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Emotion regulation and attitudes toward FARC-EP ex-combatants and Venezuelan migrants: effects of a reappraisal training

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Abstract

Colombia faces the dual challenge of integrating into civil life two large segments of population; more than fourteen thousand FARC-EP ex-combatants, as part of the peace agreement to end the five-decade conflict between that armed group and the Colombian Government, and nearly two million Venezuelan migrants. Successful integration heavily depends on fostering public acceptance of these groups. Prior research by Halperin et al. (*Psychol Sci* 24:106–11, 2013) and Hurtado-Parrado et al. (*Front Psychol* 10: 1–9, 2019) demonstrated the effectiveness of reappraisal training, a brief emotion-regulation intervention, in reducing negative emotions (e.g., anger, irritability, fear) and aggressive attitudes (e.g., support for war or opposition to the peace process), while increasing conciliatory attitudes (e.g., support for humanitarian aid). The present study extended those findings via testing reappraisal training to promote positive attitudes towards FARC-EP ex-combatants (Experiment 1) and Venezuelan migrants (Experiment 2). In both experiments, reappraisal training reduced negative emotions and support for aggressive statements, while increasing support for conciliatory statements. In addition, negative emotions mediated the effect of reappraisal on both aggressive and conciliatory statements. Lastly, reappraisal training increased participants' willingness to donate, a measure of prosocial behavior tested for the first time in this line of research. These findings add to the evidence of the effectiveness and generalizability of reappraisal training across a wider range of social targets and prosocial behaviors, and its potential to inform public policy and promote larger-scale social integration efforts.

Keywords Cognitive reappraisal, Emotion regulation, Colombian armed conflict, Migration

Colombia has been facing two major social challenges over the last six years: the implementation of the peace agreement to end the five-decade armed conflict between the Colombian government and the insurgent movement Fuerzas Armadas Revolucionarias de Colombia (FARC-EP) and providing refuge to a mounting number of migrants from Venezuela (over 2.8 million people as of January 2024) [1, 2]. FARC-EP ex-combatants and Venezuelan migrants are socially segregated, receive limited aid, and are frequently abused, harmed, and killed, which has resulted in some of them joining newly-formed militias or drug cartels [3, 4]. Colombians often view these groups as threats to security, cultural identity, and

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economic stability, fueling negative emotions that contribute to their continued marginalization and hinder their integration and access to support [5–8].

Extensive evidence suggests that political cues, such as news coverage and social media content conveying information about ideologies and policies, can trigger negative emotions, particularly anger and fear [9–11]. Intergroup emotions, which emerge from a sense of belonging to one group and are directed toward another, play a crucial role in shaping conflict dynamics [12]. These emotions are closely tied to cognitive appraisals that foster aggressive attitudes, ultimately intensifying intergroup conflict by increasing public support for aggressive actions, such as retaliatory violence and opposition to peace processes [9–12]. This pattern is particularly evident in Colombia, where emotional responses have influenced public attitudes toward the reintegration of FARC ex-combatants and the inclusion of Venezuelan migrants [13]. Addressing these issues effectively requires reducing negative emotions and fostering conciliatory attitudes among the public to create a more receptive environment for broader peacebuilding efforts [14–17].

A well-documented approach to mitigating conflict-related emotional responses is cognitive reappraisal training. It is an emotion regulation strategy that helps individuals reinterpret the meaning of emotionally provocative situations to reduce negative affect and encourage adaptive responses [12]. Research across various conflict settings, including the Israeli-Palestinian conflict [18–21] and the Colombian armed conflict [22], has demonstrated that cognitive reappraisal reduces anger, irritability, and fear, which are emotions that frequently escalate conflict dynamics.

Moreover, cognitive reappraisal has been linked to a dual impact on attitudinal shifts: it decreases aggressive tendencies (e.g., support for violent actions, war efforts with civilian casualties, and resistance to peace negotiations) while simultaneously fosters conciliatory attitudes, such as support for humanitarian aid, peace agreements, and reintegration programs for ex-combatants (e.g., FARC-EP forces) [12, 21, 22]. Notably, research indicates that reductions in negative emotionality facilitate attitudinal shifts, enabling individuals to move from endorsing aggressive actions to supporting reconciliation efforts [21–25]. In terms of underlying mechanisms, cognitive reappraisal operates through both direct and indirect pathways. The reduction of negative outgroup emotions (e.g., anger or fear) serves as a mediator, explaining the relationship between reappraisal training and positive attitudinal changes in conflict contexts [18, 21, 22].

The present study is an extension of Hurtado-Parrado et al.'s study [22], which focused on testing the effects of emotion regulation training in changing political

attitudes in the context of the armed conflict and peace processes in Colombia. They implemented the reappraisal protocol a few days prior to a National Referendum (October 2, 2016) aimed at ratifying the peace agreement to end the 5-decade armed conflict between the Colombian government and FARC-EP. Reappraisal significantly reduced negative emotions elicited by multimedia that illustrated FARC-EP's violent actions and increased support for conciliatory statements corresponding to different aspects of the peace agreement that was about to be signed. As a continuation of this previous study, in Experiment 1 here we tested if the positive effects of reappraisal training on emotions and attitudes toward the peace accord with FARC-EP could be reproduced several years later when the attitudinal target was specifically FARC-EP ex-combatants. In this experiment we also explored if reappraisal effects could extend to other pro-social variables, in this case donation intention. Experiment 1 provided further evidence of strong generality and reliability of the reappraisal protocol and its potential to be extended to other socially relevant variables and attitudinal targets not conflict-related. Accordingly, in Experiment 2 we tested for the first time the effects of the reappraisal intervention on negative attitudes and emotions associated to the growing number of Venezuelan migrants in Colombia.

Experiment 1: effects of reappraisal training on emotions, attitudes, and donation intention toward FARC-EP Ex-combatants

Fuerzas Armadas Revolucionarias de Colombia (FARC-EP) was founded in 1964. It was one of the multiple actors in the several decades-long bipartisan-fueled violence that started in the 1930s Colombian rural and agrarian struggles. FARC-EP shared with other guerrillas the influence of the ideological and political climate of the Cold War and the Cuban Revolution [26, 27]. By the 1980s, FARC-EP proclaimed their goal to overthrow the Colombian government. During the same decade, other armed actors emerged, including right-wing paramilitary groups with ties to the army, political figures, drug cartels, and large landowners. During the late 1980s and throughout the 1990s, the conflict dramatically escalated, with an upsurge in violent actions affecting the civilian population (e.g., kidnapping, massacres, landmines, forced recruitment, and forced displacement [28]). The estimated number of victims exceeds six million [29], including more than 220,000 deaths and millions internally displaced. Nearly 80% of the casualties have been civilians [30].

After more than five decades of conflict, the Colombian government and FARC-EP signed on June 23, 2016, in Havana, Cuba, the General Agreement for the

Termination of the Conflict and the Construction of a Stable and Lasting Peace [31]. It included agreements regarding ceasefire, rural reform, political participation, solution to the problems of illicit drugs, guarantees for human rights activists and social movements, reparation and compensation to victims, mechanisms for implementation and verification of the peace accord, and establishment of a special judicial system for peace and amnesty for certain crimes committed by FARC-EP members [32, 33].

One of the critical points of the agreement included the reincorporation of ex-combatants into “civil life across economic, social, and political areas of their interest” [33]. The process of demobilization and reincorporation of ex-combatants as of 2021 has involved more than 33,961 participants [34]. Unfortunately, ex-combatants often face stigmatization, rejection, and limited help from the receiving communities. As a result, the reincorporation process and the overall implementation of the peace agreement have been hindered [35–37], while mounting number of ex-combatants have joined newly formed militias or drug cartels [13].

Research has consistently shown that control of negative emotions (e.g., anger and fear) by political cues perpetuate intractable conflict by mobilizing public support for aggressive actions [9, 11, 38]. The Colombian case has not been an exception. Emotional factors have had an essential role in the difficulties of the peace process, including the reincorporation efforts [39]. Opponents of the peace process have greatly influenced the public opinion using strategies triggering negative emotions, distorting some of the contents of the accord, including impunity for the ex-combatants and the negative economic and political implications of the agreement [40, 41]. Similar efforts to negatively influence the public opinion toward FARC-EP ex-combatants have been evident since the start of the Peace Accord implementation [42]. Accordingly, the objective of Experiment 1 was to evaluate if the positive effects of reappraisal training on emotions and attitudes toward the Peace Accord with FARC-EP [22] could be reproduced when the attitudinal target is specifically FARC-EP ex-combatants.

Based on previous findings [21, 22], we predicted that reappraisal training would (a) decrease negative emotions elicited by information linked to FARC-EP ex-combatants, (b) increase support for conciliatory statements, (c) decrease support for aggressive statements, and (d) increase donation intention for the target group (FARC-EP ex-combatants). In addition, we hypothesized that negative emotions would mediate the effects of reappraisal training on support for aggressive and conciliatory statements as well as donation intentions.

Methods

Analogously to previous studies [21, 22], experimental-group participants received reappraisal training. Subsequently, an anger-inducing multimedia was presented to control and experimental groups. This multimedia presented cases of ex-combatants' criminal behaviors. It was based on a systematic search on Colombian online newspapers and was validated to confirm its function in triggering negative emotions (e.g., anger and fear). Immediately after the multimedia, all participants answered the *PANAS Negative* and indicated the level of agreement with aggressive and conciliatory statements toward ex-combatants. These statements were designed through a systematic search of Twitter posts and were also previously validated. We conducted this systematic search to ensure the statements reflected authentic and contemporary discourse on aggressive and conciliatory attitudes toward ex-combatants, aligning with the public's political opinions. Aggressive and conciliatory statements included items about political participation of ex-combatants (e.g., “FARC-EP should not be part of Congress without paying a single day in jail and without having made reparations to the victims. That is a victory for criminals in Colombia”), economic and social aid (e.g., “It is important to support companies and initiatives that work with ex-combatants, so we continue building peace”), state protection (e.g., “The State must ensure the safety and security of ex-combatants who are part of the peace agreements”), and amnesty (e.g., “FARC-EP ex-combatants should be incarcerated; otherwise, they will continue committing crimes and using the assigned Territorial Spaces for Training and evading justice”). To measure donation intention, participants were asked to specify from 1 (low) to 5 (high) their donor intent to FARC-EP ex-combatants. Finally, all participants answered a questionnaire on social desirability [43, 44].

Participants

Fifty-three subjects participated in the study (29 women and 24 men, $M_{\text{age}} = 22.9$ years; $SD_{\text{age}} = 7.54$). The sample included college students and parents of elementary school children. Overall, recruitment process aimed to balance practical considerations with ethical standards and sensitivity to potential trauma experiences, aligning with the study's objectives. Recruitment was conducted through convenience sampling, targeting psychology students in their sophomore year and parents associated with an after-school program. To ensure a trauma-sensitive approach and prevent re-victimization, participants were screened for prior experiences related to the Colombian armed conflict, either as direct or indirect victims (further details in the procedure section). Prospective participants were informed about the study through an

invitation to participate in research on emotions, emphasizing confidentiality and ethical considerations. Participants received a snack at the conclusion of the study. No other form of compensation was implemented.

Human ethics and consent to participate

This study was carried out following the guidelines and ethical recommendations of the American Psychological Association [45], the Colombian Board of Psychologists [46], and the Declaration of Helsinki. All subjects signed informed consent prior to participating in the study.

Ethics approval

The protocol was approved by the Internal Review Board (IRB) at Konrad Lorenz University (Research and Bioethics Committee).

Pretest of materials

A set of 15 images depicting criminal behavior of FARC-EP ex-combatants and ten conciliatory and aggressive statements related to those images were used to create an anger-inducing multimedia in Microsoft PowerPoint, which resembled that implemented in similar studies [21, 22]—e.g., duration, number of images, music, and content of the texts. See copies of these materials in Open Science Repository (OSF)—<https://doi.org/10.17605/OSF.IO/P8JQH>.

Validation of images and texts included in the anger-inducing multimedia was conducted with sixteen subjects that were exposed to (a) 15 images about documented cases of criminal behavior committed by ex-combatants and (b) ten related phrases expected to elicit negative emotions. The texts were obtained via systematic searches on newspapers websites with the terms “FARC-EP ex-combatants,” “crime,” “violence,” and “Colombia” – (e.g., “In a recent conversation with a FARC-EP ex-combatant, it became clear that there are hundreds of former guerrillas who could be thinking of abandoning the peace process—or who have already done so—to return to the bush and the criminal economies they once controlled” [47]). The Self-Assessment Manikin-SAM [48] was implemented to measure the participants’ emotional responses to these stimuli. The SAM is a non-verbal pictorial instrument that measures the affective experience in three emotional dimensions (ranges 1 to 9): valence (i.e., 1=totally unpleasant to 9=totally pleasant), arousal (i.e., 1=totally relaxed to 9=totally activated), and dominance (i.e., 1=totally dominant to 9=totally dominated). Participants’ assessments of the selected images and texts were distributed mainly in the unpleasant pole (Mean of Valence scores=2.49, range 1.5 to 4.43; Mean Arousal scores=4.41, range between 3.31 and 5.71; Mean of Dominance scores = 4.76, range

3.66 to 6.06 – data available at Open Science Repository (OSF)—<https://doi.org/10.17605/OSF.IO/P8JQH>.

To select and validate the conciliatory and aggressive statements required for the experiment, a systematic search was conducted on Twitter with the key terms “Ex-combatants,” “FARC,” “Reinserted,” and “Reincorporated.” From a dataset of over seven hundred tweets (2014–2019), we selected ten conciliatory and ten aggressive statements. Participants had to respond on a Likert Scale (1=Strongly disagree; 6=Strongly agree) how much they agreed with the conciliatory statements (e.g., “It is crucial to provide economic and social opportunities to FARC-EP ex-combatants, for example, buying the products they are producing) and aggressive statements (e.g., “FARC members should not be in Congress without paying a single day in jail and without having made amends to the victims. That is a victory for the criminals of Colombia.”). A factor analysis revealed the two expected factors, one that measured the conciliatory statements ($\alpha_{\text{conciliatory}}=0.85$) and another that measured the aggressive statements ($\alpha_{\text{aggressive}}=0.80$). See a dataset of factor analysis and complete list of statements in Supplementary Materials and the full dataset at OSF repository <https://doi.org/10.17605/OSF.IO/P8JQH>.

Procedure

Participants were invited to a computer lab to participate in an emotion-related study. First, they completed a trauma inventory [49]. If a participant reported having any relevant violent experience, including self-identifying as a direct or indirect victim of the Colombian armed conflict, they could not continue in the study. The different phases of the experiment are described below, which were implemented in a single 30-min session, to which each participant was exposed individually.

Reappraisal training

Participants were randomly assigned to either the experimental (n=25) or control (n=28) groups. The experimental group received training in reappraisal, as per protocol previously reported [21, 22]. Participants were individually exposed to their corresponding group. Using a Microsoft PowerPoint presentation projected on a 15" computer screen, each participant observed five anger-triggering images with reference to crimes committed by ex-combatants and was asked to “respond to them scientifically, objectively and analytically, trying to think in a cold and detached way” [50]. After presenting the instruction, the researcher modeled how to use the reappraisal technique in the presence of the first images. For example, “as I look at these images of burned bodies victims of bombings, I try to reinterpret them as evidence of the need to work towards reducing conflict and

promoting peace” and “despite the distress I feel seeing child soldiers, I try to view them as victims themselves, underscoring the relevance of their reintegration”. The participant was then asked to apply the technique with the four additional images. Participants in the control group were exposed to the same set of images but were not given instructions to regulate their emotions, nor did the researcher model a response. Instead, they were simply asked to ‘respond naturally,’ as done in previous research and the original protocol [21, 22, 50].

Presentation of anger-inducing multimedia

After the reappraisal or control intervention, participants watched a 4-min PowerPoint multimedia with the validated images and texts (see section Materials above). This multimedia showed criminal acts committed by FARC-EP ex-combatants and was based on the presentations previously implemented [21, 22] in terms of duration, number of images, music, and texts (see details and access to a copy in section Materials above). Participants assigned to the experimental group were asked to respond during the multimedia presentation according to their reappraisal training, whereas those in the control group were reminded to respond naturally.

Assessment of negative emotions

After the anger-inducing presentation, participants reported the degree to which they felt negative emotions (*angry, upset, guilty, fearful, hostile, irritable, ashamed, nervous, uneasy, and scared*) toward ex-combatants using the *PANAS Negative* [51, 52]. Participants selected the extent to which they felt each emotion using a Likert-type rating scale that ranged from 1 = *very slightly or not at all* to 5 = *extremely*. The specific scores for each emotion and the total scores for negative emotions were analyzed. The total PANAS negative score was calculated by summing the scores of the 10 items assessing negative emotions.

Support for aggressive and conciliatory statements

Participants indicated their support for three aggressive statements (i.e., “FARC-EP ex-combatants should not be sitting in Congress without paying a single day in jail and without having made reparations to the victims. That is a victory for criminals in Colombia”; “We must not promote the purchase of products made by FARC-EP ex-combatants, instead of those produced by citizens who have been working honestly for years”; “FARC-EP ex-combatants should be imprisoned, they commit crimes and use the Territorial Spaces for Training and evading justice”) and three conciliatory statements (i.e., “We must trust the former FARC combatants and understand the importance of establishing peace with them”; “The State must ensure the safety and protection of ex-combatants

covered by the peace agreements”; “It is important to support companies and initiatives that work with ex-combatants, so we continue building peace”) using a Likert-style rating scale, which ranged from 1 = *strongly disagree* to 6 = *strongly agree*. See details in Materials section above. The total scores for support for aggressive and conciliatory statements were calculated by averaging the responses across the three aggressive and three conciliatory items.

Donation intention

Participants were asked to rate in a Likert-style scale their donation intention to support FARC-EP ex-combatants (i.e., “While considering your usual expenses, please indicate the priority you would give to a donation made to a FARC-EP ex-combatants organization”). The Likert scale ranged from 1 = *low priority* to 5 = *high priority*.

Data analyses

We (a) used one-tailed independent-samples t-tests to assess the effects of reappraisal training on PANAS’ overall scores of negative emotions and specific scores for each emotion (*angry, upset, fearful*, etc.—comparing control [coded as 2] vs. reappraisal training [coded as 1] groups), (b) assessed whether reappraisal increased support for conciliatory statements and reduced support for aggressive statements using one-tailed t-tests, and (c) tested the mediating effects of negative emotions on support for aggressive statements, conciliatory statements, and donation intention, using PROCESS procedure for SPSS with model 4 and 5000 bootstraps resamples [53, 54]. Finally, as reported in previous studies [21, 22], the potential effect of reappraisal training on the Marlowe-Crowne Social Desirability Scale [55] scores was assessed with an independent-samples two-tailed t-test. Cohen’s *d* effect size calculations, where applicable, were performed.

Results

Effects of reappraisal training on negative emotions

A comparison of the overall negative emotion scores (*PANAS negative*) showed that participants exposed to reappraisal training prior to the presentation of the anger-inducing information reported less intense negative emotions ($M=21.8$, $SD=6.02$) than participants in the control group ($M=26.64$, $SD=7.01$), $t(51)=-2.68$, $p=.005$, Cohen’s $d=0.74$).

Concerning the effects of reappraisal on each negative emotion, we used a one-tailed independent-samples t-test. As shown in Supplementary Table 1, reappraisal significantly reduced scores on *angry, upset, irritable, nervous, uneasy*, and *scared*, mostly with moderate effect sizes (Cohen’s *ds* ranged between 0.59 and 0.85).

Table 1 Mediating effect of negative emotions on support for aggressive statements

Indirect effects (a*b)	Mediator	Effect	BootSE	BootLLCI	BootULC
Intervention group → emotion → aggressive statements	PANAS Negative	.33	.18	.04	.75
	Irritable	.34	.21	.0006	.79
	Uneasy	.23	.14	.005	.54
	Scared	.25	.15	.0007	.60

Effects of reappraisal training on conciliatory/aggressive statements, and donation intention

Participants in the reappraisal group expressed less support for aggressive statements ($M=2.54$, $SD=1.03$), as compared to participants assigned to the control group ($M=3.18$, $SD=1.25$), $t(51)=-1.98$, $p=.026$, $d=0.56$. Furthermore, participants in the reappraisal group expressed more support for conciliatory statements ($M=5.24$, $SD=0.95$) when compared with participants in the control group ($M=4.62$, $SD=1.15$), $t(51)=2.13$, $p=.019$, $d=0.58$.

Lastly, regarding donation intention, participants exposed to reappraisal training reported higher intention to donate to FARC-EP ex-combatants ($M=3.04$, $SD=1.20$) than participants in the control group ($M=2.28$, $SD=1.05$), $t(51)=2.43$, $p=.009$, Cohen's $d=0.67$.

The mediating effect of negative emotions on support for aggressive statements

Previous studies have reported that overall scores of *PANAS Negative* and specific scores on *anger* and *fear* mediated the effect of reappraisal on support for conciliatory and aggressive statements [21, 22]. Based on these findings, we tested whether these same variables had the same mediating role. All procedures were conducted using Model 4 of the SPSS macro PROCESS [53] and 5,000 bootstrap resamples. We followed Hayes and Rockwood's approach [54] to estimate the indirect effect of X (i.e., reappraisal) on Y (i.e., support for aggressive statements) operating through M (i.e., negative emotions), and conducted an inference about that effect using a 95% bootstrap confidence interval (CI). A resulting CI that was above or below zero was considered evidence of a mediation effect.

As expected, the intervention group (reappraisal=1, control=2) had a significant effect on *PANAS Negative* ($\beta=4.842$, $SE=1.80$, $p<.01$), indicating that receiving appraisal training was associated with decreased negative emotions. High levels of *PANAS Negative*, in turn, significantly predicted support to aggressive statements ($\beta=0.068$, $SE=0.023$, $p<.01$). The indirect effect was significant, as the 95% confidence intervals did not include zero. (See Table 1). Regarding the specific negative

emotions tested for mediation role, an indirect effect of reappraisal on support for aggressive statements through *irritable*, *uneasy*, and *scared* was detected. No significant indirect effects of reappraisal on support for aggressive statements through other emotions (*angry*, *upset*, *guilty*, *fearful*, *hostile*, *ashamed*, and *nervous*) were found [95% CI did include zero] (See Supplementary Table 3).

The mediating effect of negative emotions on support for conciliatory statements and donation intention

The tests for the indirect effect of reappraisal on support for conciliatory statements and donation intention through overall and specific negative emotions scores was not significant in all cases [95% CI did include zero].

Social desirability

A two-tailed independent-samples t -test on the Marlowe–Crowne Social Desirability Scale scores [13, 37] denoted no significant differences between reappraisal ($M=16.80$, $SD=5.91$) and control groups ($M=17.18$, $SD=6.09$), $t(51)=-0.23$, $p=.820$. The fact that these scores are similar to scores reported for Colombian [21] population ($M=17.54$, $SD=5.32$) suggested that participants in the present study showed an average degree of concern for the social desirability of their responses.

Discussion

Experiment 1 tested if the previously reported effects of reappraisal training on emotions and attitudes toward the Peace Accord with FARC-EP [22] could be reproduced when the attitudinal target was specifically FARC-EP ex-combatants. The reappraisal training focused on helping participants regulate their emotional responses to images depicting crimes committed by FARC-EP ex-combatants by reframing the images with new, more conciliatory and empathetic meanings. After demonstrating how to apply the technique, the verbalizations made by participants during the training phase focused on reflecting on the current post-peace agreement context and acknowledging the reduction in violent acts. Their verbalizations often centered around similar issues such as the importance of contributing to the reincorporation of victims of forced child soldier recruitment. This distinction between the reappraisal training and control groups

likely led to the observed reduction in negative emotions in the reappraisal group, which in turn influenced their attitudes toward aggressive statements.

As predicted, and reproducing findings reported in previous studies [21, 22], reappraisal training reduced the levels of negative emotions with moderate effect magnitudes (*angry*, *upset*, *irritable*, *nervous*, *uneasy*, and *scared*), increased participants' support for conciliatory statements (e.g., protection of ex-combatants, economic and social opportunities) and reduced the support for aggressive statements (e.g., evasion of justice, unearned socioeconomic benefits). Also reproducing findings reported in past studies, we detected mediating effects of negative emotions –*irritable*, *uneasy*, and *scared*—on support for aggressive statements. The reason why only these emotions served as mediators was likely due to the impact of limited sample size on statistical power. The post hoc power analyses revealed that Study 1 had a power of 0.62, which is somewhat below the commonly recommended threshold of 0.80. While the observed indirect effects were statistically significant, future research with larger sample sizes is warranted to confirm these findings. Lastly, the positive effects of reappraisal were demonstrated on a pro-social behavior measure not previously tested in the context of this line of research; namely, donation intention.

We did not reproduce the indirect effect of reappraisal on support for conciliatory statements through negative emotions. This again may be due to the limited power of our study, which could have hindered our ability to detect small-to-medium magnitude effects. Another possible explanation that could be explored in future research is that the effects of reappraisal on conciliatory statements depend on specific emotions (e.g., *anger* was relevant in previous studies [21, 22], but in the present study, emotions related to *fear* played a more fundamental role). Nevertheless, these findings overall provide further evidence on the reliability and generality of reappraisal training effects on prosocial behavior and conflict. More important, they showed promise that reappraisal training could be effectively applied to other socially relevant attitudinal targets not related to armed conflict. Accordingly, in Experiment 2 we decided to test the effects of the reappraisal intervention on negative attitudes, emotions, and donation intention related to the growing number of Venezuelan migrants in Colombia.

Experiment 2: effects of reappraisal training on emotions, attitudes, and donation intention toward venezuelan migrants

The second experiment featured Venezuelan migrants in Colombia as the subject of multimedia content and statements. Using the same methodology of the first

experiment, we expected reproducing the effects, this time with an attitudinal target outside the context of the Colombian armed conflict. Venezuelan decades-long socioeconomic crisis has occasioned significant regional impacts, including massive migrations [56]. As of 2021, Colombia has received the largest number of migrants from Venezuela: more than 1,842,390 [1, 56]. Violence incorporated into contemporary Venezuelan society with the looting and repression of 1989 (i.e., the “Caracazo”), the putsch of 1992 and the government of the “Bolivarian revolution” that started in 1999 [56]. As a result of a major economic and political crisis taking place over the last 30 years, Venezuela has endured a complex humanitarian emergency including hyperinflation [57], shortages of food and medicine [58], illnesses [59], and violence [60, 61].

With the high influx of Venezuelan migrants, Colombians are showing signs of increased xenophobia toward that population [62]. Overall, some Colombians are attributing the increase in violence, robbery, unemployment, diseases, hospital overcrowding, and social programs scarcity to the arrival of Venezuelans [63]; this notwithstanding the fact that only a small fraction of the migrant population has been found to be involved in criminal activities [64]. Similar to what has been reported in analogous cases in other cultures (e.g., Syrian refugees in Turkey [65], African “foreigners” in South Africa [66], and xenophobic evaluations of COVID-19 in the US [67]), negative emotions and attitudes toward Venezuelan migrants have been greatly controlled and magnified by xenophobic discourse [68]. This has resulted in an increase in victimization, vulnerability, risk, and precariousness in the Venezuelan migrants' live conditions [69]. Considering the relevance and growth of this issue in Colombia, and the potential use of reappraisal intervention on other socially relevant targets not conflict-related, we decided to test the protocol on negative attitudes and emotions toward Venezuelan migrants.

Building on the findings of Study 1 and previous research [21, 22], we hypothesized that reappraisal training would (a) reduce negative emotions associated with information about Venezuelan migrants, (b) increase support for conciliatory statements, (c) decrease support for aggressive statements, and (d) enhance donation intentions toward this group. Additionally, we proposed that negative emotions would mediate the impact of reappraisal training on support for both aggressive and conciliatory statements, as well as donation intentions. We also expected that women would experience stronger effects from the cognitive appraisal training [25, 70].

Participants

Fifty-nine subjects participated in the study (36 women and 23 men, $M_{\text{age}} = 27.32$ years; $SD_{\text{age}} = 11.79$). The

sample included college students and parents of elementary school children that were randomly assigned to either the experimental ($n=29$) or control ($n=30$) group. Recruitment, trauma-sensitive approach, compensation for participation, informed consent, and ethics approval followed the same process as in Study 1 (protocols approved by the Internal Review Board (IRB) at Konrad Lorenz University (Research and Bioethics Committee).

Pretest of materials

A set of 15 images depicting criminal behavior of Venezuelan migrants and the benefits that Venezuelan migrants receive from the Colombian government, and ten conciliatory and aggressive statements related to those images were used to create an anger-inducing multimedia in Microsoft PowerPoint, which resembled that implemented in previous studies [21, 22]—e.g., duration, number of images, music, and content of the texts. See copies of these materials in Open Science Repository (OSF)—<https://doi.org/10.17605/OSF.IO/P8JQH>.

Validation of images and texts included in the anger-inducing presentation consisted of the following: Participants ($N=19$) were exposed to (a) 15 images depicting documented cases of criminal behavior committed by Venezuelan migrants and Immigrant Eligibility for Government Programs in Colombia, and (b) ten related phrases expected to elicit negative emotions. The texts were obtained via systematic searches on newspapers websites with the terms “Venezuelan migrants,” “crime,” “violence,” and “Colombia” — (e.g., “There were disturbances by Venezuelans in the migrant camp. They broke the security cameras, destroyed the portable toilets and some tents where they take shelter, as well as damaged the health, food supply clothing donation tents” [71]). The Self-Assessment Manikin-SAM [48] (was implemented as in Experiment 1. The scores of the selected images and texts were distributed mainly in the aversive pole (Mean of Valence scores = 2.82, range 1.53 to 4.31; Mean of Arousal scores = 4.88, range between 3.94 and 6; Mean of Dominance scores = 4.72, range 3.78 to 5.72 — data available at Open Science Repository (OSF)—<https://doi.org/10.17605/OSF.IO/P8JQH>.

To select and validate the conciliatory and aggressive statements, a systematic search was conducted on Twitter with the key terms “Venezuelan,” “migrants,” “theft,” “health,” “pregnancy,” “job,” “humanitarian aid,” and “Colombia.” From a dataset of over one hundred and fifty tweets (2017–2019), we randomly selected ten conciliatory and ten aggressive statements. Participants had to respond on a Likert Scale (1 = *Strongly disagree*; 6 = *Strongly agree*) how much they agreed with the conciliatory statements (e.g., “In Colombia, we must open the doors to Venezuelan migrants, especially pregnant”),

and aggressive statements (e.g., “Venezuelan migrants should leave Colombia because they take away the few jobs that are available and they are a heavy burden we should not assume”). A factor analysis revealed two factors, one that measured the conciliatory statements ($\alpha_{\text{conciliatory}}=0.86$) and another that measured the aggressive statements ($\alpha_{\text{aggressive}}=0.91$). See a dataset of factor analysis and a complete list of the statements in Supplementary Materials and the full dataset at OSF repository <https://doi.org/10.17605/OSF.IO/P8JQH>.

Procedure

Experiment 2 followed the same procedure as Experiment 1 — i.e., reappraisal training using multimedia images and texts of Venezuelan migrants. The researcher explained how to use the reappraisal technique in the presence of the first images. For example, “as I look at the image of hundreds of Venezuelans crossing the border into Colombia, I reinterpret it with a less emotional perspective, considering the migration rights they have given the conditions in their country, and the fact that different countries are providing funds to Colombia to respond to this massive migration” and “when I see the image of the Venezuelan thieves laughing, I reinterpret the anger it elicits in me into a more neutral state, thinking that the police captured them.” Afterward, the anger inducing multimedia was presented, followed by the assessment of negative emotions using the PANAS negative, support of aggressive and conciliatory statements, and donation intention.

Support for aggressive and conciliatory statements

Participants indicated their support for three aggressive statements (i.e., “Venezuelan migrants should leave Colombia because they take away the few jobs that exist and they are a heavy burden that it is not for us to assume”; “There is no need to continue supporting Venezuelan migrants, the money they receive does not pay taxes and they do not leave any of it in Colombia because they send it to Venezuela”; “Good Venezuelan migrants don’t arrive in Colombia, instead, all of them should leave our country”) and three conciliatory statements (i.e., “In Colombia, we must accept Venezuelan migrants, especially pregnant women”; “Colombian nationality must be granted to children of Venezuelan migrant parents to guarantee the fundamental rights of this population”; “It is important to be empathetic and use our resources to help the Venezuelan migrant population”) using a Likert-style rating scale, which ranged from 1 = *strongly disagree* to 6 = *strongly agree*. See details in Materials section above.

Data analysis

Experiment 2 replicated the data analysis of Experiment 1, which was based on previous studies [16, 30].

Table 2 Mediating effect of negative emotions on support for aggressive statements

Indirect effects (a*b)	Mediator	Effect	BootSE	BootLLCI	BootULC
Intervention group → emotion → aggressive statements	PANAS Negative	1.17	.28	.67	1.78
	Upset	.80	.23	.38	1.31
	Angry	.69	.26	.17	1.18
	Fearful	.35	.19	.02	.76
	Hostile	.51	.20	.17	.95
	Irritable	.83	.24	.38	1.31
	Nervous	.58	.23	.19	1.08
	Uneasy	.89	.25	.42	1.49
	Scared	.87	.25	.42	1.38

Results

Effects of reappraisal training on negative emotions

A comparison of the *PANAS negative* scores showed that participants exposed to reappraisal training reported overall less intense negative emotions ($M=17.48$, $SD=5.75$) than participants in the control group ($M=27.33$, $SD=7.59$), $t(53.97)=-5.63$, $p<.001$, with a large effect size (Cohen's $d=1.46$). Concerning the effects of reappraisal on each negative emotion, we used one-tailed independent-samples t -test. Reappraisal significantly reduced participants' reports of feeling *angry*, *upset*, *fearful*, *hostile*, *irritable*, *ashamed*, *nervous*, *uneasy*, and *scared*, with primarily large effect sizes (all Cohen's $ds>0.80$, except *ashamed* with 0.62), and it had no effect on reports of feeling *guilty*, as shown in Supplementary Table 2.

Effects of reappraisal training on conciliatory/aggressive statements, and donation intention

Participants in the reappraisal group expressed more support for conciliatory statements ($M=4.64$, $SD=1.26$) when compared with participants in the control group ($M=3.21$, $SD=1.42$), $t(57)=4.09$, $p<.001$, $d=1.06$. Furthermore, participants in the reappraisal group expressed less support for aggressive statements ($M=2.06$, $SD=0.97$) when compared with participants in the control group ($M=3.15$, $SD=1.48$), $t(50.26)=-3.36$, $p<.001$, $d=0.87$. In both cases, effect sizes were large. Regarding donation intention, participants in the reappraisal group reported more support for donation to migrants ($M=3.31$, $SD=0.93$) than participants in the control group ($M=2.40$, $SD=1.07$), $t(57)=3.48$, $p<.001$, with a large effect size (Cohen's $d=0.91$).

The mediating effect of negative emotions on support for aggressive statements

The prediction that *PANAS Negative* mediated the relationship between reappraisal and support for aggressive

statements was confirmed using Model 4 of the SPSS macro PROCESS [53] and 5,000 bootstrap resamples. The indirect effect of reappraisal on support for aggressive statements through negative emotions was significant (95% CI did not include zero). The intervention manipulation (reappraisal=1, control=2) had a significant positive effect on *PANAS Negative* ($\beta=9.851$, $SE=1.76$, $p<.001$). *PANAS Negative*, in turn, significantly predicted support to aggressive statements ($\beta=0.119$, $SE=0.019$, $p<.001$). Regarding specific negative emotions, we found a significant indirect effect of reappraisal on support for aggressive statements through *upset*, *angry*, *fearful*, *hostile*, *irritable*, *nervous*, *uneasy*, and *scared* (95% CI did not include zero) (See Table 2).

The mediating effect of negative emotions on support for conciliatory statements

The prediction that *PANAS Negative* mediated the relationship between reappraisal and support for conciliatory statements was also confirmed. The indirect effect of reappraisal on support for conciliatory statements through negative emotions was significant (95% CI did not include zero). The intervention manipulation (reappraisal=1, control=2) had a significant effect on *PANAS Negative* ($\beta=9.851$, $SE=1.76$, $p<.001$), indicating that receiving appraisal training was associated with decreased negative emotions. Low levels of *PANAS Negative*, in turn, significantly predicted high support to conciliatory statements ($\beta=-0.080$, $SE=0.024$, $p<.01$). Regarding specific negative emotions, we found a significant indirect effect of reappraisal on support for conciliatory statement through *angry*, *upset*, *hostile*, *irritable*, *uneasy*, and *scared* (95% CI did not include zero) (See Table 3).

The mediating effect of negative emotions on donation intention

The indirect effect of reappraisal on support for donation intention through *PANAS Negative* was significant (95%

Table 3 Mediating effect of negative emotions on support for conciliatory statements

Indirect effects (a*b)	Mediator	Effect	BootSE	BootLLCI	BootULC
Intervention group → emotions → conciliatory statements	PANAS Negative	-.79	.31	-1.50	-.30
	Angry	-.71	.26	-1.27	-.24
	Upset	-.72	.32	-1.48	-.25
	Hostile	-.30	.18	-.73	-.02
	Irritable	-.75	.25	-1.29	-.33
	Uneasy	-.64	.27	-1.22	-.13
	Scared	-.49	.25	-1.03	-.05

Table 4 Mediating effect of negative emotions on support for donation

Indirect effects (a*b)	Mediator	Effect	BootSE	BootLLCI	BootULC
Intervention group → emotions → donation	PANAS Negative	-.53	.20	-.98	-.20
	Angry	-.50	.19	-.91	-.15
	Upset	-.46	.19	-.90	-.14
	Irritable	-.54	.17	-.90	-.24
	Uneasy	-.53	.21	-.98	-.16
	Scared	-.37	.16	-.74	-.08

CI did not include zero). The signs of the associations between intervention group (reappraisal = 1, control = 2) and participants' negative emotions ($B = 9.85$, $SE = 1.73$, $p < .001$) and between negative emotions and donation intention ($B = -0.05$, $SE = 0.02$, $p < .01$) were consistent with the predicted mediating effect (i.e., reappraisal condition reduced negative emotions in comparison to the control condition, this in turn increased intention to donate). Regarding specific negative emotions, we found significant indirect effects of reappraisal on support for donation *through angry, upset, irritable, uneasy, and scared* (95% CI did not include zero) (See Table 4).

Social desirability

A two-tailed independent-samples t -test on the Marlowe–Crowne Social Desirability Scale scores [43, 44] showed no significant differences between reappraisal ($M = 15.51$, $SD = 4.47$) and control groups ($M = 14$, $SD = 5.01$), $t(57) = 1.23$, $p = .225$. The fact that these scores were between the average reported in Spanish and Mexican populations indicated that participants in the present study showed an average degree of concern for the social desirability of their responses.

Discussion

In this experiment we tested if the effects of reappraisal training on emotions and attitudes could be extended to a non-conflict related attitudinal target, Venezuelan migrants in Colombia the Peace Accord. Reappraisal

training was expected to decrease the intensity of negative emotions, increase support for conciliatory statements, decrease support for aggressive statements, and increase the support for donation intention to Venezuelan migrants.

The reappraisal training focused on helping participants regulate their emotional responses to images depicting massive Venezuelan migrations and crimes committed by Venezuelan migrants by reframing the images with new, more conciliatory and empathetic meanings. After demonstrating how to apply the technique, the reappraisal group interpreted the images as portraying most Venezuelans as displaced victims rather than criminals, considering the funds destined to support this migrant community and with data showing that Colombians are involved in crime at higher rates than Venezuelans. This distinction between the reappraisal training and control groups likely led to the observed reduction in negative emotions in the reappraisal group, which in turn influenced their attitudes toward aggressive statements.

Participants exposed to reappraisal training reported lower scores on negative emotions – *angry, upset, fearful, hostile, irritable, ashamed, nervous, uneasy, and scared* – with moderate to large effect magnitudes. Reappraisal also significantly increased participants' support for conciliatory statements (e.g., social inclusion and humanitarian aid) and reduced the support for aggressive statements (e.g., labor crisis and unsafety). These findings

support the notion that the effects of reappraisal on emotions and attitudes could be reproduced in non-conflict related contexts, similar to previous reports regarding the acceptance of out-groups in the migration context of Finland [24].

Also extending the findings of previous research, including replication of an analogous finding in Experiment 1, we observed a mediating effect of negative emotions on support for donation intention. This shows promise for reappraisal training being effective on a wider range of pro-social behaviors (e.g., compliant and anonymous behaviors [72]). Future research is needed to explore this possibility. The post hoc power analysis for Study 2 indicated a power of 0.66, also slightly below the recommended threshold of .80. Although the observed indirect effects were statistically significant, further studies with larger samples are needed to validate these results.

General discussion

The purpose of this study was to extend previous research on the effects of a brief reappraisal protocol on negative emotions and conciliatory and aggressive attitudes. In Experiment 1, we tested the effects of reappraisal training on emotions, attitudes, and donation intention toward FARC-EP ex-combatants. In Experiment 2, we tested if the positive effects of reappraisal training could be effectively applied to another socially relevant attitudinal target not conflict-related, namely Venezuelan migrants in Colombia.

The current findings largely replicate previous research [21, 22]. In Experiment 1, reappraisal training reduced negative emotions such as anger, irritation, nervousness, unease, and fear, with mostly moderate effect sizes. In Experiment 2, the intervention had a more substantial impact, reducing a wider range of negative emotions, including anger, irritation, fear, hostility, shame, nervousness, unease, and fear, primarily with large effect sizes. This suggests that reappraisal training had a stronger impact on negative emotions toward Venezuelan migrants than toward FARC-EP ex-combatants. Additionally, the specific emotions affected by reappraisal differed across the two groups. In the context of Venezuelan migrants, hostility, an emotion commonly linked to discrimination against migrants in previous research [73, 74], was also reduced. Although further research is needed to understand why these effects differ depending on the target group, our findings suggest that reappraisal training may have broader and stronger effects when applied to non-armed conflict issues (e.g., migration). One possible explanation is that participants have had more exposure to political discourse surrounding the Colombian armed conflict, including the peace process,

which has been a central topic in Colombian society for decades [75]. In contrast, the issue of Venezuelan migration is relatively new, therefore participants may have had less exposure to the rhetoric surrounding this topic [76].

The present study also revealed that negative emotions mediated the relationship between reappraisal and support for aggressive statements. In the case of emotion regulation toward FACR-EP ex-combatants (Experiment 1), the emotions were *irritable*, *uneasy*, and *scared*. With Venezuelan migrants (Experiment 2), the emotions were *angry*, *upset*, *fearful*, *hostile*, *irritable*, *nervous*, *uneasy*, and *scared*. In past conflict-related studies, few negative emotions mediated the relationship between reappraisal training and aggressive statements, specifically *fear* [22] and *angry* [21]. The wide range of emotions that mediated reappraisal and support for aggressive statements toward Venezuelan migrants similarly could be explained by the degree of exposure to related discourse. Armed-conflict information, including rhetoric in favor or against aggressive actions, has been in political discourse for decades, as compared to Venezuelan migration, which is a more recent social issue.

To our knowledge, this is the first demonstration of reappraisal's effects on socially relevant variables that have been less explored in this area of research. Our findings show that reappraisal increased participants' intention to donate, and that this effect was mediated by negative emotions. While additional research is needed to confirm the reliability of these effects, the results of similar studies offer promising indications. Emotions triggered by others' distress play a crucial role in motivating prosocial behavior, such as donation, sharing, cooperation, collective action, civic engagement, volunteering, activism, and petition signing [77, 78].

Limitations

Our mediation analyses require cautious interpretation due to the modest sample sizes and statistical power. Although we aligned our sample sizes with those reported in the studies we aimed to replicate [21], these sizes may still constrain statistical power and limit generalizability. While our mediation effects are statistically significant and theoretically coherent [12], future research should aim to address power limitations by conducting a priori power calculations using methodological approaches (e.g., Monte Carlo simulations [79]) to ensure adequate statistical power. Increasing the sample size in subsequent studies will help enhance the reliability and generalizability of the results. Additionally, the cross-sectional design used in this study presents challenges in interpreting mediation effects. As noted by Rohrer et al., cross-sectional mediation models cannot establish causal pathways definitively due to the absence of temporal

sequencing between variables [80]. Although our study aligns with theoretical frameworks suggesting that emotional regulation influences affective responses that in turn influence political attitudes [12, 21], the cross-sectional nature of the design necessitates caution in drawing causal conclusions. The observed relationships are valid within the scope of our data but should not be interpreted as definitive evidence of causality. While it is theoretically plausible that the intervention influences emotions, which in turn shape political attitudes, we recommend that future studies employ longitudinal designs to test the enduring impact of the intervention on both emotional responses and subsequent political attitudes.

Future studies should control for the degree of familiarity that participants have with FARC-EP ex-combatants and Venezuelan migrants. For instance, assessing the extent of direct interactions, media exposure, or personal connections with these groups could clarify how prior exposure influences emotional responses and attitudes. Moreover, we did not measure baseline negative attitudes or perceived intergroup threat prior to the intervention, as our primary focus was on comparing experimental and control groups. Nevertheless, these factors may moderate the effectiveness of reappraisal training, with individuals holding stronger negative attitudes or higher perceived threat potentially responding differently to the intervention.

Considering the practical relevance of the reappraisal intervention, future studies should assess the maintenance of its positive effects. This could be accomplished using similar approaches to those previously reported [21]. Specifically, participants could be re-tested weeks after the initial training and assessments, with the added implementation of reminders via text messages prompting them to practice the acquired technique. Subsequent assessments of attitudes could then be conducted to identify the lasting impact of reappraisal training.

Nevertheless, it is crucial to consider and develop strategies to address the obstacles in extending the practice of reappraisal beyond experimental settings. Individuals must possess an initial motivation to regulate their emotions consistently using these methods. Therefore, in contexts of extreme and violent conflicts, where individuals firmly adhere to specific values and ideologies regarding the opposing group, it is unlikely that the majority would inherently have the motivation to alter their negative emotions towards the adversary. Moreover, mastery of most direct emotion regulation techniques demands time and often requires personalized training, making it challenging to broaden their application to a societal scale [12].

Lastly, future research should investigate the positive effects of reappraisal training using alternative measures of prosocial behavior. It is especially relevant to extend

the present findings using methodologies with more robust evidence of generality, including those that transcend hypothetical scenarios and have high predictive value on real-world behavioral changes (e.g., social discounting measures [81–83]).

Conclusions

Participants that were exposed to cognitive reappraisal training, both toward FARC-EP ex-combatants (Experiment 1) and Venezuelan migrants (Experiment 2), reported experiencing negative emotions with a lower intensity, expressed less support for aggressive statements and more support for conciliatory statements, and manifested more intention to donate, as compared to control groups. Our results provide evidence that the effectiveness of reappraisal training, already reliably demonstrated in the context of different intractable conflicts [8, 12, 20–22, 84–86], has generality across other attitudinal targets, contexts, and socially relevant measures (e.g., intention to donate to Venezuelan migrants). This shows great promise for testing the effects of the reappraisal intervention in real-world and long-term influence on other socially relevant behaviors (e.g., voting and volunteering) and guiding public policy.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s40359-025-02571-w>.

Supplementary file 1.

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Authors' contributions

LM, CHP, & MSP: designed research. LM and IC: performed research and analyzed data. LM, CHP, MSP, MEH: analyzed data, wrote the paper – review and editing.

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Data availability

Data and materials related to this manuscript are available at the Open Science Repository (OSF)—<https://doi.org/10.17605/OSF.IO/P8JQH>.

Declarations

Ethics approval and consent to participate

This study was carried out following the guidelines and ethical recommendations of the American Psychological Association, the Colombian Board of Psychologists, and the Declaration of Helsinki. All subjects signed informed consent prior to participating in the study.

All protocols were approved by the Internal Review Board (IRB) at Konrad Lorenz University (Research and Bioethics Committee).

Competing interests

Camilo Hurtado-Parrado is member of the BMC Psychology Editorial Board.

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