Abstract

Following the global outbreak of COVID-19 in March 2020, individuals are reporting psychological distress associated with the “new normal” – social distancing, financial hardships, and responsibilities while working from home. Given the interpersonal nature of stress and coping responses between romantic partners and based on the systemic transactional model, this study posits that perceived partner dyadic coping may be an important moderator between expdriences of COVID-19 psychological distress and relationship quality. To examine these associations, self-report data from 14,020 people across 27 countries was collected during the early phases of the COVID-19 pandemic (March – July, 2020). It was hypothesized that higher symptoms of psychological distress would be reported post-COVID-19 compared to pre-COVID-19 restrictions (Hypothesis 1), post-COVID-19 reports of psychological distress would be negatively associated with relationship quality (Hypothesis 2), and perceived partner DC would moderate these associations (Hypothesis 3). Hypotheses were generally supported, however, results also showed interesting between country variability. Limitations and future directions are presented.

*Keywords:* COVID-19, cross-cultural, stress, relationship quality, dyadic coping

**Coping with Global Uncertainty: Perceptions of COVID-19 Stress, Relationship Quality, and Dyadic Coping for Romantic Partners across 27 Countries**

 Originating in Wuhan, China in December 2019, the coronavirus, commonly known as COVID-19, quickly spread across the globe throughout 2020. Declared a global pandemic by the World Health Organization (WHO) on March 11, 2020, much of the world was, and continues to remain, unarmed to face COVID-19 and its effects, with over 3 million reported deaths as of May 19, 2021 (https://www.worldometers.info/coronavirus/). Individuals across the world have reported increased stress since the start of the pandemic and associated country restrictions; many of which are tied to both social and economic concerns (Chiarlonza et al., under review).

The experience of stress and resulting coping effects have important implications for both individual and relational health (Pietromonaco & Overall, 2020); in particular, the ways in which romantic partners rely one one another to cope with stress is inextricably linked to risk of disease morbidity and mortality (Loving & Slatcher, 2013). Indeed, partners who perceive their partner to be responsive to them in the face of stress report better sleep quality, show decreases in their cortisol response, and report better relationship quality (for a review see Stanton et al., 2020). Given the importance of romantic partners coping responses, drawing upon the systemic transactional model of dyadic coping (Bodenmann, 2005), this study examined how perceptions of partners’ engagement in dyadic coping may moderate the association between COVID-19 psychological distress and relationship quality across 27-nations during the early stages of the COVID-19 pandemic (March – July, 2020).

**Associations between Stress, Relationship Quality, and Perceived Partner Dyadic Coping as a Moderator**

Experiences of stress are ubiquitous for individuals around the world, and chronic experiences of stress are commonly associated with symptoms of psychological distress, namely depression and anxiety (Goyal et al., 2014). According to Bodenmann’s (2005) stress divorce model, one partner’s experience of stress can cause them [the stressed partner] to retreat, thus decreasing the communication and quality time spent with their romantic partner. Over time, if not coped with, stress can cause both partners to experience mutual alienation and disdain for one another, ultimately resulting in relationship dissolution. Family systems theorists acknowledge the interconnectedness between members in a system, and in partiulcar how members can work together to mitigate stress’ deleterious effects (Bodenmann, Randall & Falconier, 2016; Lazarus & Folkman, 1984).

According to the systemic transactional model (Bodenmann et al., 2016), romantic partners play an important role in helping one another cope with stress when individual resources are depleted. Once a partner (verbally or nonverbally) communicates their stress to their partner (Partner B), Partner B evaluates and responds to their partner either positively (e.g., providing empathy) or negatively (e.g., dismissing the concern), a process defined as *dyadic coping* (DC). As exemplified above, a partner’s dyadic coping behavior can be classified as either positive or negative; however, only positive DC is considered a relationship maintenance behavior important for romantic partners, one that is associated with higher individual and relationship well-being across the world (Falconier, Randall & Bodenmann, 2016). While the systemic transactional model (Bodenmann, 2005) was originally developed and subsequently applied to understand stress and coping processes in the face of normative daily stressors (for a review see Falconier et al., 2015), it has recently been applied to understand the experience of more severe stressors, such as critical life events and chronic disease (Bodenmann et al., 2016). Nevertheless, exploring the critical role perceived partner DC may have during the face of a major, ecological, stressor have laregly remained unexamined (for a notable exception see Bar-Kalifa, Randall & Perelman, in press).

Responses to natural disasers, such as the aftermath of the Great East Japan Earthquake, can be ambivabelnt in nature (Uchida, Takahashi, & Kawahara, 2014). Specifically, participants reported both temporarily heightened negative affect as well as increased overall ﻿eudaimonic well-being; the latter was related to participants’ valuing social connectedness more in the face of uncertainty and disaster (Uchida, et al., 2014). This study suggests that perceived partner’s DC may be one way in which people experience social connectedness in their immediate environments, which may provide buffering effects against psychological distress associated with COVID-19. While most research applied to the COVID-19 context to date has examined individual and societal level coping efforts, to our knowledge, this study is the first to investigate how relational systems, namely romantic partners, reported coping during the early phase of the COVID-19 pandemic (March to July, 2020).

**Present Study**

The ongoing COVID-19 pandemic presents, perhaps for the first time in our living history, an opportunity to examine individuals’ experience of a common stressor yet to arguably varying degrees. This exceptional, yet unfortunate, opportunity allows relationship scientists to ecologically test fundamental tenets of relationship science, specifically applied to the systemic transactional model of dyadic coping (Bodenmann et al., 2016). The goal of the present study was to test the following pre-registered (BLINDED FOR PEER REVIEW) hypotheses (H) in this 27-nation cross-sectional study.

H1: Given symptoms of psychological distress are common responses to threat, such as the COVID-19 pandemic (WHO, 2021), it is hypothesized that higher symptoms of psychological distress (i.e., depression, anxiety, and stress) will be reported post-COVID-19 compared to pre-COVID-19 restrictions.

H2: Given stress is negatively associated with relationship quality (Randall & Bodenmann, 2017), it is hypothesized that post-COVID-19 psychological distress will be negatively associated with relationship quality.

H3: Given documented associations between dyadic coping and relationship quality (see Falconier et al., 2015 for a meta-analysis), it is hypothesized that perceived partner DC would moderate the association between post-COVID psychological distress and relationship quality, such that positive DC would weaken the association (H3a), whereas negative DC would exacerbate the association (H3b).

Romantic partners’ larger cultural contexts supply a “blueprint for how to cope: how meaning is given to events, what is considered stressful, which coping behaviors are acceptable, and what roles and competencies are valued” (Kayser & Revenson, 2016, p. 287; see also Kim, Sherman, & Taylor, 2008). Simply put, couples navigate emotional situations in culturally specific ways (Boiger, et al., 2021). For individuals around the world, positive and negative dyadic coping have been found to be associated with beneficial and detrimental outcomes, respectively (Falconier et al., 2016). Given the novelty of the situation, we did not formulate predictions for specific cultural differences; however, these were explored for each of the above hypotheses.

**Method**

The supplementary file contains specific country level information related to IRB approval, recruitment and participants, compensation, dates of data collection, and the translation of measures, where applicable.

**Participants**

Participants had to meet the following inclusion criteria to participate: (1) at least 18 years of age, (2) in a romantic relationship for at least one year, and (3) living together with their partner in their respective country[[1]](#endnote-1). A total of 14,020 people across 27 countries participated in the study. Most were female (*n*= 10,845; 77.4%), thirty-six years of age on average (*SD* = 11.38) and self-identified as heterosexual (*n* = 12.040; 91.1%).

On average, participants reported being in a relationship for 11.37 years (*SD* = 10.17). Across the 27 countries, most participants were married (*n* = 7,466; 57.6%); four thousand, four hundred and fifty-five participants reported being a committed relationship (34.3%), and 1,038 reporting being engaged (8%). See Table 1a-c for specific country level information.

**Procedure**

Participants were recruited from various social media sites, such as Facebook, and listservs in the respective countries. Interested participants were directed to online survey links that contained the informed consent and screening questionnaire to determine eligibility. Eligible participants were automatically directed to the research questionnaire, which took approximately 30 minutes to complete.

**Measures**

 Descriptive information for all measures appears in Table 2.

***Psychological Distress***

Psychological distress related to pre-and post-COVID-19 restrictions was measured with the Depression, Anxiety, and Stress Scale-21 (DASS-21; Lovibond & Lovibond, 1995). Participants responded to the items twice, once reflecting on their experiences pre-COVID-19 restrictions and once reflecting on their experiences post-COVID-19 restrictions. Participants rated 21 items (e.g., “I found it hard to wind down”) on a 4-point Likert scale ranging from 0 = *did not apply to me at all* to 3 = *applied to me very much, or most of the time* (total possible score = 63). Reliabilities for pre-COVID-19 psychological distress scores ranged from .86 (Canada) to .96 (South Korea), with an average of .93 across countries, and .91 (Spain) to .97 (Malaysia and South Korea), with an average α of .93 across countries for post-COVID-19 psychological distress scores. A multilevel confirmatory factor analysis demonstrated that the structural models were invariant across within-country and between-country levels (see supplementary file).

***Perceived Relationship Quality***

Relationship quality was measured using the Perceived Relationship Quality Component Inventory (PRQC; Fletcher, 2000). Participants rated 18 items (e.g., “How happy are you with your relationship?”) on a 7-point Likert scale ranging from 1 = *not at all* to 7 = *extremely* (total possible score = 126). Reliabilities ranged from .93 (Bangladesh) to .98 (South Korea), with an average α of .96 across countries.

***Perceived Partner DC***

Perceptions of partner DC were measured using the Dyadic Coping Inventory (DCI; Bodenmann, 2008), which assesses participants’ perceptions of their partners’ coping behaviors when they are experiencing stress. Similar to Papp and Witt (2010), perceived partner positive DC was calculated by averaging two items from each of the three subscales of the DCI: emotion-focused coping (e.g., “My partner shows empathy and understanding”), problem-focused coping (e.g., “My partner helps me to see stressful situations in a different light”), and delegated coping (e.g., “When I am too busy my partner helps me out”). Perceived partner negative DC was calculated by averaging the 4-item negative DC subscale (e.g., “My partner blames me for not coping well enough with stress”). Participants rated each item on a 5-point Likert scale ranging from 1 = *very rarely* to 5 = *very often*. Reliabilities for positive DC ranged from .56 (U.S.) to .92 (Malaysia), with an average of .85 across countries. Reliabilities for negative DC ranged from .14 (U.S.) to .82 (Malaysia), with an average of .79 across countries.

**Control Variables**

The analyses controlled for gender (coded as male/female) and one’s own self-reported stress communication behavior, given partner’s dyadic coping behavior is predicated on the notion that partners first communicate their stress to their partner (Bodenmann et al., 2016). Stress communication was measured using the stress communication subscale in the DCI (Bodenmann, 2008).

**Analytic Plan**

***Hypothesis 1***

It was hypothesized that all participants would report higher levels of psychological distress post-COVID-19 restrictions compared to before these restrictions were in place (i.e., pre-COVID-19). To test this, participant-level difference scores for pre- and post-COVID-19 distress were computed to conduct an unconditional random intercepts model which took the form:

Difference in Psychological Distressij = β0 + μ0j + *e*ij [1]

where the outcome is difference in psychological distress for participant *i* in country *j.* β0 represents the estimated average change in psychological distress across all countries, μ0j represents the average deviation of participants in country *j* from β0, and *e*ij represents the deviation of person *i* from the average change in psychological distress in country *j.*

All models were fit using restricted maximum likelihood in “lme4” (Bates et al., 2020) in RStudio version 1.3.96 (RStudio Team, 2020). After fitting the random intercepts model, the best linear unbiased predictions was used to recover country-specific β coefficients (i.e., conditional modes). The conditional modes from each country can be thought of as a weighted average between the average effect across all participants (i.e., the fixed effect) and the average effect for participants in country *j* (i.e., a least-squares fit line to people in country *j*). Conditional modes were computed using a penalized weighted least-squares estimation procedure written in the function ‘ranef()’ in ‘lme4’ (see Bates et al., 2015 for a technical definition). The premise of this procedure is that, if the variance of between-country effects is high, the country-specific least-squares fit line will be weighted more heavily; conversely, if the variability in within-country effects is high, the fixed effect from the model will be weighted more heavily. In sum, this procedure allowed us to derive country-specific coefficients with 95% confidence intervals to graphically depict differences in coefficients across countries (Figure 1, Figure 2, Panels A & C). Because random effects are assumed to be normally distributed with a mean of zero, the conditional modes were centered around the fixed effect estimate to ease interpretation and to allow readers to distinguish between the fixed effect (dotted line) and zero (solid line).

***Hypothesis 2***

 It was hypothesized that there would be a negative association between post-COVID-19 psychological distress and relationship quality. To test this, linear mixed effects modeling was used to control for pre-COVID-19 psychological distress (i.e., preDASS), gender, and stress communication, while allowing intercepts and slopes to vary across countries. Prior to conducting the analyses, postDASS scores were disaggregated into between- (i.e., country-level mean; $\overbar{postDASS}$j) and within-country (i.e., each participant’s deviation from their country-level mean; $\overbar{postDASS}$j – $\overbar{postDASS}$ij) components. Moreover, intercepts and slopes were allowed to vary across countries for all within-country predictors, pending model convergence.

 To identify the optimal random structure, an unconditional random intercept model with relationship quality as the outcome and country as the clustering variable was conducted. The intraclass correlation (ICC) for this model was 0.09, indicating that approximately 9% of the variance in relationship quality could be explained by a person’s country of residence. While low, the ICC was retained as a random intercept. Next, the fixed effects for preDASS, gender, stress communication, $\overbar{postDASS}$j, and $\overbar{postDASS}$j – $\overbar{postDASS}$ij were added to the model. This model was a better fit than the unconditional model, χ2(5) = 3240.5, *p* < 0.001. Next, a random effect for $\overbar{postDASS}$j – $\overbar{postDASS}$ij was added; however, this yielded multiple convergence warnings. Following the suggestion of Bates et al. (2020), the model was fit using different optimizers and evaluate the consistency of estimates across models. If estimates are relatively consistent across optimizers, this would suggest that convergence warnings are admissible. Estimates and random effects across several optimizers were identical; therefore, the SBplx algorithm in NLopt (i.e., NLOPT\_LN\_SBPLX) that uses local approximation, and is gradient-free, did not trigger any convergence warnings was used (Johnson, 2021). The final model converged with random effects for gender, stress communication, and $\overbar{postDASS}$j – $\overbar{postDASS}$ij, but not preDASS, and this model proved to be a better fit than the model with only fixed effects and random intercepts, χ2(9) = 301.5, *p* < 0.001. Therefore, the final model took the from:

Relationship Qualityij= β0­ + β1 (preDASS) + β2 (Gender) + β3 (Stress Com.) + β4 ($\overbar{postDASS}$j) + β5 ($\overbar{postDASS}$j – $\overbar{postDASS}$ij) + μ0j + μ1j (Gender) + μ2j (Stress Com.) + μ3j ($\overbar{postDASS}$j – $\overbar{postDASS}$ij) + *e*ij  [2]

where the relationship quality of person *i* in country *j* is a modeled by a fixed intercept (β­0), fixed effects for each predictor (β1 … β5), a country-specific random intercept (μ0j), country-specific random effects (μ1j … μ3j), and a person-specific residual error term (ϵij).

 Similar to the procedure outlined for hypothesis 1, country-specific slope coefficients were derived with 95% confidence intervals for $\overbar{postDASS}$j – $\overbar{postDASS}$ij, gender, and stress communication (stress com.). These coefficients are represented in Figures 1B, 1C, and 1D, respectively.

 **Australia, Portugal, and Romania.** Key variables were missing from the Australian, Portuguese, and Romanian datasets, which precluded data from these countries to be included in the models above. Specifically, stress communication was missing from the Australian dataset, and Portugal and Romania used a shortened version of relationship quality. To address this, individual multiple regression models were conducted for participants from these countries (see Results below).

***Hypothesis 3***

It was hypothesized perceived partner DC would moderate the association between psychological distress and relationship quality. To test this, participants’ perceived positive DC (PDC) and negative DC (NDC) were included in two alternate models to test if perceived DC moderated the association between postDASS on relationship quality. PDC and NDC were disaggregated into between- ($\overbar{PDC}$j; $\overbar{NDC}$j) and within-country ($\overbar{PDC}$j – $\overbar{PDC}$ij; $\overbar{NDC}$j – $\overbar{NDC}$ij) components.

**PDC.** Fixed and random effects were included for $\overbar{PDC}$j, $\overbar{PDC}$j – $\overbar{PDC}$ij, and an interaction term ($\overbar{PDC}$j – $\overbar{PDC}$ij\*$\overbar{postDASS}$j – $\overbar{postDASS}$ij). The model failed to converge using various optimizers; therefore, random effects for gender and stress communication were dropped, and the model converged successfully using the NLOPT\_LN\_SBPLX optimizer. The final model fit better than the model depicted in Equation 2, χ2(3) = 3339.8, *p* < 0.001, and took the form:

Relationship Qualityij = β0­ + β1 (preDASS) + β2 (Gender) + β3 (Stress Com.) + β4 ($\overbar{postDASS}$j) + β5 ($\overbar{postDASS}$j – $\overbar{postDASS}$ij) + β6 ($\overbar{PDC}$j) + β7 ($\overbar{PDC}$j – $\overbar{PDC}$ij) + β8 ($\overbar{PDC}$j – $\overbar{PDC}$ij\*$\overbar{postDASS}$j – $\overbar{postDASS}$ij) + μ0j + μ1j ($\overbar{postDASS}$j – $\overbar{postDASS}$ij) + μ2j ($\overbar{PDC}$j – $\overbar{PDC}$ij) + μ3j($\overbar{PDC}$j – $\overbar{PDC}$ij\*$\overbar{postDASS}$j – $\overbar{postDASS}$ij) + *e*ij  [3]

with fixed effects for $\overbar{PDC}$j (β6), $\overbar{PDC}$j – $\overbar{PDC}$ij (β7), and the interaction term (β8), and random effects for $\overbar{PDC}$j (μ2j) and the interaction term (μ3j­). Similar to hypothesis 1 and 2, country-specific interaction terms with 95% confidence intervals are depicted graphically (Fig. 2, Panel A).

**NDC.** Fixed and random effects for $\overbar{NDC}$j, $\overbar{NDC}$j – $\overbar{NDC}$ij, and an interaction term ($\overbar{NDC}$j – $\overbar{NDC}$ij\*$\overbar{postDASS}$j – $\overbar{postDASS}$ij were added to Equation 2 and the model failed to converge. Therefore, similar to PDC, the random effects for gender and stress communication were dropped and the model converged successfully, and fit better than the baseline model from Equation 2, χ2(3) = 1694.8, *p* < 0.001. The final model took the same form as Equation 3. Country-specific interaction terms with 95% confidence intervals are depicted graphically (Fig. 2, Panel C).

**Results**

***Hypothesis 1***

 On average, participants reported higher psychological distress after the COVID-19 restrictions than before (*b0 =* 2.33, *95% CI* = [1.24, 3.41]). However, there appeared to be nontrivial between-country variation in the extent to which distress was perceived as higher after country specific COVID-19 restrictions (μ0 = 2.81). To parse this variation, country-specific intercept coefficients were graphically represented in Figure 1, Panel A and centered around the average difference in pre- and post-COVID-19 distress (*b*0 = 2.33; depicted by a dotted vertical line). A visual inspection of Figure 1, Panel A suggests that participants in 19 of 27 countries reported higher post-COVID-19 distress (i.e., 95% CI lies above zero, depicted by a solid vertical line). On average, participants in 11 of 27 countries (e.g., Canada, India, Malaysia, and the USA) reported differences in pre- and post-COVID-19 psychological distress that were above-average when compared to other countries (i.e., 95% CIs lies above dotted line). Conversely, it seems that participants in five of 27 countries did not report higher post-COVID-19 distress (e.g., Greece, Indonesia, and Romania.; 95% CI includes zero), and three of 27 countries reported lower post-COVID-19 distress (i.e., Italy, Pakistan, and South Korea; 95% CI lies below zero).

***Hypothesis 2***

On average, participants with higher stress communication reported higher relationship quality (*b3* = 8.63, *95% CI* = [7.58, 9.69]). Countries with higher post-COVID-19 distress reported neither lower nor higher relationship quality (*b4* = -0.05, *CI 95%* = [-0.56, 0.45]). However, individuals who reported above-average post-COVID-19 distress relative to others in their country reported lower relationship quality (*b5* = -0.18, *CI 95%* = [-0.25, -0.12]). All fixed effects and random effects are reported in Table 3, and country-specific slope coefficients for post-COVID-19 psychological distress, gender, and stress communication are depicted in Panels B, C, and D of Figure 1, respectively.

Overall, countries appeared to differ significantly in the association between post-COVID-19 distress and relationship quality. As shown in Figure 1, Panel B, the negative association between post-COVID-19 distress and relationship quality held in 18 out of 24 countries (i.e., 95% CIs lies above zero). This association was negligible in South Korea, Pakistan, Bangladesh, Israel, Turkey, and the USA (i.e., 95% CIs includes zero), and was most pronounced in Germany, Hungary, Indonesia, and Italy (i.e., 95% CIs lies below dotted line – the average effect across countries).

***Hypothesis 3***

 **Perceived Partner Positive DC.** At the between-country level, countries that reported above-average perceived partner positive DC relative to other countries reported higher relationship quality (*b6* = 7.98, *95% CI* = [0.52, 15.44]; similarly,individuals who reported above-average perceived partner positive DC relative to others in their country reported higher relationship quality (*b*7 = 10.24, *95% CI* = [9.02, 11.47]). Furthermore, a significant positive interaction between perceived partner positive DC and post-COVID-19 distress indicated that, on average, the negative association between post-COVID-19 psychological distress on relationship quality was attenuated in those who perceived higher perceived partner positive DC relative to others in their country (*b*8 = 0.14, *95% CI* = [0.09, 0.18]). Country-specific coefficients of this interaction term are depicted in Figure 2, Panel B. Positive DC moderated the negative association between post-COVID-19 psychological distress and relationship quality in 18 out of 28 countries (i.e., 95% CI lies above zero). However, the association were negligible in Bangladesh, Canada, Chile, Ghana, and Spain (95% CI includes zero) and was particularly pronounced in Greece and Hungary (95% CIs lie above the average effect for all other countries).

Following decomposing the interaction at -1SD and +1SD, as shown in Figure 2, Panel B, simple slopes analyses revealed higher perceived partner positive DC mitigated the negative association between post-COVID-19 psychological distress and relationship quality. Specifically, slope of β5 was not significantly different from zero in participants who reported positive DC at +1SD above country mean (*b* = -0.01, *95% CI* [-0.06, 0.03]). See Table 4a.

 **Perceived Partner Negative DC.** At the between-country level, perceived partner negative DC was not associated with relationship quality (*b6* = -1.20, *95% CI* = [-4.83, 2.42]; however,individuals who reported higher perceived partner negative DC relative to others in their country reported lower relationship quality (*b*7 = -5.60, *95% CI* = [-7.31, -3.89]). Moreover, a significant negative interaction between negative DC and post-COVID-19 psychological distress indicated that, on average, the negative association between post-COVID-19 psychological distress on relationship quality was exacerbated for those who reported higher perceived partner negative DC relative to others in their country (*b*8 = -0.06, *95% CI* = [-0.10, -0.02]).

Country-specific coefficients of this interaction term are depicted in Figure 2, Panel C. Perceived partner negative DC exacerbated the negative association between post-COVID-19 distress and relationship quality in only six out of 28 countries (i.e., Belgium, Greece, Hungary, India, Ireland, and South Korea). This association was particularly pronounced in Belgium, Ireland, and South Korea (95% CIs lie below average interaction effect). As shown in Figure 2, Panel D, analysis of the simple slopes suggests that there was a negative association between post-COVID-19 psychological distress and relationship quality for participants who reported high perceived partner negative DC at +1SD (*b* = -0.14, *95% CI* [-0.20, -0.09]) or at their country’s mean (*b* = -0.10, *95% CI* [-0.14, -0.05]). However, when participants reported low perceived partner negative DC at -1SD for their country (*b* = -0.05, *95% CI* [-0.11, 0.01], this association was no longer statistically significant. See Table 4b.

***Australia, Portugal, and Romania – Moderating Effects of DC***

For participants from Australia,perceived partner positive DC did not significantly moderate the association between post-COVID-19 psychological distress and relationship quality (*b* = 0.02, *95% CI* = [-0.10, 0.14]); however, perceived partner negative DC did moderate this association (*b* = -0.12, *95% CI* = [-0.23, -0.01]). Specifically, the association between post-COVID-19 psychological distress and relationship quality was nullified when participants reported mean-level (*b* = -0.11, *95% CI* = [-0.28, 0.06]) or low negative DC (i.e., -1SD; *b* = -0.01, *95% CI* = [-0.22, 0.19]).

 For participants from Portugal, neither perceived partner positive nor negative DC moderated the association between post-COVID-19 psychological distress and relationship quality.

For participants from Romania, perceived partner positive DC significantly moderated the association between post-COVID-19 psychological distress and relationship quality (*b* = 0.22, *95% CI* = [0.12, 0.32]). Following simple slopes analyses, high perceived partner positive DC buffered the negative association between post-COVID-19 psychological distress and relationship quality (*b* = 0.02, *95% CI* = [-0.14, 0.17]). Perceived partner negative DC did not moderate the association between post-COVID-19 psychological distress and relationship quality.

**Discussion**

Given the global effects of the current COVID-19 pandemic, the current study used a large multinational sample across 27 nations to examine whether perceived partner positive DC would moderate the association between post-COVID-19 psychological distress (depression, anxiety, and stress; DASS) and relationship quality during the early phases of the COVID-19 pandemic (March – July, 2020). It was hypothesized that COVID-19 and, in particular the country level restrictions that were put in place, would be associated with higher self-reported psychological distress, and this would be negatively associated with relationship quality. Furthermore, this study examined the potential moderating effects of perceived partner dyadic coping on this association. Because national responses and community resources in coping with the pandemic differ hugely (e.g., Gelfand et al., 2020), and because cultural ideas and practices around preferred ways of coping with stress also differ (Kim, et al., 2008), we expected cultural variation in the strength of effects across countries.

Overall, hypotheses in the study were largely supported. In most, yet not all, countries, participants reported more psychological distress after COVID-19 country level restrictions were implemented; one that was also associated with lower relationship quality. Importantly, and in line with prior research (Randall & Messerschmitt-Coen, 2019), perceived partner positive DC buffered the negative association between post-COVID-19 psychological distress and relationship quality for most participants in our sample. Not surprisingly, perceived partner negative DC exacerbated the negative association between post-COVID-19 psychological distress and relationship quality; however, this association was only found in a sample of participating countries (i.e., Australia, Belgium, Greece, Hungary, India, Ireland, and South Korea).

 For participants from Bangladesh, Canada, Chile, Ghana, and Spain, perceived partner positieve DC did not moderate the association between post-COVID-19 psychological distress and relationship quality. For Bangladesh, post-COVID-19 psychological distress was not significantly associated with relationship quality, however, for the remaining countries (Canada, Chile, Ghana and Spain), we could not identify a simple unifying factor. There were no clear commonalities among these countries in terms of economic / community resources in coping with the pandemic, the government response, the extent of the pandemic, or larger cultural values that may explain why perceived partner positive DC did moderate the association between post-COVID-19 psychological distress and relationship quality. It is possible, however, that systemic differences in baseline distress across different countries (e.g., related to poverty, population density, access to safe food and water) may explain some of differences. Additionally, although efforts were made to align data collection as much as possible, there were some differences between countries as to when data were collected, which may also explain some of the country-level differences we found (see supplementary file for dates of data collection). However, because we asked participants in each country their perception of their own rates of psychological distress and examined associations between individuals’ levels of distress relative to the average levels of distress among individuals in their country, between- and within-country differences were examined separately. Doing so allows us to draw conclusions about individuals’ COVID-19 psychological distress ratings without overgeneralizing across populations.

**Strengths, Limitations, and Future Directions**

Given the COVID-19 pandemic is ongoing, in order to measure initial symptoms of distress following country level restrictions, participants were asked to report on their symptoms of psychological distress prior to their country’s COVID-19 restrictions (i.e., pre-COVID-19 psychological distress), and then again consider their experiences since the COVID-19 pandemic (post-COVID-19 psychological distress). While this use of the DASS-21 (Lovibond & Lovibond, 1995) has not been empirically validated, it extends existing research using this measure by examining *perceived changes* in psychological well-being during a global pandemic. By implementing the DASS-21 (Lovibond & Lovibond, 1995) in this way, results demonstrated perceived changes in participants’ psychological distress from pre- to post-COVID-19 country level restrictions. Further, in controlling for pre-COVID-19 psychological distress ratings, we were able to document the ways that post-COVID-19 psychological distress, above and beyond pre-COVID-19 levels, was associated with relationship quality, and whether this association was moderated by perceived partner positive DC.

Based on research conducted with the systemic transactional model across cultures (Falconier, et al., 2016), the inclusion criteria focused on individuals who were in a relationship for at least one year and living with their partner, which limits the ability to generalize these results to other couples, especially those who may be experiencing additional stressors due to their minority status, as an example. Additionally, while a valid attempt was made to adapt the study’s measures to the current COVID-19 context, we acknowledge the context to which existing psychological phenomena are being applied may affect the reliability of such measures. For example, the Dyadic Coping Inventory (DCI; Bodenmann, 2008) was originally developed to assess how couples cope with commonly daily external stressors in the context of their relationship. Thus, while the DCI assesses perceived partner’s coping behaviors, the current context of the global pandemic and additional sociopolitical stressors likely impacted the reliability and subsequent results. Additional research on the reliability of such measures, especially within a longitudinal design and applied to the context of a global pandemic, is warranted.

Lastly, given the cross-sectional nature of the data, temporal associations between partners’ stress communication and coping responses could not be examined. For example, it is unclear how the progression of the COVID-19 pandemic, and its unpredictability from day-to-day impacted perceptions of stress (or eustress), given the ongoing changes to individual’s daily lives; from working remotely, to home schooling children, to facing continued lockdowns and associated restrictions. Finally, and perhaps most importantly, future research is encouraged to explore the cultural variation in our results. While perceived partner positive DC may be overall helpful in moderating the association between COVID-19 psychological distress and relationship quality across countries, it is possible that participants from certain cultural contexts may benefit from specific types of positive DC compared to other. Close relationships in Asian contexts have been found to avoid the disclosure of stressful events or feelings when seeking or providing social support (Kim et al., 2008). As such, helping partners with tasks (i.e., delegated DC) may be more beneficial than helping one to analyze the problem (i.e., problem-focused DC) or showing empathy (i.e., emotion-focused DC) in mitigating symptoms of psychological distress. While beyond the scope of the current study’s purpose and available data, it is important to acknowledge how contextual factors such as available (community) resources, government responses, or the dynamic of the pandemic itself may systematically impacting effects of COVID-19 on stress and coping processes, both for individuals and their romantic partners.

**Conclusion**

Based on self-report data from collected from over 14,000 individuals across the world, results from this study advance the understanding of how romantic partners experienced and reported coping with stress during the early phases of the COVID-19 pandemic (March – July, 2020). These multi-nation data point to the importance of partners’ positive dyadic coping behaviors in mitigating the associations between COVID-19 psychological distress and relationship quality; highlighting a generalizable relationship maintenance behavior that may potentially buffer the damaging effects of such stressors (Randall & Messerschmitt, 2019), especially when community coping resources are low (Gelfand et al., 2020). It is important to acknowledge, however, that given cultural differences in how people communicate stress and seek support (Kim et al., 2008), there are likely additional, mediating factors, that can further explain these associations. Indeed, identifying perceptions of partner’s dyadic coping behaviors and associated outcomes will enable psychologists, mental healthcare providers, and policymakers to identify couples with enduring vulnerability (e.g., those experiencing low levels of dyadic coping), and tailor clinical recommendations in coping with major stressors, such as those in the face of global pandemics.

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**Table 1a**

*Sociodemographic Characteristics of Participants*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Age  | Time Married to Partner | Time Known Partner | Time in Romantic Relationship | Have Children | Currently Student | Currently Working |
| *N* | M | SD | Range | *N* | M | SD | Range | *N* | M | SD | Range | *N* | M | SD | Range | *N* | % | *N* | % | *N* | % |
| **North America and West Europe** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  Austria | 571 | 28.76 | 5.86 | 41 | 130 | 4.01 | 3.91 | 22.33 | - | - | - | - | 554 | 5.84 | 4.12 | 33.08 | 581 | 18 | 581 | 53 | 403 | 87 |
|  Belgium | 855 | 36.57 | 12.66 | 73 | 327 | 14.29 | 12.88 | 51.25 | 732 | 13.43 | 11.51 | 66.67 | 748 | 11.99 | 10.88 | 77.5 | 865 | 61 | 497 | 7 | - | - |
|  Canada | 272 | 36.33 | 11.94 | 65 | 97 | 13.57 | 12.40 | 53.75 | 219 | 12.38 | 10.45 | 57.5 | 227 | 10.64 | 9.32 | 53.75 | 299 | 40 | - | - | - | - |
|  Germany | 947 | 36.53 | 7.8 | 61 | 580 | 8.54 | 6.15 | 44.83 | 685 | 12.92 | 7.55 | 48.92 | 734 | 11.72 | 6.89 | 46.17 | 964 | 81 | - | - | 923 | 67 |
|  Greece | 501 | 36.84 | 12.15 | 58 | 237 | 15.63 | 11.59 | 54 | 491 | 13.16 | 11.49 | 55 | 479 | 11.94 | 11.44 | 55 | 487 | 44 | - | - | - | - |
|  Ireland | 849 | 36.23 | 10.4 | 58 | 333 | 8.41 | 9.14 | 53.67 | 605 | 57 | 9.07 | 57 | 630 | 9.33 | 8.3 | 56.5 | 850 | 64 | 838 | 15 | 850 | 63 |
|  Italy | 606 | 41.53 | 11.61 | 52 | 435 | 15.47 | 11.71 | 45.67 | 826 | 16.69 | 12.4 | 59 | 828 | 14.69 | 11.49 | 51.17 | 850 | 52 | - | - | 585 | 65 |
|  Netherlands | 1046 | 34.22 | 11.81 | 57 | 309 | 11.13 | 10.30 | 50.25 | 876 | 10.87 | 9.35 | 51.33 | 910 | 9.68 | 8.79 | 49.75 | 487 | 44 | 1046 | 24 | 906 | 88 |
|  Portugal | 528 | 39.41 | 10.07 | 51 | 270 | 14.58 | 10.86 | 45 | 523 | 16.64 | 10.72 | 51.83 | 525 | 14.44 | 10.15 | 49.17 | 536 | 56 | 535 | 7 | 498 | 86 |
|  Spain | 364 | 39.83 | 10.22 | 55 | 364 | 7.69 | 10.08 | 50.5 | 365 | 15.55 | 10.6 | 52 | 365 | 13.63 | 10.15 | 49.42 | 365 | 44 | 365 | 26 | 365 | 64 |
|  Switzerland | 419 | 35.49 | 12.09 | 68 | 144 | 12.59 | 11.82 | 57 | 371 | 12.36 | 11.09 | 64 | 381 | 10.41 | 9.9 | 59 | 419 | 36 | 419 | 34 | 419 | 70 |
|  United Kingdom | 391 | 35.3 | 13.26 | 64 | 158 | 13.29 | 12.20 | 53.92 | 357 | 12.05 | 11.14 | 55 | 361 | 10.53 | 10.49 | 54.08 | 395 | 36 | - | - | - | - |
|  United States | 445 | 39.5 | 14.57 | 65 | 264 | 12.73 | 13.30 | 57.92 | 340 | 14.44 | 12.6 | 59.83 | 359 | 12.28 | 12 | 58.5 | 446 | 42 | 83 | 8 | 115 | 62 |
| **East Europe** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  Hungary | 458 | 40.94 | 12.17 | 51 | 264 | 15.78 | 12.82 | 49.75 | 457 | 16.71 | 12.49 | 54.58 | 458 | 14.64 | 11.72 | 49.25 | 458 | 64 | - | - | - | - |
|  Romania | 537 | 36.89 | 10.34 | 53 | 471 | 13.34 | 9.684 | 49 | - | - | - | - | 290 | 12.64 | 9.521 | 40 | 538 | 71 | - | - | 381 | 57 |
| **Asia** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  Bangladesh  | 200 | 25.26 | 9.02 | 61 | 81 | 6.24 | 9.32 | 39.17 | 176 | 5.34 | 6.52 | 39.25 | 175 | 4.52 | 6.62 | 39.75 | 200 | 18 | 37 | 11 | 37 | 57 |
|  India | 511 | 33.14 | 9.92 | 45 | 507 | 8.57 | 9.14 | 53 | 503 | 9.69 | 9.36 | 53 | - | - | - | - | 511 | 38 | - | - | 511 | 43 |
|  Indonesia | 416 | 31.26 | 7.35 | 46 | 302 | 6.4 | 6.51 | 41.17 | 275 | 9.5 | 6.8 | 39.83 | 316 | 7.92 | 5.94 | 39.08 | 422 | 62 | 421 | 9 | 420 | 69 |
|  Malaysia | 195 | 43.21 | 11.65 | 49 | 168 | 15.07 | 10.81 | 50.25 | 195 | 18.9 | 11.06 | 48.42 | - | - | - | - | 195 | 81 | 195 | 14 | 195 | 57 |
|  Pakistan | 517 | 33.09 | 10.25 | 60 | 96 | 4.88 | 7.5 | 44 | 58 | 8.27 | 10.43 | 44 | 68 | 7.13 | 10.11 | 43.92 | 517 | 76 | - | - | 517 | 74 |
|  South Korea | 540 | 43.95 | 9.06 | 41 | 536 | 14.68 | 10.3 | 41.25 | 540 | 17.87 | 10.14 | 44.33 | 540 | 17 | 10.14 | 43.92 | 540 | 84 | - | - | 540 | 81 |
|  Turkey | 141 | 36.89 | 9.51 | 52 | 48 | 8.78 | 8.74 | 44 | 52 | 8.39 | 6.8 | 32.92 | 49 | 9.11 | 8.86 | 44.58 | 143 | 59 | 142 | 19 | 143 | 60 |
| **Middle East** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  Israel | 575 | 28.15 | 6.81 | 68 | 479 | 2.09 | 6.07 | 49.92 | 515 | 6.22 | 6.16 | 52.92 | 544 | 5.65 | 5.89 | 48.92 | 574 | 15 | - | - | - | - |
| **Africa** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  Ghana | 304 | 38.34 | 7.95 | 43 | 182 | 10.45 | 7.55 | 40.08 | 149 | 11.98 | 7.34 | 37.83 | 145 | 9.79 | 6.72 | 34.33 | 310 | 19 | 250 | 26 | 248 | 71 |
| **Middle and South America** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  Brazil | 662 | 39.87 | 11.38 | 59 | 501 | 12.68 | 11.4 | 56.25 | 520 | 15.02 | 11.55 | 62.58 | 547 | 13.36 | 10.86 | 55.25 | 668 | 53 | 668 | 31 | 668 | 70 |
|  Chile | 424 | 42.14 | 9.67 | 52 | 424 | 11.83 | 9.56 | 47.75 | 424 | 16.82 | 10.85 | 68.75 | 424 | 14.12 | 9.81 | 54 | 424 | 68 | 424 | 8 | 424 | 78 |
| **Oceania** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  Australia | 495 | 32.26 | 10.43 | 62.25 | 176 | 8.99 | 9.26 | 46.58 | 439 | 8.77 | 8.49 | 52.83 | 445 | 7.6 | 8.24 | 52.92 | 505 | 31 | - | - | 504 | 73 |

**Table 1b**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  Male | Female | Nonbinary | Gender Fluid | Other | Heterosexual | Bisexual | Lesbian | Gay | Queer | Other |
|  | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % |
| **North America and West Europe** |  |
|  Austria | 71 | 12 | 508 | 87 | 2 | 0 | 0 | 0 | 0 | 0 | 507 | 87 | 49 | 8 | 8 | 1 | 7 | 1 | 5 | 1 | 5 | 1 |
|  Belgium | 60 | 7 | 795 | 92 | 5 | 1 | 2 | 0 | 0 | 0 | 792 | 92 | 10 | 1 | 17 | 2 | 5 | 1 | 14 | 2 | 27 | 3 |
|  Canada | 44 | 15 | 248 | 83 | 4 | 1 | 2 | 1 | 0 | 0 | 256 | 86 | 25 | 8 | 4 | 1 | 1 | 0 | 7 | 2 | 6 | 2 |
|  Germany | 151 | 16 | 806 | 84 | 1 | 0 | 1 | 0 | 0 | 0 | 928 | 97 | 20 | 2 | 5 | 1 | 3 | 0 | 2 | 0 | 2 | 0 |
|  Greece | 121 | 24 | 381 | 76 | 0 | 0 | 0 | 0 | 0 | 0 | 473 | 94 | 16 | 3 | 6 | 1 | 7 | 1 | 0 | 0 | 0 | 0 |
|  Ireland | 124 | 15 | 724 | 85 | 1 | 0 | 0 | 0 | 1 | 0 | 761 | 90 | 31 | 4 | 17 | 2 | 26 | 3 | 6 | 1 | 8 | 1 |
|  Italy | 273 | 32 | 572 | 67 | 3 | 0 | 0 | 0 | 1 | 0 | 801 | 94 | 17 | 2 | 6 | 1 | 22 | 3 | 2 | 0 | 2 | 0 |
|  Netherlands | 65 | 6 | 973 | 93 | 5 | 0 | 4 | 0 | 0 | 0 | 870 | 83 | 110 | 11 | 24 | 2 | 8 | 1 | 12 | 1 | 23 | 2 |
|  Portugal | 82 | 15 | 453 | 85 | 0 | 0 | 0 | 0 | 1 | 0 | 513 | 96 | 11 | 2 | 8 | 1 | 3 | 1 | 0 | 0 | 1 | 0 |
|  Spain | 64 | 18 | 298 | 82 | 2 | 1 | 0 | 0 | 1 | 0 | 335 | 92 | 18 | 5 | 7 | 2 | 5 | 1 | 0 | 0 | 0 | 0 |
|  Switzerland | 61 | 15 | 355 | 85 | 2 | 0 | 1 | 0 | 0 | 0 | 375 | 89 | 27 | 6 | 4 | 1 | 7 | 2 | 2 | 0 | 4 | 1 |
|  United Kingdom | 107 | 27 | 287 | 72 | 3 | 1 | 0 | 0 | 0 | 0 | 340 | 86 | 30 | 8 | 10 | 3 | 4 | 1 | 8 | 2 | 5 | 1 |
|  United States | 72 | 16 | 364 | 82 | 7 | 2 | 1 | 0 | 1 | 0 | 376 | 84 | 36 | 8 | 14 | 3 | 5 | 1 | 10 | 2 | 4 | 1 |
| **East Europe** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  Hungary | 108 | 24 | 350 | 76 | 0 | 0 | 0 | 0 | 0 | 0 | 442 | 98 | 3 | 1 | 0 | 0 | 5 | 1 | 0 | 0 | 1 | 0 |
|  Romania | 62 | 12 | 475 | 88 | 0 | 0 | 0 | 0 | 0 | 0 |  |  |  |  |  |  |  |  |  |  |  |  |
| **Asia** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  Bangladesh  | 104 | 51 | 96 | 48 | 1 | 0 | 0 | 0 | 1 | 0 | 158 | 78 | 12 | 6 | 1 | 1 | 20 | 10 | 0 | 0 | 3 | 2 |
|  India | 149 | 29 | 362 | 71 | 0 | 0 | 0 | 0 | 0 |  | 474 | 93 | 20 | 4 | 0 | 0 | 0 | 0 | 4 | 1 | 13 | 3 |
|  Indonesia | 85 | 20 | 336 | 80 | 0 | 0 | 0 | 0 | 1 | 0 | 371 | 91 | 6 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 26 | 6 |
|  Malaysia | 45 | 23 | 150 | 77 | 0 | 0 | 0 | 0 | 0 | 0 |  |  |  |  |  |  |  |  |  |  |  |  |
|  Pakistan | 216 | 42 | 301 | 58 | 0 | 0 | 0 | 0 | 0 | 0 | 517 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  South Korea | 286 | 53 | 254 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 532 | 99 | 3 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 3 | 1 |
|  Turkey | 31 | 22 | 110 | 77 | 1 | 1 | 0 | 0 | 0 | 0 | 117 | 84 | 8 | 6 | 0 | 0 | 0 | 0 | 1 | 1 | 13 | 9 |
| **Middle East** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Israel | 88 | 15 | 487 | 85 | 0 | 0 | 0 | 0 | 1 | 0 | 544 | 95 | 14 | 2 | 3 | 1 | 3 | 1 | 1 | 0 | 8 | 1 |
| **Africa** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  Ghana | 155 | 50 | 154 | 50 | 0 | 0 | 0 | 0 | 1 | 0 | 245 | 84 | 24 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 8 |
| **Middle and South America** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  Brazil | 165 | 25 | 497 | 74 | 4 | 1 | 1 | 0 | 1 | 0 | 594 | 89 | 43 | 6 | 14 | 2 | 15 | 2 | 1 | 0 | 1 | 0 |
|  Chile | 114 | 27 | 306 | 72 | 2 | 0 | 1 | 0 | 1 | 0 | 408 | 96 | 3 | 1 | 1 | 0 | 9 | 2 | 0 | 0 | 3 | 1 |
| **Oceania** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  Australia | 201 | 40 | 294 | 58 | 8 | 2 | 0 | 0 | 1 | 0 | 405 | 81 | 56 | 11 | 10 | 2 | 9 | 2 | 14 | 3 | 9 | 2 |

*Gender and Sexual Orientation of Participants*

**Table 1c**

*Relationship Characteristics of Participants*

|  |  |  |  |
| --- | --- | --- | --- |
|  | In a Committed Relationship | Engaged – Living Together | Married |
|  | *N* | % | *N* | % | *N* | % |
| **North America and West Europe** |  |  |  |  |  |  |
|  Austria | 380 | 65 | 69 | 12 | 123 | 21 |
|  Belgium | 330 | 38 | 131 | 15 | 386 | 45 |
|  Canada | 144 | 49 | 28 | 10 | 122 | 41 |
|  Germany | 236 | 25 | 50 | 5 | 676 | 70 |
|  Greece\* | - | - | - | - | - | - |
|  Ireland | 316 | 38 | 83 | 10 | 373 | 45 |
|  Italy | 331 | 39 | 33 | 4 | 462 | 54 |
|  Netherlands | 620 | 59 | 70 | 7 | 357 | 34 |
|  Portugal | 91 | 17 | 170 | 32 | 275 | 51 |
|  Spain | 155 | 42 | 14 | 4 | 196 | 54 |
|  Switzerland | 243 | 58 | 29 | 7 | 147 | 35 |
|  United Kingdom | 200 | 50 | 28 | 7 | 168 | 42 |
|  United States | 118 | 27 | 30 | 7 | 297 | 67 |
| **East Europe** |  |  |  |  |  |  |
|  Hungary | 143 | 32 | 40 | 9 | 264 | 59 |
|  Romania | 81 | 15 | 34 | 6 | 420 | 79 |
| **Asia** |  |  |  |  |  |  |
|  Bangladesh  | 92 | 46 | 75 | 37 | 35 | 17 |
|  India\* | - | - | - | - | - | - |
|  Indonesia | 56 | 13 | 10 | 2 | 355 | 84 |
|  Malaysia | 17 | 9 | 4 | 2 | 174 | 89 |
|  Pakistan | 0 | 0 | 0 | 0 | 517 | 100 |
|  South Korea | 4 | 1 | 0 | 0 | 536 | 99 |
|  Turkey | 20 | 14 | 4 | 3 | 116 | 83 |
| **Middle East** |  |  |  |  |  |  |
|  Israel | 348 | 61 | 52 | 9 | 175 | 30 |
| **Africa** |  |  |  |  |  |  |
|  Ghana | 27 | 9 | 7 | 2 | 276 | 89 |
| **Middle and South America** |  |  |  |  |  |  |
|  Brazil | 78 | 12 | 29 | 4 | 560 | 84 |
|  Chile | 153 | 36 | 10 | 2 | 261 | 62 |
| **Oceania** |  |  |  |  |  |  |
|  Australia | 272 | 54 | 38 | 8 | 195 | 39 |

*Note.* \* Did not administer specific demographic questions (i.e., missing data).

**Table 2**

*Country level descriptive statistics*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | preDASS |  | postDASS |  |  PRQC |  |
|  | M | SD | Range | Alpha |  | M | SD | Range | Alpha |  | M | SD | Range | Alpha |
| **North America and West Europe** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Austria | 7.83 | 7.30 | 0 - 42 | .94 |  | 8.18 | 7.27 | 0 - 35 | .94 |  | 112.14 | 13.78 | 30 - 126 | .95 |
| Canada | 1.40 | 2.59 | 0 - 15 | .86 |  | 10.34 | 7.67 | 0 - 40 | .94 |  | 105.90 | 14.67 | 41 - 126 | .95 |
| Belgium | 9.13 | 8.42 | 0 - 42 | .94 |  | 10.88 | 9.90 | 0 - 45 | .95 |  | 105.11 | 18.89 | 18 - 126 | .96 |
| Germany | 6.96 | 5.55 | 0 - 30 | .91 |  | 9.40 | 7.50 | 0 - 38 | .94 |  | 102.05 | 19.58 | 18 - 126 | .97 |
| Greece | 7.78 | 6.24 | 0 - 37 | .92 |  | 7.80 | 6.46 | 0 - 33 | .92 |  | 107.78 | 15.35 | 26 - 126 | .95 |
| Ireland | 9.09 | 6.56 | 0 - 39 | .92 |  | 9.73 | 7.78 | 0 - 43 | .94 |  | 106.73 | 18.02 | 20 - 126 | .96 |
| Italy | 10.26 | 5.62 | 0 - 39 | .92 |  | 9.05 | 6.46 | 0 - 45 | .94 |  | 107.35 | 17.54 | 32 - 126 | .95 |
| Netherlands | 8.10 | 6.05 | 0 - 40 | .91 |  | 9.90 | 7.47 | 0 - 45 | .93 |  | 110.47 | 13.90 | 32 - 126 | .94 |
| Portugal\* | 8.29 | 7.20 | 0 - 43 | .94 |  | 9.36 | 8.38 | 0 - 45 | .96 |  | 30.24 | 5.58 |  5 - 35 | .93 |
| Spain | 7.40 | 5.94 | 0 - 42 | .93 |  | 8.46 | 6.16 | 0 - 42 | .91 |  | 105.68 | 14.07 | 44 - 126 | .94 |
| Switzerland | 6.45 | 6.70 | 0 - 42 | .93 |  | 7.24 | 7.03 | 0 - 34 | .93 |  | 105.98 | 16.22 | 31 - 126 | .95 |
| United Kingdom | 9.45 | 6.99 | 0 - 41 | .93 |  | 11.09 | 8.47 | 0 - 45 | .95 |  | 106.38 | 18.80 | 25 - 126 | .97 |
| United States | 8.94 | 6.57 | 0 - 43 | .91 |  | 11.81 | 8.51 | 0 - 45 | .94 |  | 107.63 | 14.89 | 18 - 126 | .95 |
| **East Europe** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Hungary | 8.03 | 7.32 | 0 - 43 | .93 |  | 10.68 | 8.63 | 0 - 42 | .93 |  | 108.50 | 21.01 | 30 - 126 | .95 |
| Romania\* | 8.65 | 5.61 | 0 - 36 | .91 |  | 8.65 | 6.52 | 0 - 41 | .94 |  | 91.14 | 13.24 | 32 - 105 | .96 |
| **Asia** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Bangladesh | 13.58 | 8.70 | 0 - 35 | .93 |  | 12.57 | 10.08 | 0 - 39 | .96 |  | 118.94 | 10.82 | 18 - 126 | .93 |
| India | 7.31 | 7.84 | 0 - 41 | .93 |  | 11.29 | 10.02 | 0 - 45 | .94 |  | 110.12 | 18.91 | 27 - 126 | .97 |
| Indonesia | 9.85 | 6.88 | 0 - 34 | .92 |  | 9.81 | 8.29 | 0 - 43 | .95 |  | 103.46 | 17.90 | 33 - 126 | .95 |
| Malaysia | 3.79 | 5.75 | 0 - 45 | .95 |  | 7.36 | 8.37 | 0 - 45 | .97 |  | 100.76 | 17.23 | 34 - 126 | .96 |
| Pakistan | 9.15 | 8.50 | 0 - 45 | .94 |  | 8.44 | 9.49 | 0 - 45 | .96 |  | 113.84 | 14.62 | 36 - 126 | .95 |
| South Korea | 10.24 | 9.08 | 0 - 45 | .96 |  | 9.34 | 9.90 | 0- 45 | .97 |  | 91.97 | 22.82 | 18 - 126 | .98 |
| Turkey | 9.37 | 6.49 | 0 - 34 | .92 |  | 9.86 | 8.84 | 0 - 44 | .96 |  | 105.07 | 18.84 | 31 - 126 | .96 |
| **Middle East** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Israel | 6.76 | 5.58 | 0 - 33 | .90 |  | 8.65 | 7.30 | 0 - 44 | .92 |  | 112.62 | 13.10 | 41 - 126 | .95 |
| **Africa** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Ghana | 4.96 | 4.71 | 0 - 28 | .87 |  | 4.27 | 5.63 | 0 - 38 | .94 |  | 114.01 | 15.87 | 42 - 126 | .94 |
| **Middle and South America** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Brazil | 9.51 | 8.02 | 0 - 41 | .94 |  | 11.51 | 9.39 | 0 - 43 | .95 |  | 102.19 | 17.81 | 20 - 126 | .95 |
| Chile | 5.64 | 4.86 | 0 - 31 | .90 |  | 8.49 | 7.14 | 0 - 45 | .93 |  | 105.44 | 15.01 | 39 - 126 | .95 |
| **Oceania** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Australia | 10.38 | 7.29 | 0 - 37 | .94 |  | 11.43 | 8.69 | 0 - 44 | .95 |  | 105.87 | 16.95 | 44 - 126 | .95 |

*Note.* Alpha coefficients tend to underestimate true reliability compared to other coefficients of reliability such as omega total (McNeish, 2018), therefore, omega is reported for alpha coefficients below Nunnally and Bernstein’s (1994) rule-of-thumb for acceptable alpha values (α = .70); Positive DC in U.S., ω = .71; Negative DC in U.S., ω = .44; Negative DC in Bangladesh, ω = .69; Negative DC in Israel, ω = .64.

**Table 2 (cont’d)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Positive DC |  |  | Negative DC |  |
|  | M | SD | Range | Alpha |  | M | SD | Range | Alpha |
| **North America and West Europe** |  |  |  |  |  |  |  |  |  |
| Austria | 3.70 | 0.75 |  1 - 5  | .81 |  | 1.84 | 0.78 |  1 - 5  | .74 |
| Canada | 3.71 | 0.73 |  1 - 5  | .83 |  | 1.96 | 0.80 |  1 - 5  | .80 |
| Belgium | 3.94 | 0.95 |  1 - 5  | .89 |  | 2.24 | 1.06 |  1 - 5  | .79 |
| Germany | 3.41 | 0.82 |  1 - 5  | .85 |  | 2.00 | 0.87 |  1 - 5  | .79 |
| Greece | 3.57 | 0.79 |  1 - 5  | .83 |  | 2.19 | 0.83 |  1 - 5  | .71 |
| Ireland | 3.73 | 0.76 |  1 - 5  | .84 |  | 1.97 | 0.82 |  1 - 5  | .77 |
| Italy | 3.52 | 0.81 |  1 - 5  | .84 |  | 1.72 | 0.69 |  1 - 5  | .75 |
| Netherlands | 3.71 | 0.60 |  1 - 5  | .77 |  | 1.94 | 0.70 |  1 - 5  | .71 |
| Portugal | 3.71 | 0.80 |  1 - 5  | .88 |  | 2.06 | 0.80 |  1 - 5  | .78 |
| Spain | 3.65 | 0.74 |  1 - 5  | .84 |  | 2.08 | 0.80 |  1 - 5  | .72 |
| Switzerland | 3.60 | 0.78 |  1 - 5  | .82 |  | 1.75 | 0.72 |  1 - 5  | .75 |
| United Kingdom | 3.61 | 0.76 |  1 - 5  | .81 |  | 2.20 | 0.90 |  1 - 5  | .75 |
| United States | 3.08 | 0.56 |  1 - 5  | .**56\*** |  | 2.99 | 0.50 |  1 - 5  | **.14\*** |
| **East Europe** |  |  |  |  |  |  |  |  |  |
| Hungary | 3.48 | 0.89 |  1 - 5  | .86 |  | 1.83 | 0.81 |  1 - 5  | .74 |
| Romania | 3.63 | 0.86 |  1 - 5  | .90 |  | 2.16 | 0.90 |  1 - 5  | .81 |
| **Asia** |  |  |  |  |  |  |  |  |  |
| Bangladesh | 3.57 | 0.74 |  1 - 5  | .70 |  | 3.08 | 0.76 |  1 - 5  | **.43\*** |
| India | 3.79 | 0.99 |  1 - 5  | .88 |  | 2.42 | 0.99 |  1 - 5  | .70 |
| Indonesia | 3.70 | 0.80 |  1 - 5  | .87 |  | 2.11 | 0.89 |  1 - 5  | .78 |
| Malaysia | 3.49 | 0.88 |  1 - 5  | .92 |  | 2.16 | 0.89 |  1 - 5  | .82 |
| Pakistan | 3.68 | 0.79 |  1 - 5  | .85 |  | 2.11 | 0.94 |  1 - 5  | .73 |
| South Korea | 3.42 | 0.80 |  1 - 5  | .89 |  | 3.37 | 0.88 |  1 - 5  | .79 |
| Turkey | 3.57 | 0.83 |  1 - 5  | .88 |  | 2.30 | 0.85 |  1 - 5  | .72 |
| **Middle East** |  |  |  |  |  |  |  |  |  |
| Israel | 3.85 | 0.66 |  1 - 5  | .76 |  | 1.78 | 0.67 |  1 - 5  | **.59\*** |
| **Africa** |  |  |  |  |  |  |  |  |  |
| Ghana | 3.72 | 0.78 |  1 - 5  | .90 |  | 2.14 | 0.80 |  1 - 5  | .80 |
| **Middle and South America** |  |  |  |  |  |  |  |  |  |
| Brazil | 3.69 | 0.77 |  1 - 5  | .85 |  | 2.15 | 0.83 |  1 - 5  | .75 |
| Chile | 3.68 | 0.82 |  1 - 5  | .86 |  | 3.92 | 0.80 |  1 - 5  | .71 |
| **Oceania** |  |  |  |  |  |  |  |  |  |
| Australia | 3.71 | 0.71 |  1 - 5  | .82 |  | 1.92 | 0.82 |  1 - 5  | .80 |

*Note.* preDASS = symptoms of psychological distress rated prior to each country’s specific COVID-19 restrictions; postDASS = symptoms of psychological distress rated after these restrictions were in place; PRQC = Perceived Relationship Quality Component Inventory; Positive DC = perceived partner positive dyadic coping; Negative DC = perceived partner negative dyadic coping; Portugal and Romania administered shorter versions of the PRQC, denoted in text.

**Table 3**

*Parameter estimates for the model with relationship quality as the outcome (Hypothesis 2)*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | 95% CI |  |
| Fixed Effects | Estimate | SE | Df | *t* | Lower | Upper | *p* |
| (Intercept) | **76.34\*\*** | 2.71 | 23.07 | 28.15 | 71.02 | 81.66 | < .001 |
| **Controls** |  |  |  |  |  |  |  |
|  preC19 Distress  | **-1.64\*\*** | 0.20 | 11195.96 | -8.33 | -2.02 | -1.25 | < .001 |
|  Gender | **-2.38\*\*** | 0.59 | 18.76 | -4.01 | -3.54 | -1.22 | < .001 |
|  Stress Comm.  |  **8.63\*\*** | 0.54 | 23.57 | 16.01 |  7.58 |  9.69 | < .001 |
| **Predictors** |  |  |  |  |  |  |  |
| postC19 Distress (between) | -0.05 | 0.26 | 22.35 | -0.21 | -0.56 |  0.45 | 0.83 |
| postC19 Distress (within) | **-0.18\*\*** | 0.03 | 30.04 | -5.99 | -0.25 | -0.12 | < .001 |
|  |  |  | Correlations |  |  |
| Random Effects | Var. | SD | (Intercept) | postC19 Distress | Gender |  |  |
| (Intercept) | 164.90 | 12.84 |  |  |  |  |  |
| postC19 Distress (within) | 0.02 | 0.12 | -0.02 |  |  |  |  |
| Gender | 5.25 | 2.29 |  0.30 | 0.37 |  |  |  |
| Stress Comm. | 6.25 | 2.50 | -0.97 | 0.01 | -0.40 |  |  |
| Residual | 214.87 | 14.66 |  |  |  |  |  |

*Note.***p<0.05\*; p<0.01\*\***; preC19 Distress = symptoms of psychological distress rated prior to each country’s specific COVID-19 restrictions; postC19 Distress = symptoms of psychological distress rated after these restrictions were in place; Stress comm = stress communication.

**Table 4a**

*Parameter estimates for the model with perceived partner positive DC as a moderator (Hypothesis 3)*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | 95% CI |  |
| Fixed Effects | Estimate | SE | Df | *t* | Lower | Upper | *p* |
| (Intercept) | **96.94\*\*** | 1.22 | 42.39 | 79.53 | 94.55 | 99.33 | < .001 |
| **Controls** |  |  |  |  |  |  |  |
| preC19 Distress | **-1.37\*\*** | 0.17 | 8108.99 | -8.08 | -1.70 | -1.04 | < .001 |
| Gender | **-1.83\*\*** | 0.30 | 11641.25 | -6.11 | -2.42 | -1.25 | < .001 |
| Stress Comm.  |  **3.12\*\*** | 0.17 | 11819.56 | 18.39 | 2.79 | 3.45 | < .001 |
| **Predictors** |  |  |  |  |  |  |  |
| postC19 Distress (between) |  0.44 | 0.24 | 22.80 | 1.81 | -0.04 | 0.91 | 0.08 |
| postC19 Distress (within) | **-0.12\*\*** | 0.02 | 35.25 | -5.79 | -0.16 | -0.08 | < .001 |
| Positive DC (between) |  **7.98**\* | 3.81 | 19.66 | 2.10 | 0.52 | 15.43 | 0.04 |
| Positive DC (within) | **10.24\*\*** | 0.63 | 22.86 | 16.36 | 9.02 | 11.47 | < .001 |
| PDC (within)\* postC19 (within) | **0.14\*\*** | 0.02 | 16.77 | 6.47 | 0.09 | 0.18 | < .001 |
|  |  |  | Correlations |  |  |
| Random Effects | Var. | SD | (Intercept) | postC19 Distress | Positive DC |  |  |
| (Intercept) | 25.25 | 5.03 |  |  |  |  |  |
| postC19 Distress (within) | 0.01 | 0.07 |  0.31 |  |  |  |  |
| Positive DC (within) | 8.50 | 2.92 | -0.80 | -0.71 |  |  |  |
| PDC (within)\* postC19 (within) | 0.01 | 0.08 | -0.09 | -0.63 | 0.54 |  |  |
| Residual | 162.65 | 12.75 |  |  |  |  |  |

*Note.* **p<0.05\*; p<0.01\*\***; preC19 Distress = symptoms of psychological distress rated prior to each country’s specific COVID-19 restrictions; postC19 Distress = symptoms of psychological distress rated after these restrictions were in place; Stress comm. = stress communication; DC = dyadic coping. PDC = positive dyadic coping.

**Table 4b**

*Parameter estimates for the model with perceived partner negative DC as a moderator (Hypothesis 3)*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | 95% CI |  |
| Fixed Effects | Estimate | SE | Df | *t* | Lower | Upper | *p* |
| (Intercept) | **81.60\*\*** | 1.19 | 33.90 | 68.38 | 79.27 | 83.94 | < .001 |
| **Controls** |  |  |  |  |  |  |  |
| preC19 Distress | **-0.92\*\*** | 0.18 | 10962.08 | -5.03 | -1.28 | -0.56 | < .001 |
| Gender | **-2.11\*\*** | 0.32 | 11929.83 | -6.56 | -2.74 | -1.48 | < .001 |
| Stress Comm.  |  **7.21\*\*** | 0.15 | 11931.43 | 46.74 |  6.91 |  7.52 | < .001 |
| **Predictors** |  |  |  |  |  |  |  |
| postC19 Distress (between) | -0.24 | 0.39 | 21.43 | -0.61 | -1.00 |  0.53 | 0.55 |
| postC19 Distress (within) | **-0.10\*\*** | 0.02 | 33.14 | -4.15 | -0.14 | -0.05 | < .001 |
| Negative DC (between) | -1.20 | 1.85 | 20.75 | -0.65 | -4.83 |  2.42 | 0.52 |
| Negative DC (within) | **-5.60\*\*** | 0.87 | 23.18 | -6.42 | -7.31 | -3.89 | < .001 |
| NDC (within)\* postC19 (within) | **-0.06\*** | 0.02 | 22.41 | -2.67 | -0.10 | -0.02 | 0.01 |
|  |  |  | Correlations |  |  |
| Random Effects | Var. | SD | (Intercept) | postC19 Distress | Negative DC |  |  |
| (Intercept) | 24.54 | 4.95 |  |  |  |  |  |
| Post-C19 Distress (within) | 0.01 | 0.08 |  0.26 |  |  |  |  |
| Negative DC (within) | 17.44 | 4.18 | -0.13 |  0.04 |  |  |  |
| NDC (within)\* Post-C19 (within) | 0.01 | 0.09 |  0.03 | -0.16 | 0.27 |  |  |
| Residual | 185.90 | 13.63 |  |  |  |  |  |

*Note.* **p<0.05\*; p<0.01\*\*;** preC19 Distress = symptoms of psychological distress rated prior to each country’s specific COVID-19 restrictions; postC19 Distress = symptoms of psychological distress rated after these restrictions were in place; Stress comm. = stress communication; DC = dyadic coping. NDC = negative dyadic coping.





*Figure 1*. The dotted line in panel A denotes the average difference (i.e., fixed intercept) in pre- and post-COVID-19 distress (*b0* = 2.33). Dotted lines in panels B, C, and D represent the estimated fixed effect of each variable on relationship quality. Country-specific coefficients (i.e., conditional modes) are centered around the fixed effect with 95% confidence intervals.





*Figure 2*. The dotted line represents the fixed effect for the interaction term and country-specific coefficients are centered around the fixed effect with 95% confidence intervals. Interactions are decomposed by holding respective positive and negative DC constant at three values (+1SD, mean, -1SD), respectively, and slopes are plotted with 95% confidence intervals. Post-COVID-19 distress is measured as the deviation of each participant from their country’s mean level of post-COVID-19 distress.

1. Inclusion criterion were selected based on research conducted with the systemic transactional model (e.g., Bodenmann, et al., 2006; Bodenmann et al., 2010). [↑](#endnote-ref-1)