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Harnessing distress to boost growth in frontline healthcare workers during COVID-19 pandemic: the protective role of resilience, emotion regulation and social support

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Dear Editor

The current narrative on psychological wellbeing of frontline healthcare workers (HCWs) during the coronavirus disease 2019 (COVID-19) pandemic has been highly polarized by a predominant focus on distress: most studies have painted a picture of a fragile group with mental health needs that need prioritizing (Dutheil, Mondillon, & Navel, 2020; García-Fernández et al., 2020; Holmes et al., 2020; Romero et al., 2020), while a few others depict HCWs as resilient and endowed with super-hero abilities (Cui et al., 2021; Stokes-Parish, Elliott, Rolls, & Massey, 2020).

Such a one-sided approach is unfortunate and not only reinforces a biased view of frontline HCWs, but it also overlooks robust literature evidencing a positive relationship between stress and growth outcomes in adverse circumstances (Bonanno, 2008; Tedeschi & Calhoun, 2004). Experiencing adversity may trigger a plethora of processes which, while aimed to counteract negative effects of stress may also contribute to leveraging resources that allow the individual to not only maintain, but also exceed previous levels of normal functioning (phenomenon known by the term posttraumatic growth, Tedeschi & Calhoun, 2004). Paradoxical as it may seem, above-normal level distress may be necessary for growth to occur, besides other intra-and interpersonal level factors, like the ability to see the silver lining (positive reappraisal) and to positively rebound in hardship situations (resilience), which have been associated with psychological wellbeing together with social support (Labrague, 2020; Prati & Pietrantoni, 2009; Schubert, Schmidt, & Rosner, 2016).

Nevertheless, most COVID-19 studies have one-sidedly approached this issue leaving unexplored the relationship between pandemic-related distress and posttraumatic growth in frontline HCWs. To close this gap we examined the relationship between posttraumatic stress and posttraumatic growth, while assessing the moderating role of resilience, emotion regulation and social support. We expected that high-level distress would be associated with posttraumatic growth in healthcare workers with high resilience, high emotion regulation skills and high social support.

To test this hypothesis, between 15 and 30 May, 2020 we collected data from HCWs working in worst-hit regions of central-northern Italy using an online questionnaire spread through a snowball sampling procedure. Posttraumatic stress was measured with the PTSD checklist for DSM-5 (PCL-5, Weathers et al., 2013), a 20-items scale assessing posttraumatic stress disorder (PTSD) symptoms (avoid thinking about, talking about or having feelings about the stressful experience). Items were summed to provide a total severity score with a cut-off point 31–33 suggested to discriminate clinically relevant symptoms.

Posttraumatic growth was measured with the posttraumatic growth inventory (PTGI; Tedeschi and Calhoun, 1996) which comprises 21 items evaluating different aspects of growth during adversity, like appreciating new possibilities (I established a new path for my life), social relationships (I have a greater sense of closeness with others), personal strength (I discovered that I'm stronger than I thought I was) and life more generally (I can better appreciate each day). Items were summed into a total score with higher values indicating higher PTG levels.

Resilience was measured with the Connor−Davidson Resilience Scale (CD-RISC_10, Connor and Davidson, 2003), a 10-item scale based on an operational definition of resilience as the ability to 'bounce back after illness or adversity'. Higher total scores indicate higher resilience.

Emotion regulation strategies were assessed with the Emotion Regulation Questionnaire (ERQ, Gross and John, 2003), which comprises 10 items assessing two commonly used
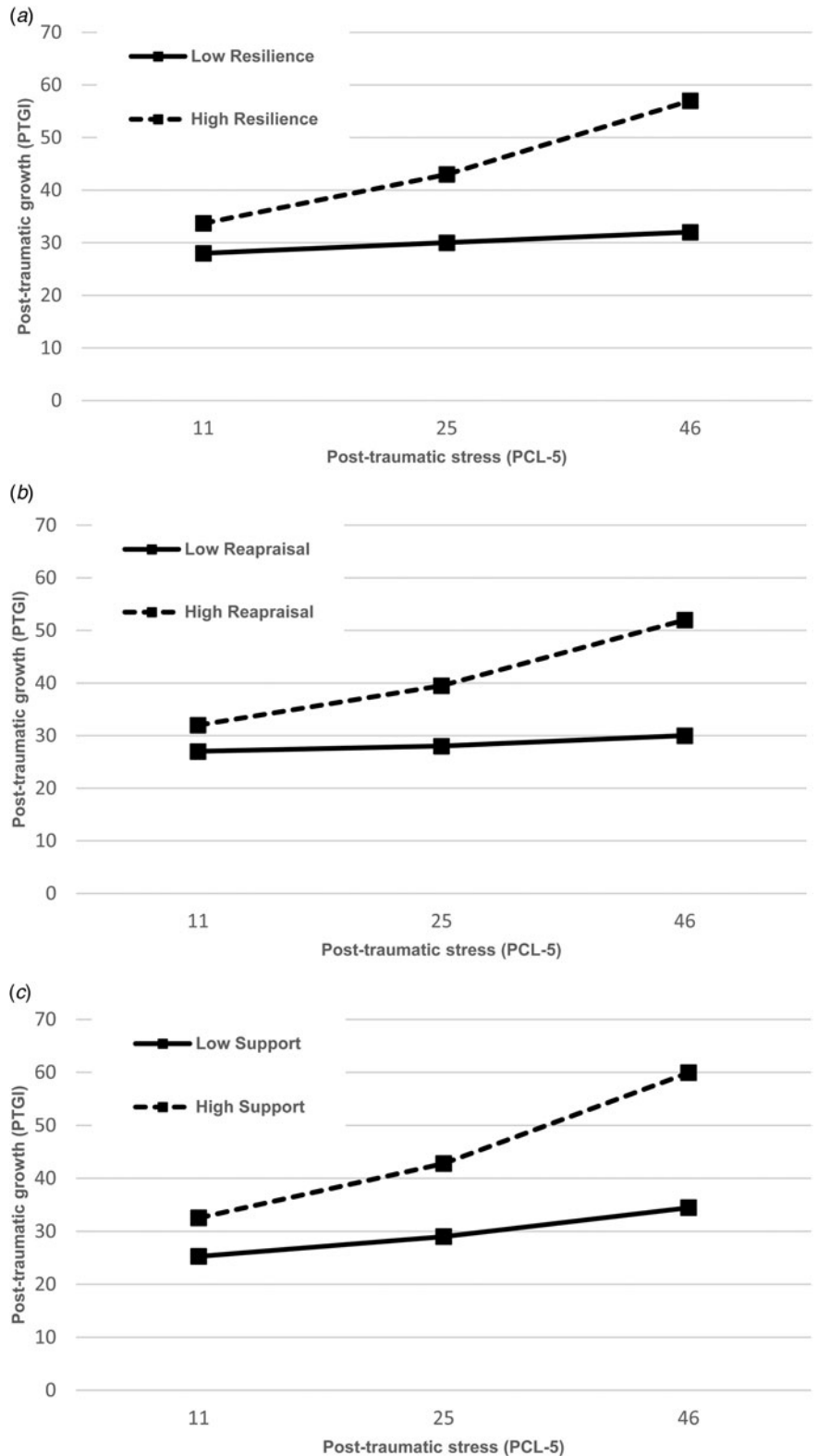
Fig. 1. Graphs show slopes of (a) resilience, (b) cognitive reappraisal and (c) social support predicting posttraumatic growth (PTG) at low, mean and high levels of posttraumatic stress (PTSD). When plotting the graphs, data automatically generated by the PROCESS analysis algorithm are used to classify low, mean and high levels of continuous variables.

strategies to modulate emotion: cognitive reappraisal (when I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm) and expressive suppression (when I am feeling negative emotions, I make sure not to express them). Responses were summed to yield two subscales with higher values indicating higher cognitive reappraisal or expressive suppression.

Finally, social support was measured through four items adapted from the Multidimensional Scale of Perceived Social Support (MSPSS, Zimet, Dahlem, Zimet, and Farley, 1988)

assessing perceptions of support from family (I get all the emotional support I need from my family); friends (I have friends with whom I can share my joys and sorrows), a significant other (I have a special person who is a real source of comfort to me) and colleagues (I get the emotional help I need from my colleagues at work). Higher total scores indicate higher levels of support. The study received IRB approval and all participants provided informed consent.

Descriptive statistics and ANOVAs were computed on a total of 202 frontline nurses ($n = 139$) and doctors ($n = 63$) to characterize the sample and evaluate potential covariates. Female healthcare workers ($n = 155$) reported higher levels of posttraumatic stress compared to males ($p = 0.021$). No other significant differences emerged (see online Supplementary Table S1).

To investigate the relationship between PTSD (independent variable) and PTG (dependent variable) under the influence of resilience, emotion regulation and social support (moderator variables), we performed a series of moderation analysis with 10 000 accelerated bootstrap sampling and bias-corrected confidence intervals, controlling for gender.

The moderating role of resilience was significant as indicated by the model ($F_{3198} = 15.591$, $p < 0.0001$, $R^2 = 0.21$) and the PTSD by resilience interaction ($b = 0.032$, $t(198) = 3.11$, $p = 0.002$). As shown in Fig. 1a, high levels of resilience potentiated growth beyond mean ($b = 0.479$, $t(198) = 5.01$, $p < 0.0001$) and clinically relevant levels of PTSD ($b = 0.701$, $t(198) = 5.30$, $p < 0.0001$), whereas no significant effects were found at low PTSD levels ($b = 0.162$, $t(198) = 1.33$, $p = 0.184$).

The same analysis performed with emotion regulation yielded a significant model for cognitive reappraisal ($F_{3198} = 9.284$, $p < 0.0001$, $R^2 = 0.13$) as confirmed by the PTSD by cognitive reappraisal interaction ($b = 0.030$, $t(198) = 2.85$, $p = 0.005$). A higher tendency to positively reappraise events was associated with high levels of posttraumatic growth at mean ($b = 0.427$, $t(198) = 4.35$, $p < 0.0001$) and above-normal levels ($b = 0.639$, $t(198) = 4.781$, $p < 0.0001$) but not at low levels of PTSD ($b = 0.109$, $t(198) = 0.81$, $p = 0.401$) (Fig. 1b).

Finally, the moderating role of social support was significant ($F_{3198} = 15.338$, $p < 0.0001$, $R^2 = 0.20$) as indicated by the interaction with PTSD ($b = 0.061$, $t(198) = 2.76$, $p = 0.006$). HCWs benefiting from high social support experienced an increase in posttraumatic growth across low ($b = 0.239$, $t(198) = 2.02$, $p = 0.04$), mean ($b = 0.546$, $t(198) = 5.36$, $p < 0.0001$) and above-normal levels of PTSD ($b = 0.730$, $t(198) = 5.16$, $p < 0.0001$) (Fig. 1c).

The current findings bridge the currently dichotomous narrative on HCW psychological wellbeing by showing that pandemic-related distress and growth are connected in a complex relationship that depends on intra and inter-personal factors. It follows that, in a pandemic context assessing and addressing HCWs mental health needs should be a priority without overlooking existing strengths. Given that above-normal level distress is to be expected it is crucial to find ways of harnessing the potential for growth and sustain HCWs wellbeing through adversity. Support strategies should target not just individual-level factors like resilience, and emotion regulation skills, but social support should be crucially enhanced across social and organizational settings.

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