reported greater empathy and altruism toward ingroup versus outgroup targets, and that posttraumatic stress predicted less and posttraumatic growth predicted more empathy and altruism. Further, empathy mediated ingroup biases in altruism (i.e., allocation of resources to the self and others); this indirect effect was stronger for those reporting greater posttraumatic growth and posttraumatic stress. These results support our proposed model of empathy-mediated altruism that incorporates individual differences in response to war violence and ingroup preferences.

*Keywords:* empathy, altruism, pro-sociality, exposure to trauma, posttraumatic growth, posttraumatic stress, group identity

## Empathy-Mediated Altruism in Intergroup Contexts:

## The Role of Posttraumatic Stress and Growth

Over the last decade, a growing body of work has found that exposure to war-related violence is associated with greater pro-social and cooperative behavior such as voting, joining community groups, and the outcomes of a variety of incentivized lab-in-the-field games (see Bauer et al., 2016, for a review). Further, exposure to war-related violence increases altruism, or the motivation to promote another's welfare (Batson & Powell, 2003; Bauer, Cassar, Chytilová, & Henrich, 2014; Cecchi, Leuvel, & Voors, 2014; Gilligan, Pasqual, & Samii, 2014; Hartman & Morse, 2018; Lim & DeSteno, 2016; Vollhardt, 2009; Voors et al., 2012). The relationship between exposure to violence and pro-sociality does not depend on the type of violence that subjects experienced, the gender of the subject, or whether participants were victims or perpetrators, and war-related pro-sociality does not appear to decline over time (Bauer et al., 2016). This work has been conducted primarily by political scientists and economists (e.g., Bauer et al., 2016; Blattman, 2009; Voors et al., 2012), who have pointed to experienced empathy – that is, other-directed emotional responses such as feeling sympathy, compassion, and tenderness for others' in need (Batson & Ahmad, 2009; Staub & Vollhardt, 2008) – and individual differences in posttraumatic growth (Calhoun & Tedeschi, 2006) as possible mechanisms explaining this relationship. However, there is no direct empirical evidence supporting the psychological process by which exposure to war-related violence might be associated with pro-sociality, and no existing model integrates across existing theoretical perspectives. In this investigation, we propose and test a comprehensive model of empathy mediated altruism that addresses both how and when exposure to violence relate to pro-sociality and incorporates biases that favor ingroup targets.

### **Empathy Mediated Altruism**

The empathy-altruism hypothesis suggests that other-oriented concern in the form of sympathy and compassion for others' distress provokes altruistic motivation to provide help (Batson, 2010), challenging the assumption that seemingly pro-social behavior directed toward others is actually intended to benefit the self. Forty years of empirical evidence supports the idea that, when confronted with a situation in which others have a need or are in distress and given a clear opportunity to provide help, many people will respond by providing assistance (see Batson, 2010, for a review).

Drawing from this work (Batson & Powell, 2003; de Waal, 2008), exposure to violence is thought to promote emotional sensitivity to others' suffering, thus increasing victims' capacity to empathize with others out of sympathy and compassion (e.g., altruism born of suffering; Staub & Vollhardt, 2008; Vollhardt, 2009). Importantly, emotional empathy or feeling for others in need is at the core of this process, compared to cognitive empathy or perspective-taking (i.e., imagining the thoughts and feelings associated with suffering). This increased emotional empathy should, in turn, play a critical role in the process by which war violence links to pro-sociality (Hartman & Morse, 2018; Lim & DeSteno, 2016). Hartman and Morse (2018) provide initial evidence of empathy mediated altruism in a sample of Ivorian refugees in Liberia following the 2010-11 post-election violence in Côte d'Ivoire. Those who reflected on their own experiences of violence in an earlier conflict reported greater likelihoods of hosting refugees who signaled distress. While these findings are encouraging, they are limited in that empathy was manipulated by asking participants to recall their own exposure to violence, but was not explicitly measured. Thus, these findings do not provide conclusive evidence that emotional

empathy, *per se*, is associated with altruism. The current investigation tests the empathy mediated altruism hypothesis by directly assessing empathy.

A vast literature demonstrates that posttraumatic stress, which is associated with an inward focus on the self and lower capacity to focus on others, consistently predicts maladaptive responses to exposure to violence and other traumas, including negative (and perhaps less positive) emotion toward others (e.g., Hoffman, Liddell, Bryant, & Nickerson, 2019; Spiller et al., 2019; Tuomisto & Roche, 2018). It does so by impairing concern for others' thoughts, feelings, and preferences (i.e., empathy; Nietlisbach & Maercker, 2009; Nietlisbach, Maercker, Rössler, & Haker, 2010; Plana, Lavoie, Battaglia, & Achim, 2014). Building on these findings, we suggest that posttraumatic stress should also undermine empathy mediated altruism.

Although exposure to violence and other traumas often produces distress, it can simultaneously produce posttraumatic growth, or positive psychological change that results from highly challenging life experiences (Calhoun & Tedeschi, 2006; Tedeschi, Park, & Calhoun, 1998). Such growth can take a number of forms, including newfound appreciation for life and personal strength, seeing new opportunities in the world, and positive changes in relationships and spirituality (Calhoun & Tedeschi, 2006). Of particular importance here, posttraumatic growth involves connecting with one's own vulnerability, which may promote empathy and compassion for others who have encountered or may encounter similar circumstances, as well as a strong motive to support them (Tedeschi et al., 1998). This, in turn, should promote more altruistic behaviors towards others (e.g., Hartman & Morse, 2018; Lim & DeSteno, 2016; Tedeschi et al., 1998).

Existing literature on the pro-social effects of warfare has focused on exposure to violence as a predictor of pro-sociality. Some have put forward posttraumatic growth as a

potential explanation (e.g., Bauer et al., 2016; Blattman, 2009), however its impact has yet to be directly tested. Meanwhile, the role of posttraumatic stress has been largely ignored in the literature on war-related pro-sociality (see Bauer et al., 2016, for a review). We predict that posttraumatic stress will be associated with less, and posttraumatic growth with more, empathy and altruism.

Posttraumatic stress and posttraumatic growth are distinct psychological processes which may or may not occur in response to trauma. Although the lifetime prevalence of trauma exposure in the general population is relatively high - up to 89% – the prevalence of clinical levels of posttraumatic stress is substantially lower (e.g., Kilpatrick et al., 2013); the prevalence of posttraumatic growth is unknown. Further, while the literature has identified classes of traumatic events, social factors, individual differences, and comorbidities linked to the likelihood of developing posttraumatic stress and posttraumatic growth (for reviews, see Ozer, Best, Lipsey, & Weiss, 2003; Wu et al., 2019), none necessarily guarantees the occurrence of either.

Importantly, posttraumatic stress and posttraumatic growth tend to co-occur. Experiencing trauma can lead to distress, which is a prerequisite to posttraumatic growth (Tedeschi et al., 1998). This is supported empirically; posttraumatic growth correlates positively with posttraumatic stress in war-exposed samples (Acquaye, Sivo, & Jones, 2018; Magruder, Kılıç, & Koryürek, 2015). Because previous work examining wartime trauma has not examined posttraumatic stress and posttraumatic growth simultaneously, the magnitude of the unique effects of posttraumatic stress and growth are unclear. In this work, we measure both psychological processes, which allows us to capture their unique associations with empathy and altruism.

### **Target group identity**



Political violence is often organized along group lines, with armed combatants claiming to represent the interests of one ethnic, sectarian (Fearon & Laitin, 2000), or political (Steele, 2017) group at the expense of another. These group distinctions can become highly salient during and after periods of political violence, which in turn can fundamentally reshape intergroup relations. Non-combatant outgroup members may be victimized not because of their actions or inactions during conflicts, but simply because their perceived ethnic or religious identity or political preferences represent an existential threat to the ingroup (Wohl, Squires, & Caouette, 2012). The threat posed by outgroups can additionally serve to increase and cement ingroup cohesion (Coser, 1956), as can sharing social identities, such as that of “refugee”, and activate support networks (Alfadhli & Drury, 2016, 2018). In many conflicts, these intergroup processes create and solidify in- and outgroups based on these identities, which is not the case for many other types of violence.

While people are often motivated to alleviate others’ distress, this tendency is particularly fragile when directed toward outgroup members (Cikara, Bruneau, & Saxe, 2011), likely because of differences in the empathy felt for ingroup vs outgroup members (i.e., “parochial empathy”; Bruneau, Cikara, & Saxe, 2017). These effects extend to the context of war violence: the link between war violence and pro-social outcomes, including altruism, is biased in favor of ingroup targets (e.g., Bauer et al., 2014; Cecchi et al., 2014; Hall & Kahn, forthcoming). For example, in a sample of Sierra Leone citizens, exposure to violence predicted greater altruism toward people from their own villages but did not influence altruism towards people from a “distant village” (Bauer et al., 2014). Similarly, Sierra Leone soccer players exposed to violence were more altruistic towards their team than towards opposing teams (Cecchi et al., 2014). However, the outgroups in most existing studies have not been those on the opposing side of the conflict.

Based on this, we expect that empathy mediated altruism will be stronger for ingroup, compared to outgroup, targets, where the outgroup is defined as an opposing side in the civil conflict.

We further expect that this effect will depend on individual differences in responses to violence (i.e., posttraumatic stress and posttraumatic growth). Posttraumatic stress may exacerbate parochial empathy and associated altruism by enhancing the distinction between ingroup and outgroup membership. Thus, we expect that the effects of target group identity (i.e., ingroup vs outgroup) on empathy and altruism may be stronger for those higher (vs lower) in posttraumatic stress. Because it should be easier to empathize with similar vs dissimilar others, and trauma victims who experience greater posttraumatic growth may be more motivated to support similar others (i.e., other trauma victims), we hypothesize that effects of group membership on altruism and empathy may be stronger for those higher (vs lower) in posttraumatic growth.

### **The Present Research**

The present investigation tested a model in which empathy-mediated altruism is moderated by posttraumatic stress and posttraumatic growth toward ingroup and outgroup targets in a large-scale, “lab in the field” survey experiment of refugees (Sunni Arab refugees residing in Turkey). We begin by testing whether posttraumatic stress, posttraumatic growth, and target group identity predict empathy and altruism, expecting that greater empathy and altruism will be elicited by ingroup targets and related to higher in posttraumatic growth, whereas empathy and altruism will be lower for those with higher posttraumatic stress.

Second, we also hypothesize that the effects of target group identity on empathy and altruism will depend on individual differences in posttraumatic stress and posttraumatic growth.

Specifically, we predict that posttraumatic stress and posttraumatic growth will enhance the effect of group identity on both empathy and altruism.

Finally, based on the above hypotheses we propose a conditional mediation model in which empathy mediates the association between group membership and altruism – parochial empathy should explain ingroup biases in altruism – and this mediating effect is moderated by posttraumatic stress and posttraumatic growth. Specifically, we suggest that the indirect effect of group membership on altruism through empathy will be stronger for those higher in posttraumatic stress and posttraumatic growth.

Because the degree to which participants were exposed to violence is directly related to posttraumatic stress and posttraumatic growth (e.g., Mollica, McInnes, Poole, & Tor, 1998; Sagaltici, Alpak, & Altindag, 2020; Steel et al., 2009; Tedeschi et al., 1998) and because it may influence the extent to which target group identity leads to empathy and altruism, we tested exposure to violence as a covariate in all analyses. Similarly, it was possible that the proposed processes may be confounded by participants' age, gender, time as a refugee, and socio-economic status (SES) before the war, so we also tested these variables as covariates across analyses. Further, to address the possibility that the mechanism by which target group identity leads to altruism is not specific to empathy, but instead involves other positive and negative emotion, we tested feelings of respect, fear, anger, and respect as competing mechanisms of our proposed conditional mediation model.

## **Method**

### **Participants**

These data were collected as part of a large-scale survey experiment in a naturalistic setting in which the subjects are refugees from Syria and Iraq residing in Turkey. We designed our sampling approach to ensure we could access a large and diverse sample (see the

supplemental materials for details on data collection and measures described here). This project received approved from the Uppsala University Ethical Review Board and informed consent was obtained from all participants.

We include only Sunni Arab participants in the analysis that follows; these comprised 80 percent ( $N = 1660$ ) of the entire sample. We limited our sample to Sunni Arabs to reflect relevant group dimensions of the conflicts in Syria and Iraq. Demographic information about the sample appears in Table 1. Most of the refugees in our sample fled to Turkey between 2013 and 2015). This period of the conflict, especially in Syria, was characterized by the systematic use of indiscriminate forms of violence, such as the shelling and bombing of entire neighborhoods and towns. The main axis of fighting in the region was between Syrian and Iraqi government forces and Sunni Islamist forces. In both Iraq and Syria, the armed forces of Shia-backed governments battled the Islamic State, which claimed to represent the interests of Sunni Arabs, alongside allied Shia militias and with the support of Shia regional power Iran. Participants in our sample were thus likely view Shia Arabs as a potentially threatening outgroup. This sample provided greater than .98 power to detect small effects (effect = .14) in our most complex test of conditional mediation (Preacher, Rucker, & Hayes, 2007).

## **Procedure**

Research assistants, themselves refugees from Syria and Iraq, recruited participants and administered the study, which served ensure cultural sensitivity. Recruitment used a chain sampling procedure whereby existing participants recruited future participants from among their social networks. The same procedure for participant recruitment was carried out in Konya, Yalova, Istanbul, Ankara and Eskisehir until we reached a large and diverse sample of participants. Potential participants were informed that this was an Uppsala University-based

study which aimed to better understand how war experiences impact decision-making. Those approached were also provided with the contact information of the second author. The fact that the study was conducted by a Swedish university further facilitated recruitment, as Sweden has a positive reputation as a good-faith actor in the Middle Eastern context. Before being asked to give consent to participate, those approached were informed that participation was completely voluntary and they could discontinue their involvement at any time and for any reason. Those who elected to participate received a small sum of money, 20 Turkish lira, for their time. The study was administered inside the homes of families on tablet computers individually and anonymously. The only exception was made for illiterate participants. In these cases, the research assistant conducted an oral interview. Female RAs interviewed female respondents (see supplemental materials for additional details).

Participants completed measures of altruism, empathy, and other emotions; the target group manipulation was embedded into these measures. They also completed measures of posttraumatic stress and posttraumatic growth and reported their exposure to potentially traumatic wartime events and demographic information.

### **Measures.**

**Altruism.** Participants indicated their altruism toward targets by completing the welfare tradeoff task (Cosmides & Tooby, 2013; Delton & Robertson, 2016; Kirkpatrick, Delton, Robertson, & de Wit, 2015). This instrument measures the degree to which the subject values their own welfare relative to the welfare of another individual. The task involved thirteen decisions regarding the allocation of money to oneself and the target individual. Subjects first choose between either accepting a relatively large monetary reward for themselves or giving a modest sum of money to the target individual. In each of the consecutive decisions, the monetary

reward for themselves became progressively lower, with the final decisions involving a choice between *losing* a small sum of money for themselves or providing a modest sum of money to the target individual. The welfare tradeoff ratio (WTR) was determined by identifying the sum at which the participants switched to providing a reward to the target individual rather than to themselves and then dividing this sum by the sum allocated to the target individual. The resulting WTR ranges between -1.67 and 2.67, with higher values indicating placing greater value on the welfare of the target individual relative to one's own; or in other words, a greater degree of altruism (see the supplemental materials for additional details on the WTR).

**Empathy and other emotions.** Following completion of the welfare tradeoff task, participants responded to a single item regarding the degree to which they feel empathy when thinking about an individual of the social category of the target individual. They also indicated to what degree they feel respect, fear, anger, and disgust, rated on a scale from 1 (*not at all*) to 9 (*extremely*).

Participants indicated their responses on a scale from 1 (*not at all*) to 9 (*extremely*).

**Target Identity Group Manipulation.** The target group identity manipulation was imbedded in the instructions for completing the altruism and empathy measures; participants were randomly assigned to imagine either Sunni Arab (ingroup condition) or Shia Arab (outgroup condition) refugees. Specifically, when reporting their altruism toward targets, participants were instructed to imagine allocating money between themselves and either a Sunni Arab or Shia Arab refugee; when completing the empathy scale, they were asked to imagine either a Sunni Arab or Shia Arab refugee. The target group manipulation was randomly assigned

at the participant level.<sup>1</sup>

**Posttraumatic Stress.** We assessed posttraumatic stress using the short form of the PTSD Checklist – Civilian version (PCL-C; Lang & Stein, 2005; Lang et al., 2012). Participants rated six items with respect to “how much you have been bothered by each problem in the last month” on a scale from 1 (*not at all*) to 5 (*extremely*). Sample items included “Avoid activities or situations because they remind you of a stressful experience from the past?” and “Feeling distant or cut off from other people?” This scale demonstrated excellent internal reliability ( $\alpha = .90$ ).

**Posttraumatic Growth.** We measured posttraumatic growth using the short form of the Posttraumatic Growth Inventory (PTGI-SF; Cann et al., 2010). Participants rated 10 items with

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<sup>1</sup> This study also included manipulations of target group age (25 vs 65) and gender, described on page 3 of supplemental materials. Although these are not primary variables of interest in this investigation, we tested these effects (i.e., Target Gender and Target Age) as covariates in all analyses. Detailed results are shown in supplemental tables. As shown in Supplemental Tables 3 and 4, target gender and target age did not account for links between PTG and empathy and altruism in Phase 1 analyses, with one exception: the association between PTG and empathy became marginal when target gender was included as a covariate. As shown in Supplemental Tables 5-8, the Target Group X PTS and Target Group X PTG product terms predicting empathy and altruism in Phase 2 analyses remained significant when target gender and target age (and their product terms with target group) were included as covariates. As shown in Supplemental Tables 12 and 16, when we included each covariate (i.e., target gender and target age) and its interaction with target group in Phase 3 analyses, results remain unchanged.

respect to the “degree to which this change occurred in your life as a result of all that has happened” on a scale from 1 (*not at all*) to 6 (*to a very great degree*). Sample items include “I am able to do better things with my life” and “I know better that I can handle difficulties.” This measure also demonstrated excellent internal reliability ( $\alpha = .90$ ).

**Exposure to Potentially Traumatic War-Related Events.** We measured level of exposure using the Harvard Trauma Questionnaire (HTQ) Event Checklist (Mollica et al., 1992). The version we used contained sixteen items determined to be relevant to Syrian and Iraqi refugees. Sample items include “indiscriminate shelling or bombing,” “lack of food or water,” and “ill health without medical care.” Participants were asked to indicate whether they had experienced any of these events before arriving in Turkey. They were not limited in the number of events they could choose. Previous studies tend to measure war exposure as an additive index. Latent class analysis (LCA) is, however, a more appropriate strategy for classifying participants in terms of their level of war exposure. To clarify the reasoning behind this approach, it is important to note that having experienced any of these potentially traumatic events implies some degree of war exposure. Yet it is unclear whether experiencing more events implies more war exposure. Treating the variable as continuous would, for example imply that someone who was forced to evacuate, experienced lack of shelter and suffered ill health without medical attention had greater war exposure than someone who was kidnapped and tortured (2 events). For this reason, we rely instead on LCA to divide our sample into two categories based on meaningful clustering of participants’ responses to the 16-item exposure battery. LCA avoids the arbitrary cutoff points involved in simple binary measures, such as mean splits, while at the same time avoiding the problems with the continuous approach mentioned above.

The appropriate number of latent classes is determined based on goodness of fit,



interpretability, and parsimony (Hagenaars & McClutcheon, 2002). Consecutive LCAs were carried out for 1-9 classes. Goodness of fit (sample size adjusted BIC) improved greatly with the inclusion of 2 classes and then leveled off (see figures 3 and 4 in the supplemental materials). Regarding interpretability, the 2-class solution clearly divided participants by exposure prevalence. Compared to participants belonging to latent class 1 (69 percent), those belonging to latent class 2 (31 percent) were more likely to have experienced each of the 16 items ( $M = 2.33$ ,  $SD = 1.64$  vs.  $M = 11.29$ ,  $SD = 2.87$ ). Regarding parsimony, the 2-class solution was clearly optimal. Based on the results of the LCA, we thus divided the participants into two classes, which we termed “low” and “high” exposure to war-related traumatic events.<sup>2</sup>

**Demographic Information.** Participants reported their gender, age, and how long they had been a refugee. They also reported their relative SES before the war. Specifically, they presented with a 11-point scale, in which 0 represented those in their country of origin who were worst off and 10 represented those who were best off. Participants were asked to indicate their relative standing before the war.

## Results

We tested our hypotheses in three phases. Phase 1 analyses corresponded to our first set of hypotheses, in which we examined the main effects of target identity group, posttraumatic stress, and posttraumatic growth on empathy and altruism. Phase 2 analyses corresponded to the second set of hypotheses regarding the moderating effects of posttraumatic stress and posttraumatic growth on the effect of target group identity on empathy and altruism. Phase 3 analyses corresponded to the conditional mediation hypothesis that empathy mediates the

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<sup>2</sup> The terms “low exposure” and “high exposure” here are used only in relation to the current sample, as the overall level of exposure to war-time trauma reported by the participants is objectively high.

association between group membership and altruism and this mediating effect is moderated by posttraumatic stress and posttraumatic growth. Phase 3 analyses also tested respect, fear, anger, and disgust as competing mechanisms of this process. We tested our hypotheses using a regression strategy.

As expected, this sample was characterized by relatively high levels of exposure to potentially traumatic events; Figure 1 shows the prevalence of exposure. Table 2 shows the zero-order correlations, means, and standard deviations for all primary study variables. Notably, the mean level of altruism reported in this sample is high ( $M = .75$ ), suggesting that, on average, participants in this sample value target others' welfare only slightly less than their own (a score of 1 suggests perfect altruism or that participants value others' welfare equally to their own). For each phase of analyses, we conducted a second set of analyses, controlling for self-reported exposure to potentially traumatic war events, participant age and gender, how long participants had been a refugee, SES in their country of origin, and target age and gender in separate analyses in order to rule out the possibility that these variables might account for the hypothesized associations. Because posttraumatic stress and posttraumatic growth were positively correlated, we tested them as covariates of each other.

### **Phase 1: Main Effects of Target Identity Group, Posttraumatic Stress, and Posttraumatic Growth**

First, we tested the main effects of target identity group, posttraumatic stress, and posttraumatic growth on empathy and altruism in four multiple regression models by regressing the outcome on target identity group, posttraumatic stress (Model 1a) and posttraumatic growth (Model 2a). As shown in Tables 3 and 4, the main effects of target identity group suggested that participants reported greater empathy and altruism toward Sunni Arab versus Shia targets. Also

as expected, posttraumatic stress predicted less empathy and altruism; posttraumatic growth predicted greater empathy and altruism. These findings remained unchanged when we controlled for covariates (i.e., exposure to potentially traumatic war events, age, gender, time as a refugee, SES before the war, target age, and target gender and PTG in Model 1 and PTS in Model 2; see Columns 3 and 4 of Supplemental Tables 3 and 4).

### **Phase 2: Posttraumatic Stress and Posttraumatic Growth Moderating the Effects of Target Identity Group on Empathy and Altruism**

In Phase 2, we tested whether posttraumatic stress and posttraumatic growth moderated the effects of target identity group on empathy and altruism by adding the relevant product terms to the regression models tested in Phase 1 analyses. The target identity group X posttraumatic stress interaction significantly predicted empathy (see Table 3, Model 1b) and altruism (see Table 4, Model 1b). As shown in Figure 2, plots of the simple slopes suggested that effects of target identity group on empathy (Panel 1) and altruism (Panel 2) were stronger for those higher in posttraumatic stress, compared to those who were lower in posttraumatic stress (all simple slopes were significant,  $p < .001$ ). Simple slopes of posttraumatic stress on empathy and altruism were stronger for outgroup targets, compared to ingroup targets (all simple slopes were negative and significant,  $p < .01$ ).

The target identity group X posttraumatic growth interaction significantly predicted empathy (see Table 3, Model 2b) and altruism (see Table 4, Model 2b). As shown in Figure 3, plots of the simple slopes suggested that effects of target identity group on empathy (Panel 1) and altruism (Panel 2) were stronger for those higher in posttraumatic growth, compared to those who were lower in posttraumatic growth (all simple slopes were significant,  $p < .001$ ). Posttraumatic growth positively predicted empathy for ingroup ( $p < .001$ ) but not outgroup

targets ( $p = .499$ ); posttraumatic growth predicted greater altruism more strongly for ingroup, compared to outgroup targets, but both simple slopes were significant and in the same direction (both  $ps < .001$ )

Across all Phase 2 analyses, we conducted a second set of analyses that controlled for covariates in separate analyses by adding the main effect of each covariate and its product with target group (Yzerbyt, Muller, & Judd, 2004). As shown in Supplemental Tables 5 and 6, results for empathy remain unchanged across the 16 alternative models tested. Results for 14 of the 16 models predicting altruism remain unchanged when we included covariates (see Supplemental Tables 7 and 8). There were two exceptions: First, the interaction between target group and posttraumatic growth became marginal when we controlled for posttraumatic stress ( $p = .058$ ; see Supplemental Table 8); second, the interaction between target group and posttraumatic stress became nonsignificant when we controlled for war exposure ( $p = .303$ ; see Supplemental Table 7).

Thus, in general, both posttraumatic stress and posttraumatic growth enhanced participants' bias in favor of ingroup targets with respect to empathy and altruism toward others.

### **Phase 3: Conditional Mediation Models**

In Phase 3, we tested conditional mediation models in which empathy mediated the relationship between target identity group and altruism and each path was moderated by posttraumatic stress and posttraumatic growth. We acknowledge that mediation analyses are based on theory and assumptions about causality and that such analyses only examine the compatibility of one out of several possible theoretical models with the data. Since target identity group was experimentally varied, drawing causal conclusions regarding the effect of this variable on empathy and altruism is justified. Further, posttraumatic stress and posttraumatic growth

cannot reasonably be assumed to be the result of target identity group, empathy or altruism. We thus assume posttraumatic stress and posttraumatic growth to be independent, moderating variables in the model. According to our theoretical reasoning, participants will report greater altruism toward ingroup targets because they feel greater empathy toward them. Moreover, this effect should be particularly strong for participants who experienced greater posttraumatic stress and for those who experienced greater posttraumatic growth. The conditional mediation analyses in the present study examine whether a prediction derived from this theoretical model can account for a substantial part of the variance. The statistical analysis does not, however, rule out the accuracy of competing theoretical models, notably that posttraumatic growth increases, and posttraumatic stress decreases, empathy-mediated altruism, and these effects are moderated by target identity group. Adjudicating between such competing accounts is at base a matter of theory rather than empirics and the conclusions we draw are intended to be theoretical rather than empirical in nature.

We tested these hypotheses in two PROCESS models (Model 59; Hayes, 2013), with target identity group (coded as 0 = *Shia*, 1 = *Sunni Arab*) as the predictor, empathy as the mediator, altruism as the dependent variable. In the first model, we included posttraumatic stress as the moderator of all paths; in the second model, we included posttraumatic growth as the moderator of all paths.

When we tested the model in which posttraumatic stress was the moderator (see Table 5; top of Figure 4), there was a significant target identity group X posttraumatic stress interaction predicting empathy (effect = .61,  $p < .001$ ), such that participants felt stronger empathy for ingroup compared to outgroup members when they had higher (effect = 3.59,  $p < .001$ ) vs lower (effect = 2.37,  $p < .001$ ) posttraumatic stress. In turn, the empathy X posttraumatic stress

interaction predicting altruism was also significant (effect = .05,  $p < .001$ ), such that empathy predicted greater altruism when posttraumatic stress was higher (effect = .21,  $p < .001$ ) vs lower (effect = .10,  $p < .001$ ). The indirect effect for higher posttraumatic stress was stronger (effect = .75, 95% CI [.60, .90]) than that for lower posttraumatic stress (effect = .25, 95% CI [.15, .36]). The direct effect of target group identity was not moderated by posttraumatic stress (effect = -.05,  $p = .495$ ). As in Phase 2 analyses, we conducted a second set of analyses that controlled for the 8 covariates in separate analyses by adding the main effect of each covariate and its product with target group (Yzerbyt et al., 2004). As shown in Supplemental Tables 9-12, the pattern of results remained unchanged with one exception. When war exposure was included as a covariate, the empathy X posttraumatic stress interaction significantly predicted altruism, but the pattern of the slopes changed: empathy was associated with greater altruism at low but not high levels of posttraumatic stress.

When we tested the model in which posttraumatic growth was the mediator (Table 6; bottom of Figure 4), there was a significant target identity group X posttraumatic growth interaction predicting empathy (effect = .47,  $p = .002$ ), such that participants felt stronger empathy for ingroup compared to outgroup members when they had higher (effect = 3.43,  $p < .001$ ) compared to lower (effect = 2.60,  $p < .001$ ) posttraumatic growth. In turn, the empathy X posttraumatic growth interaction predicting altruism was also significant (effect = .07,  $p < .001$ ), such that empathy was more strongly related to altruism when posttraumatic growth was higher (effect = .23,  $p < .001$ ) vs lower (effect = .10,  $p < .001$ ). The indirect effect was stronger for those reporting greater posttraumatic growth (effect = .78, 95% CI [.62, .94]) compared to lower posttraumatic growth (effect = .27, 95% CI [.16, .39]). The direct effect of target group identity was not moderated by posttraumatic stress (effect = -.00,  $p = .991$ ). When we controlled for

covariates and their interactions with target group, the pattern of results remains unchanged (see Supplemental Tables 13-16).

Finally, we addressed the possibility that the mechanism by which target group identity leads to altruism is not specific to empathy, but instead involves other positive and negative emotion. We conducted a third set of analyses, individually entering respect, fear, anger, and disgust as second mediators in our proposed conditional mediation model in 8 separate analyses (4 competing mechanisms X posttraumatic stress and posttraumatic growth as moderators). Results remain unchanged (see Supplemental Tables 17-20) with one exception: when respect was included as competing mechanism in the model in which posttraumatic stress was the moderator, the empathy X posttraumatic stress interaction predicting altruism became marginal (effect = .05,  $p = .065$ ; see Supplemental Table 17) - the conditional effect of empathy on altruism was marginal at high posttraumatic stress (effect = .08,  $p = .06$ ) but was nonsignificant at low posttraumatic stress (effect = -.02,  $p = .592$ ). The respect X posttraumatic stress interaction was nonsignificant (effect = -.01,  $p = .782$ ). Thus, the mechanism in our proposed conditional mediation models does not generalize to negative affect. However, the effect of empathy on altruism may generalize to other positive emotions when posttraumatic stress is a moderator, but not when posttraumatic growth is a moderator.

In sum, participants reported greater altruism toward ingroup targets because they felt greater empathy toward them. This effect was particularly strong for participants who experienced greater posttraumatic stress and for those who experienced greater posttraumatic growth.

### Discussion

These results are consistent with our hypotheses and contribute to the literature on empathy, pro-sociality, and wartime violence in a number of ways. First, we find that both posttraumatic stress and posttraumatic growth are associated with altruism, and do so by altering empathy. Specifically, in these data, those experiencing posttraumatic stress tend to be less empathic and altruistic. This is consistent with the literature demonstrating that trauma-related stress is accompanied by distressing emotions, dysfunctional cognitions, and negative physical symptoms (Tedeschi & Calhoun, 2004), leaving little psychological space to consider others' feelings or be supportive (i.e., be empathic or altruistic). Further, our results suggest that those experiencing posttraumatic growth tend to be more empathic and altruistic. This is consistent with literature demonstrating that those who experience greater posttraumatic growth may more easily orient toward and attend to others' needs – they tend to be more responsive to others and experience more positive social functioning (e.g., Barrington & Shakespeare-Finch, 2013; Canevello, Michels, & Hilaire, 2016b).

Earlier research has posited that posttraumatic growth could be the reason why we observe greater pro-sociality following exposure to war violence (Blattman, 2009). While previous research has interpreted pro-sociality in these contexts through the lens of posttraumatic growth theory (e.g., Hartman & Morse, 2018), to our knowledge, these findings are the first to directly measure posttraumatic growth and provide direct support for the proposition that posttraumatic growth is associated with more cooperative tendencies. We also measured posttraumatic stress and found that it is associated with reduced altruism through lower empathy. This specific finding is less novel, as existing research has also found that stress reduces empathy and pro-social tendencies (Nietlisbach & Maercker, 2009; Nietlisbach et al., 2010; Plana et al.,



2014). But no existing studies examining war violence and pro-sociality have simultaneously measured posttraumatic stress and posttraumatic growth. This is an important contribution because both growth and stress are psychological responses to trauma that some, but not all, victims experience. This suggests that the relationships between exposure to violence and pro-social attitudes and behavior are likely to be heterogeneous. Posttraumatic stress and posttraumatic growth also co-occur: indeed, posttraumatic stress is thought to be a critical antecedent of posttraumatic growth (Tedeschi et al., 1998). Future research could build on this work by also measuring both posttraumatic stress and posttraumatic growth simultaneously, and assessing its relation to pro-social emotions, attitudes and behaviors other than empathy and altruism.

Second, our findings indicate that group membership plays a key role in shaping pro-sociality in war-affected communities. Specifically, we find strong evidence of parochial altruism: participants were more empathic and altruistic towards in-group members than out-group members. Our research design addresses a key shortcoming of previous work on wartime violence and pro-sociality identified by Bauer et al. (2016, p.271): “[t]he most important next step will be for researchers to focus on establishing the reach and generality of this parochial altruism finding... This necessitates a sharper focus on behaviors towards out-group members that belong to the antagonistic group in the war, which is not the case in most existing studies.” Our experiment is more effectively designed than previous research to determine if lines of group membership that align with the combatants in a civil war influence pro-sociality. Our finding of parochial altruism thus has direct implications for post-conflict reconstruction and reconciliation. These tasks demand cooperation among civilians, and trust between civilians and government officials. Our research indicates that such cooperation would, in the context of the

civil wars in Iraq and Syria at least, be easier to achieve within rather than between groups, especially among in-group members who have experienced post-traumatic growth. We might expect these ingroup members to play important roles in leading and organizing such cooperation. However, recovery from many conflicts demands active cooperation across group lines. Ingroup members who have experienced posttraumatic growth might advocate policies and behavior that fail to adequately take account of the needs and preferences of outgroup members. This, in turn, could accentuate grievances among outgroup members, hinder inter-group cooperation in reconstruction, and facilitate the re-emergence of armed conflict between groups.

Finally, our conditional mediation model indicates that empathy is one mechanism that of greater altruism towards ingroup targets, and that this effect appears stronger for individuals higher in posttraumatic stress and posttraumatic growth. Specifically, in these data, associations between posttraumatic stress and empathy and altruism were stronger for outgroup vs ingroup targets, suggesting that posttraumatic stress might heighten the salience of outgroup targets as potential sources of threat. Alternatively, the associations between posttraumatic growth and empathy and altruism were accentuated for ingroup members, suggesting that posttraumatic growth may activate feelings of connection and concern for those with whom people can easily and closely identify (i.e., ingroup targets).

The literature review and meta-analysis in Bauer et al. (2016) advocates that an important next step for research on wartime violence and pro-sociality is to sort out the mechanisms linking these two phenomena, concluding that “[t]he research to date has done a far better job of establishing the effect of war violence on later cooperation than of explaining it” (p. 266), and suggest three productive avenues: economic incentives, evolutionary changes, and psychological processes. We take up the last of these suggestions, and develop and find support for a theory of

empathy mediated altruism, reinforcing earlier studies that focused on empathy (Hartman & Morse, 2018). We also find that this pathway is moderated by the psychological processes of posttraumatic stress and posttraumatic growth. Specifically, our results suggest that when posttraumatic growth is higher, having empathy for others is linked to a greater capacity for pro-sociality. This finding seems fairly intuitive – because posttraumatic growth may orient people toward others, it should heighten the association between empathy and altruism. Empathy is also more strongly linked to greater altruism when posttraumatic stress is also higher. This may be because those who have experienced high levels of suffering may be more attuned to others' suffering which can provide motivation to react in more pro-social ways. These findings suggest that careful attention to psychological processes can contribute to our understanding of how trauma influences pro-sociality. Future research should build on this by exploring other psychological processes linking these phenomena. Future work should also directly compare the effect of empathy on altruism to economic and evolutionary explanations.

These findings point to the unique role that empathy plays in this process, relative to other emotions. When other emotions (i.e., respect, fear, anger, and disgust) were pitted against empathy as alternative mechanisms, they largely did not account for the mediating role of empathy. The single exception occurred when respect was added as a competing mediator of the posttraumatic stress model, the empathy X posttraumatic stress interaction predicting altruism became marginal. Thus, the mechanism in our proposed conditional mediation models does not generalize to negative affect. However, the link between empathy and altruism may generalize to respect when posttraumatic stress is a moderator, but not when posttraumatic growth is a moderator.

Importantly, these findings were not a function of sample demographics. Results did not change when we controlled for age, gender, pre-war socioeconomic status, and time as a refugee. Also, we ruled out the possibility that findings for posttraumatic growth were due to participants' exposure to potentially traumatic war-related events. Thus, while prior work has linked potentially traumatic events to posttraumatic growth and pro-sociality (e.g., Bauer et al., 2016; Steel et al., 2009; Tedeschi et al., 1998; Vollhardt, 2009), exposure to these events does not account for our results. Exposure to potentially traumatic war-related events did account for this process when examining the moderating role of posttraumatic stress. Thus, war-related events do appear to play an important role in the process by which posttraumatic stress moderates empathy-mediated altruism.

Our findings indicate that treating refugees and other displaced persons for posttraumatic stress may not only improves patients' psychological well-being, but may also have downstream effects on the degree and nature of cooperation in postwar settings. One key finding is that altruistic behavior towards ingroup members compared to outgroup members is accentuated when posttraumatic stress and posttraumatic growth are higher. Reducing stress in displaced persons could promote more equal levels of altruism between in-group and out-group members. This intervention could operate through both the stress and growth pathways, since experiencing stress is a precondition for experiencing growth. Doing so might increase empathy towards and cooperation with outgroup members, which in turn could facilitate the process of postwar reconciliation and reconstruction—a question that could be profitably addressed in future research. Unfortunately, there is not a consensus on which interventions are most effective in treating posttraumatic stress in displaced persons (Giacco, Laxhman, & Priebe, 2018; Tribe, Sendt, & Tracy, 2019) and clinical research should continue to address this question.

Our findings also indicate that group membership exercises a powerful influence on altruism, with subjects feeling more empathetic and behaving more altruistically towards ingroup members. Interventions should aim to reduce intergroup bias among displaced persons to mitigate this bias. For example, there is evidence that self-interest can reduce group bias. Individuals who play dictator games, in which they unilaterally divide money between themselves and another subject, exhibit more intergroup bias than those who play ultimatum games where the other subject can reject these offers (Stagnaro, Dunham, & Rand, 2018). This suggests that aid from governments and international organizations that support the return and integration of displaced persons to their area of origin might be designed in such a way as to create economic incentives for participants to cooperate across group lines. Other research suggests that interventions which encourage individuals to reframe group boundaries from multiple groups to one group can be effective in reducing intergroup bias (Gaertner & Dovidio, 2000). Interventions along these lines might be particularly promising among displaced persons who share common experiences of victimization and displacement.

This investigation is not without limitations. This sample has several characteristics that may limit the generalizability of these findings. Specifically, this sample reported extremely high exposure to potentially traumatic war-related events, and also reported relatively high levels of altruism, even toward outgroup members. While these factors may limit the extent which these findings might extend to other populations, they also demonstrate the human capacity for pro-sociality under even the seemingly most dire circumstances and the importance of empathy in these conditions. Further, they speak to the potential power of individual differences in empathy and altruism in the context of exposure to war violence, which is relatively extreme in comparison to other traumas. According to our results, posttraumatic stress and posttraumatic

growth may play an important role in pro-social emotion and behavior in strong situations, where one might expect situational factors to overpower individual differences.

Critiques of posttraumatic growth question trauma survivors' abilities to accurately perceive and report self-change retrospectively (e.g., Ford, Tennen, & Albert, 2008; Jayawickreme & Blackie, 2014; McFarland & Alvaro, 2000). While this debate about exactly what is being captured by measures of posttraumatic growth remains unresolved, reports from close others corroborate people's self-reported posttraumatic growth suggest that self-reported posttraumatic growth coincides with observable change in people who have experienced trauma (e.g., Blackie, Jayawickreme, Helzer, Forgeard, & Roepke, 2015; Canevello, Michels, & Hilaire, 2016a). Critiques of posttraumatic growth suggest that empirical investigations of PTG should involve prospective longitudinal designs that, ideally, capture pre-trauma baselines (Infurna & Jayawickreme, 2019). While prospective pre-post designs are challenging to implement in the context of trauma, future research should attempt to address these methodological limitations.

Further, although we manipulated group identity in this study, we did not manipulate posttraumatic stress and posttraumatic growth, which limits our ability to draw definitive causal conclusions about the roles of posttraumatic stress and posttraumatic growth in empathy-mediated altruism. It also does not address the possibility that some underlying shared third variable (e.g., salience of victimization or competitive victimhood) may account for the effects of posttraumatic stress and posttraumatic growth in this investigation. Manipulating these variables in such a highly-charged context is ethically questionable. Again, future research should attempt to examine these processes longitudinally in order to shed light on the plausibility of causality.

### **Conclusion**

In sum, the present results support the association between empathy and altruism in the context of war violence. They also shed new light on the roles of posttraumatic stress in potentially thwarting and posttraumatic growth in promoting empathy and altruism and the roles of posttraumatic stress and posttraumatic growth in enhancing ingroup-biases in empathy-mediated altruism. Examining why and when exposure to violence may result in pro-social emotion and behavioral tendencies affords a deeper understanding of the psychological consequences of wartime violence, pointing to potential avenues for intervention.

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**Table 1*****Demographics of the Sample***

	<i>N</i>	% of Sample
Gender		
Male	843	51%
Female	816	49%
Age		
24 or younger	569	34%
25-34	473	29%
35-44	299	18%
45-54	179	11%
55-65	77	5%
65-74	33	2%
75-84	8	<1%
85 or older	1	<1%
Time as a Refugee (When did you leave Syria?)		
1994 or earlier	6	<1%
1995-1999	6	<1%
2000-2004	12	<1%
2005-2009	79	5%
2010	11	<1%
2011	25	2%
2012	101	6%
2013	221	13%
2014	639	39%
2015	415	25%
2016-today	145	9%
SES before the war	<i>M</i> = 6.33 ( <i>SD</i> = 2.21)	
War Exposure		
Low	1149	69%
High	511	31%

*Note.* SES before the war was assessed on a scale from 1 to 10 where higher scores indicate

higher SES.

**Table 2*****Zero-Order Correlations, Means and Standard Deviations for Primary Study Variables***

	1.	2.	3.	4.	<i>M</i>	<i>SD</i>
1.Target Identity Group					--	--
2.Posttraumatic Stress	-.02				2.83	1.01
3.Posttraumatic Growth	-.00	.21***			3.20	.96
4.Empathy	.50***	-.24***	.05**		5.83	2.98
5.Altruism	.32***	-.14***	.16***	.42**	.75	1.46

*Note.*  $N = 1776$ . \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ . Target identity group was coded such that 0

= Shia Arab and 1 = Sunni Arab. Posttraumatic growth was measured on a scale from 0 (*not at*

*all*) to 6 (*to a very great degree*). Posttraumatic stress was measured on a scale from 0 (*not at all*)

to 5 (*extremely*). Empathy was measured on a scale from 1 (*not at all*) to 9 (*extremely*). Scores on

altruism ranged from -1.67 to 2.67, with higher scores indicating greater altruism.

**Table 3**

**Results Reflecting Target Identity Group, and Posttraumatic Stress (PTS; Model 1) or Posttraumatic Growth (PTG; Model 2) Predicting Empathy**

DV: Empathy							
	<i>b</i>	<i>SE</i>	$\beta$	<i>t</i>	<i>p</i>	95% CI	$\Delta R^2$
<u>Model 1a:</u>							
Target Group	2.98	.13	.50	23.53	<.001	[2.74, 3.23]	.31
PTS	-.68	.06	-.23	-10.69	<.001	[-.80, -.55]	
<u>Model 1b:</u>							
Target Group	2.97	.13	.50	23.61	<.001	[2.73, 3.22]	.01
PTS	-.98	.09	-.33	-11.04	<.001	[-1.16, -.81]	
Target GroupXPTS	.61	.13	.14	4.84	<.001	[.36, .86]	
<u>Model 2a:</u>							
Target Group	3.01	.13	.50	22.91	<.001	[2.75, 3.70]	.25
PTG	.15	.08	.04	2.02	.044	[.00, .30]	
<u>Model 2b:</u>							
Target Group	2.99	.13	.50	22.78	<.001	[2.73, 3.25]	.01
PTG	-.07	.10	-.02	-.68	.499	[-.27, .13]	
Target GroupXPTG	.47	.15	.10	3.16	.002	[.18, .77]	

*Note.* Model 1: *N* = 1540; Model 2: *N* = 1537. Target identity group was coded such that 0 =

Shia Arab and 1 = Sunni Arab. Posttraumatic growth was measured on a scale from 0 (*not at all*) to 6 (*to a very great degree*). Posttraumatic stress was measured on a scale from 0 (*not at all*) to 5 (*extremely*).

**Table 4**

***Results Reflecting Target Identity Group, and Posttraumatic Stress (PTS; Model 1) or Posttraumatic Growth (PTG; Model 2) Predicting Altruism***

DV: Altruism							
	<i>b</i>	<i>SE</i>	$\beta$	<i>t</i>	<i>p</i>	95% CI	$\Delta R^2$
<u>Model 1a:</u>							
Target Group	.97	.07	.33	14.25	<.001	[.84, 1.10]	.13
PTS	-.21	.03	-.14	-6.13	<.001	[-.27, -.14]	
<u>Model 1b:</u>							
Target Group	.97	.07	.33	14.28	<.001		.003
PTS	-.29	.05	-.20	-6.04	<.001		
Target GroupXPTS	.16	.07	.08	2.39	.017		
<u>Model 2a:</u>							
Target Group	1.00	.07	.34	14.81	<.001	[.87, 1.13]	.14
PTG	.26	.04	.17	7.20	<.001	[.19, .33]	
<u>Model 2b:</u>							
Target Group	1.00	.07	.34	14.84	<.001	[.87, 1.13]	.004
PTG	.17	.05	.11	3.36	.001	[.07, .27]	
Target GroupXPTG	.19	.07	.09	2.66	.008	[.05, .33]	

*Note.* Model 1: *N* = 1616; Model 2: *N* = 1612. Target identity group was coded such that 0 =

Shia Arab and 1 = Sunni Arab. Posttraumatic growth was measured on a scale from 0 (*not at all*) to 6 (*to a very great degree*). Posttraumatic stress was measured on a scale from 0 (*not at all*) to 5 (*extremely*).

**Table 5**

***Results for Test of Conditional Mediation Model in which Empathy Mediates the Association between Target Identity Group and Altruism, with all Pathways Moderated by Posttraumatic Stress (PTS)***

	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
<u>Effect on Empathy</u>					
Target Identity Group	1.22	.38	3.18	<.001	[.47, 1.98]
PTS	-.98	.09	-11.04	<.001	[-1.16, -.81]
<b>Identity Group X PTS</b>	<b>.61</b>	<b>.13</b>	<b>4.84</b>	<b>&lt;.001</b>	<b>[.36, .86]</b>
Conditional Effect of Target Identity Group at Values of PTS					
Low	2.37	.18	13.34	<.001	[2.03, 2.72]
Mean	2.98	.13	23.70	<.001	[2.74, 3.23]
High	3.59	.18	20.18	<.001	[3.24, 3.94]
<u>Effect on Altruism</u>					
Target Identity Group	.64	.23	2.78	.006	[.19, 1.09]
Empathy	.01	.04	.17	.863	[-.07, .08]
PTS	-.40	.07	-5.67	<.001	[-.54, -.26]
<b>Identity Group X PTS</b>	<b>-.05</b>	<b>.08</b>	<b>-.68</b>	<b>.495</b>	<b>[-.21, .10]</b>
<b>Empathy X PTS</b>	<b>.05</b>	<b>.01</b>	<b>3.97</b>	<b>&lt;.001</b>	<b>[.03, .08]</b>
Conditional Effect of Empathy at Values of PTS					
Low	.10	.02	5.93	<.001	[.07, .14]
Mean	.16	.01	11.71	<.001	[.13, .18]
High	.21	.02	10.59	<.001	[.17, .25]
Direct Effects of Target Identity Group on Altruism					
Low	.54	.10	5.24	<.001	[.34, .74]
Mean	.48	.08	6.24	<.001	[.33, .64]
High	.43	.12	3.64	<.001	[.20, .66]
Conditional Indirect Effects of Target Identity Group on Altruism by PTS					
Low	.25	.06			[.15, .36]
Mean	.47	.05			[.37, .56]
High	.75	.08			[.60, .90]

*Note.* *N* = 1541. Target identity group was coded such that 0 = Shia Arab and 1 = Sunni Arab.

Empathy was measured on a scale from 1 (*not at all*) to 9 (*extremely*). Posttraumatic stress was measured on a scale from 0 (*not at all*) to 5 (*extremely*). Conditional effects were tested at 1 standard deviation above (i.e., high) and below (i.e., low) the mean.

**Table 6**

***Results for Test of Conditional Mediation Model in which Empathy Mediates the Association between Target Identity Group and Altruism, with all Pathways Moderated by Posttraumatic Growth (PTG)***

	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
<u>Effect on Empathy</u>					
Target Identity Group	1.46	.50	2.88	<.001	[.47, 2.46]
PTG	-.07	.10	-.68	.499	[-.27, .13]
<b>Identity Group X PTG</b>	<b>.47</b>	<b>.15</b>	<b>3.16</b>	<b>.002</b>	<b>[.18, .76]</b>
Conditional Effect of Target Identity Group at Values of PTG					
Low	2.60	.19	13.98	<.001	[2.23, 2.96]
Mean	3.01	.13	22.98	<.001	[2.75, 3.27]
High	3.43	.19	18.46	<.001	[3.06, 3.79]
<u>Effect on Altruism</u>					
Target Identity Group	.49	.26	1.86	.063	[-.03, 1.00]
Empathy	-.06	.05	-1.43	.154	[-.15, .02]
PTG	-.18	.09	-2.11	.035	[-.35, -.01]
<b>Identity Group X PTG</b>	<b>-.00</b>	<b>.08</b>	<b>-.01</b>	<b>.991</b>	<b>[-.15, .15]</b>
<b>Empathy X PTG</b>	<b>.07</b>	<b>.01</b>	<b>5.17</b>	<b>&lt;.001</b>	<b>[.04, .10]</b>
Conditional Effect of Empathy at Values of PTG					
Low	.10	.02	6.22	<.001	[.07, .14]
Mean	.16	.01	13.04	<.001	[.14, .19]
High	.23	.02	12.54	<.001	[.19, .26]
Direct Effects of Target Identity Group on Altruism					
Low	.49	.10	4.94	<.001	[.29, .68]
Mean	.48	.07	6.44	<.001	[.34, .63]
High	.48	.11	4.57	<.001	[.28, .69]
Conditional Indirect Effects of Target Identity Group on Altruism by PTG					
Low	.27	.06			[.16, .39]
Mean	.50	.05			[.40, .60]
High	.78	.08			[.62, .94]

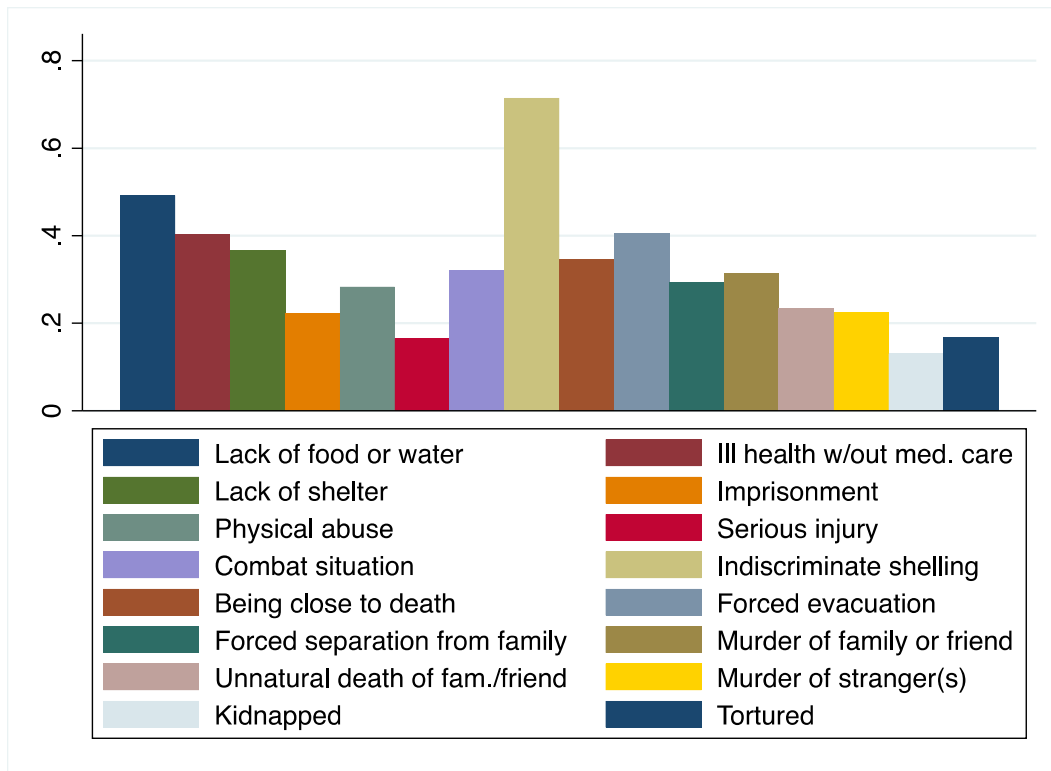
*Note.* *N* = 1538. Target identity group was coded such that 0 = Shia Arab and 1 = Sunni Arab.

Posttraumatic growth was measured on a scale from 0 (*not at all*) to 6 (*to a very great degree*).

Empathy was measured on a scale from 1 (*not at all*) to 9 (*extremely*). Conditional effects were tested at 1 standard deviation above (i.e., high) and below (i.e., low) the mean.

**Figure 1**

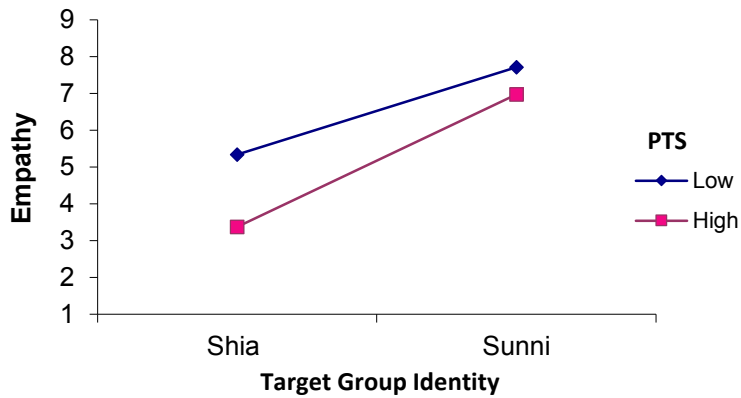
Prevalence of Exposure to Potentially Traumatic War Events



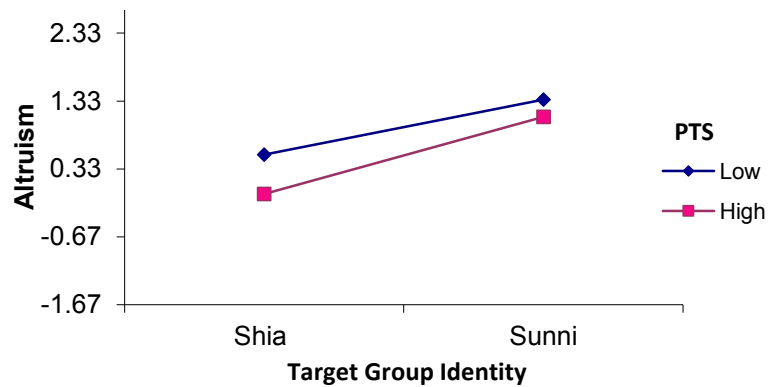
**Figure 2**

Plot of Target Identity Group Predicting Empathy (Panel A) and Altruism (Panel B) by Posttraumatic Stress (PTS)

Panel A:



Panel B:



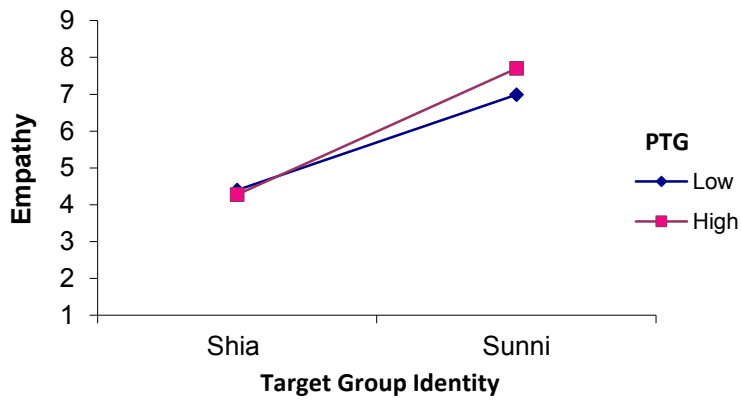
*Note.* Slopes are plotted at 1 standard deviation above (i.e., high) and below (i.e., low) the mean of posttraumatic stress.



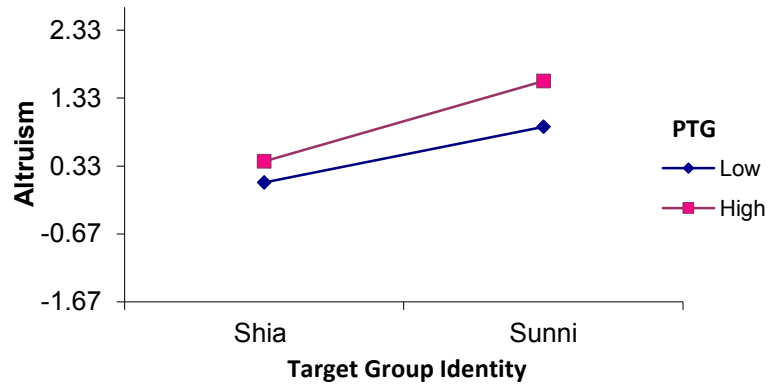
**Figure 3**

Plot of Target Identity Group Predicting Empathy (Panel A) and Altruism (Panel B) by Posttraumatic Growth (PTG)

Panel A:



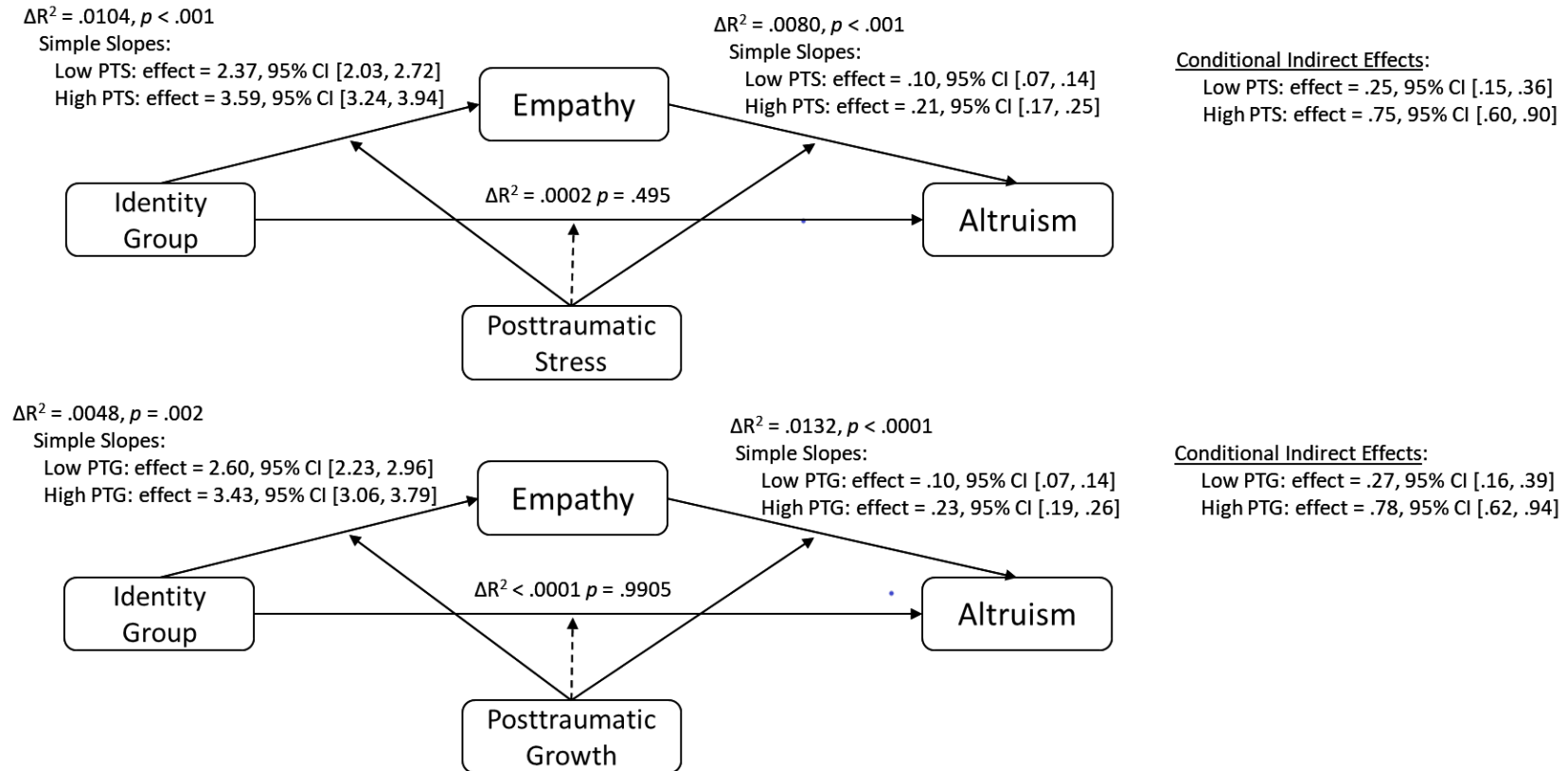
Panel B:



*Note.* Slopes are plotted at 1 standard deviation above (i.e., high) and below (i.e., low) the mean of posttraumatic growth.

**Figure 4**

Results for Test of Conditional Effects of Posttraumatic Stress (top) and Posttraumatic Growth (bottom)



*Note.* Conditional effects are reported at 1 standard deviation above (i.e., high) and below (i.e., low) the mean of moderators.



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**Supplemental Material**

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