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Coping with global uncertainty: Perceptions of COVID-19 psychological distress, relationship quality, and dyadic coping for romantic partners across 27 countries

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Abstract

Following the global outbreak of COVID-19 in March 2020, individuals report psychological distress associated with the "new normal"—social distancing, financial hardships, and increased responsibilities while working from home. Given the interpersonal nature of stress and coping responses between romantic partners, based on the systemic transactional model this study posits that perceived partner dyadic coping may be an important moderator between experiences of COVID-19 psychological distress and relationship quality. To examine these associations, self-report data from 14,020 people across 27 countries were 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), reports of post-COVID-19 psychological distress would be negatively associated with relationship quality (Hypothesis 2), and perceived partner DC would moderate these associations (Hypothesis 3). While hypotheses were generally supported, results also showed interesting between-country variability. Limitations and future directions are presented.

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Keywords
COVID-19, distress, dyadic coping, multination, relationship quality

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, 2020) on March 11, 2020, much of the world was, and continues to remain, ill-equipped to face COVID-19 and its effects, with over 3.7 million reported deaths as of June 10, 2021 (https://www.worldometers.info/coronavirus/). Individuals across the world have reported increased stress since the start of the pandemic and associated country restrictions; much of which is tied to both social and economic concerns (Chiarolanza et al., under review).

The experience of stress and resulting coping efforts have important implications for both individual and relational health, especially during COVID-19 (Pietromonaco & Overall, 2020). In particular, the ways in which romantic partners rely on one another to cope with stress are inextricably linked to risk of disease morbidity and mortality (Loving & Slatcher, 2013). Indeed, individuals who perceive their partner to be responsive to them in the face of stress report better sleep quality, show decreases in cortisol responses, and report better relationship quality (for a review see Stanton et al., 2020). Given the importance of romantic partners' coping responses for mitigating stress' deleterious effects on individual and relational well-being (Randall & Bodenmann, 2017), drawing upon the systemic transactional model of dyadic coping (Bodenmann et al., 2016), this study examined how perceptions of partners' dyadic coping behaviors moderated 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 psychological distress, 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 dealt 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 particular how members (here romantic partners) can work together to mitigate stress' deleterious effects (Bodenmann et al., 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 either positively (e.g., providing empathy) or negatively (e.g., dismissing the concern), a process defined as *dyadic coping* (DC). As denoted above, a partner's dyadic coping behavior can be

classified as either positive or negative. Importantly, only positive DC is considered a universally important relationship maintenance behavior (Randall & Messerschmitt-Coen, 2019); one that is associated with higher individual and relationship well-being (Falconier et al., 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 (Bodenmann et al., 2016). Nevertheless, exploring the critical role perceived partner DC may have during the face of a major, ecological, stressor has largely remained unexamined (for a notable exception see Bar-Kalifa, et al., in press). Responses to natural disasters, such as the aftermath of the Great East Japan Earthquake, can be ambivalent in nature (Uchida et al., 2014). Research from Uchida and colleagues (2014) found 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. This study suggests that perceived partner's DC may be one way in which people experience social connectedness, which may provide buffering effects against psychological distress associated with COVID-19. While most research on COVID-19 to date has examined individual and societal level coping efforts, to our knowledge, this study is the first to investigate how romantic partners' perceived one another to help them cope with stress from the early phase of the COVID-19 pandemic (March–July, 2020).

Present study

Perhaps for the first time in our history, the ongoing COVID-19 pandemic presents an opportunity to examine how individuals around the world are experiencing a common stressor. This exceptional, yet unfortunate, opportunity allows us to test fundamental tenets of relationship science, specifically applied to the systemic transactional model of dyadic coping (Bodenmann et al., 2016). As such, the goal of the present study was to test the following preregistered (https://osf.io/s7j52) 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 will be reported post-COVID-19 compared to pre-COVID-19 restrictions.
- **H2:** Given distress 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 the well-documented association between dyadic coping and relationship quality (see Falconier et al., 2015 for a meta-analysis), it is hypothesized that perceived partner DC will moderate the association between post-COVID psychological distress and relationship quality, such that positive DC will weaken the association (H3a), whereas negative DC will exacerbate the association (H3b).

Romantic partners' 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 et al., 2008). Simply put, couples navigate emotional situations in culturally specific ways (Boiger et al., 2020). For individuals around the world, positive and negative DC 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 1 year, and (3) living together with their partner in their respective country.[1] A total of 14,020 people across 27 countries participated in the study. Most were female ($n = 10{,}845$; 77.4%), on average 36 years of age ($SD = 11.38$) 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%); 4,455 in a committed relationship (34.3%), and 1,038 were engaged (8%). See Table 1 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*

Table 1. Sociodemographic characteristics, gender and sexual orientation, relationship characteristics of participants.

	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

(continued)

Table 1. (continued)

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	%
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

Gender and sexual orientation of participants																						
	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

(continued)

Table 1. (continued)

	Gender and sexual orientation of participants																			
	Male		Female		Nonbinary		Gender Fluid		Other		Heterosexual		Bisexual		Lesbian		Gay		Queer		Other	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
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

(continued)

Table 1. (continued)

	Gender and sexual orientation of participants																			
	Male		Female		Nonbinary		Gender Fluid		Other		Heterosexual		Bisexual		Lesbian		Gay		Queer		Other	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
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

	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	238	47.5%	23	4.6%	240	47.9%
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

(continued)

Table 1. (continued)

	Relationship characteristics of participants					
	In a Committed Relationship		Engaged—Living Together		Married	
	N	%	N	%	N	%
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

(continued)

Table 2. (continued)

	preDASS				postDASS				PRQC			
	M	SD	Range	Alpha	M	SD	Range	Alpha	M	SD	Range	Alpha
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

	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*

(continued)

Table 2. (continued)

	Positive DC				Negative DC			
	M	SD	Range	Alpha	M	SD	Range	Alpha
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. Alpha coefficients tend to underestimate true reliability (McNeish, 2018). As such, omega is reported for alpha coefficients below Nunnally and Bernstein's (1994) rule-of-thumb for acceptable alpha values ($\alpha = .70$); Positive DC in U.S., $\omega = .71$; Negative DC in U.S., $\omega = .44$; Negative DC in Bangladesh, $\omega = .69$; Negative DC in Israel, $\omega = .64$. preDASS = symptoms of psychological distress rated prior to each country's COVID-19 restrictions; postDASS = symptoms of psychological distress rated after 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.

to 3 = *applied to me very much, or most of the time.* A total score is calculated, where higher scores reflect higher psychological distress. Reliabilities for pre-COVID-19 psychological distress scores ranged from .86 (Canada) to .96 (South Korea), with an average α of .93 across countries. Reliabilities for post-COVID-19 psychological distress scores ranged from .91 (Spain) to .97 (Malaysia and South Korea), with an average α of .93 across countries. 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.* A total score is calculated, where higher scores reflect higher relationship quality. 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 2 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 α of .85 across countries. Reliabilities for negative DC ranged from .14 (U.S.) to .82 (Malaysia), with an average α 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 that 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).

Data screening procedures

After initial data screening by each country's team, the resulting datasets were further screened for indicators of careless responding (Brühlmann et al., 2020; Curran, 2016). In each country datasets, three indicators were calculated for the responses of the psychological scales (in sum, 114 items): percentage of missing responses, long string index

(i.e., the highest number of same responses consecutively in a row) and person-total correlation (i.e., Pearson-correlation coefficient between the individual responses and the sample level averages of the same items). The calculation of long string index was based on 72 items, which included the DCI (37 items; Bodenmann, 2008), PRQC (18 items; Fletcher et al., 2000), and other measures not related to the present study.

Country-level distributions for person-total correlations (PTCs) and long string indices (LSIs) were calculated. For PTC, we calculated the cutoff value according to the following procedure: We searched for the lowest country-level average PTC (.78), subtracted two standard deviations (2*.25) that resulted in a rounded .30 value which was uniformly used for all country datasets. This cutoff value was more strict than 0.00 recommended by Brühlmann and colleagues (2020), however, the number of screened cases was relatively low. For LSI, analysis showed that scores of 19 and above were uncommon, which also met the recommendation of Brühlmann and colleagues (2020); that is, more than half of the item number of the longest questionnaire (in our case, DCI with 37 items). Finally, cases with missing responses above 25% were also considered as ineligible for inclusion in the final dataset and the subsequent data imputation procedure (Schlomer et al., 2010). Please see Table 2 in the supplementary file for the number of cases screened by country.

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 that took the form of:

$$\text{Difference in Psychological Distress}_{ij} = \beta_0 + \mu_{0j} + e_{ij} \quad (1)$$

where the outcome is difference in psychological distress for participant *i* in country *j*. β_0 represents the estimated average change in psychological distress across all countries, μ_{0j} represents the average deviation of participants in country *j* from β_0, 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 were 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

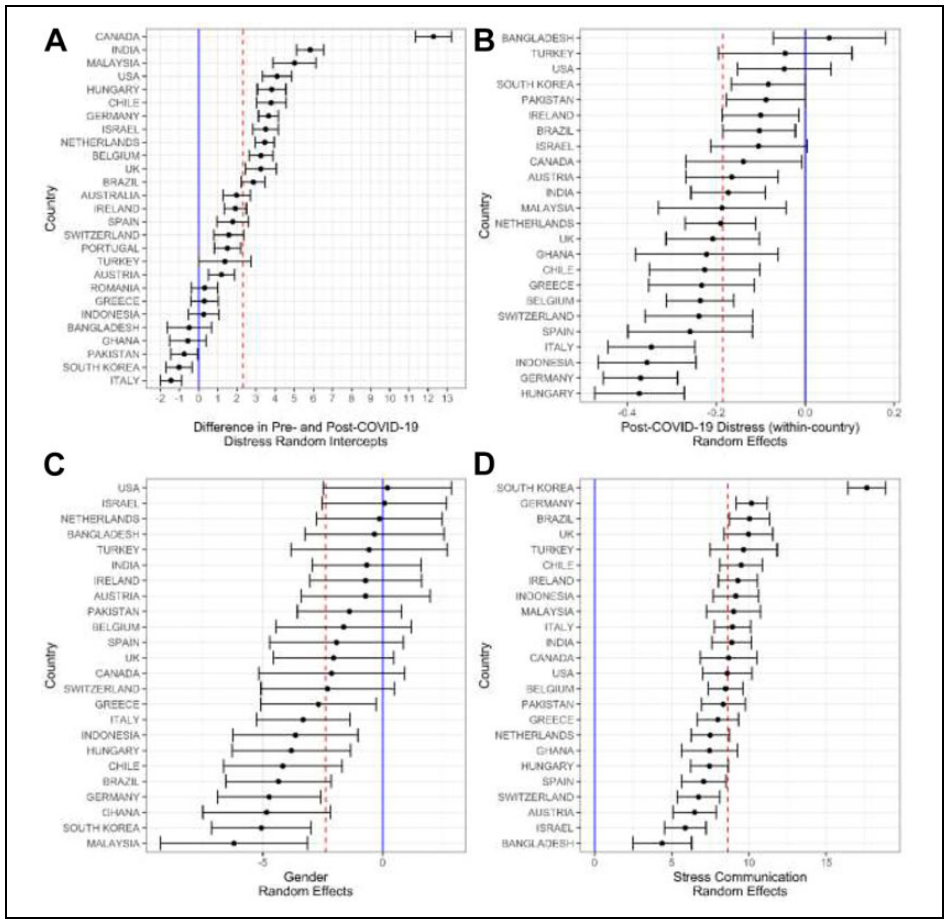

Figure 1. The dotted line in panel A denotes the average difference (i.e., fixed intercept) in pre- and post-COVID-19 (psychological) distress ($b_0 = 2.33$). Dotted lines in panels B, C, and D represent the estimated fixed effect of each variable on relationship quality. Country-specific coefficients (i.e., conditional modes) are centered around the fixed effect with 95% confidence intervals.

to graphically depict differences in coefficients across countries (Figure 1, Figure 2, Panels A and 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

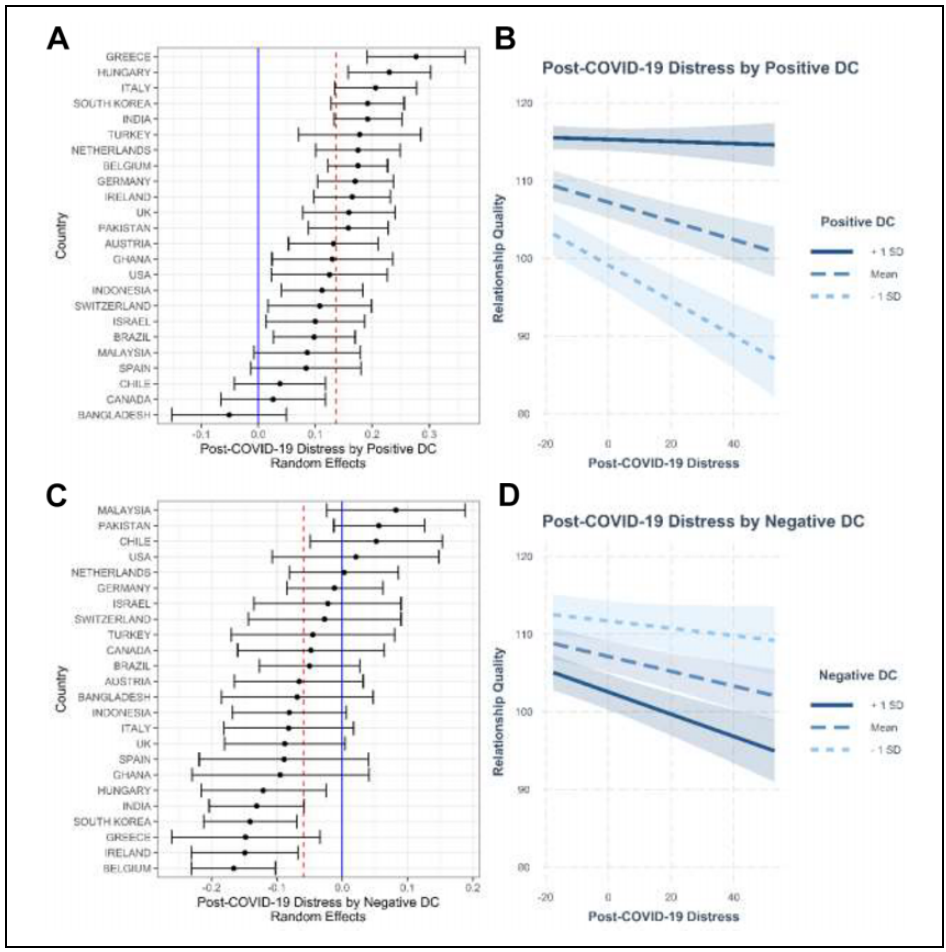

Figure 2. Panels A and C illustrate the fixed effects for the interaction term and country-specific coefficients represented by the dotted line and are centered around the fixed effect with 95% confidence intervals. Panels B and D illustrate the interactions decomposed at +SD, mean, and -1 SD, respectively, and slopes are plotted with 95% confidence intervals. Post-COVID-19 (psychological) distress is measured as the deviation of each participant from their country's mean level of post-COVID-19 distress.

to vary across countries. Prior to conducting the analyses, postDASS scores were disaggregated into between- (i.e., country-level mean; $\overline{\text{postDASS}}_j$) and within-country (i.e., each participant's deviation from their country-level mean; $\overline{\text{postDASS}}_j - \overline{\text{postDASS}}_{ij}$) 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, $\overline{\text{postDASS}}_j$, and $\overline{\text{postDASS}}_j - \overline{\text{postDASS}}_{ij}$ were added to the model. This model was a better fit than the unconditional model, $\chi^2(5) = 3240.5$, $p < 0.001$. Next, a random effect for $\overline{\text{postDASS}}_j - \overline{\text{postDASS}}_{ij}$ was added; however, this yielded multiple convergence warnings. Following the suggestion of Bates et al. (2020), the model was fit using different optimizers to 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 $\overline{\text{postDASS}}_j - \overline{\text{postDASS}}_{ij}$, but not preDASS, and this model proved to be a better fit than the model with only fixed effects and random intercepts, $\chi^2(9) = 301.5$, $p < 0.001$. Therefore, the final model took the form:

$$\begin{aligned}\text{Relationship Quality}_{ij} = {} & \beta_0 + \beta_1(\text{preDASS}) + \beta_2(\text{Gender}) + \beta_3(\text{Stress Com.}) \\ & + \beta_4(\overline{\text{postDASS}}_j) + \beta_5(\overline{\text{postDASS}}_j - \overline{\text{postDASS}}_{ij}) \\ & + \mu_{0j} + \mu_{1j}(\text{Gender}) + \mu_{2j}(\text{Stress Com.}) + \mu_{3j}(\overline{\text{postDASS}}_j \\ & - \overline{\text{postDASS}}_{ij}) + e_{ij}\end{aligned} \tag{2}$$

where the relationship quality of person i in country j is modeled by a fixed intercept (β_0), fixed effects for each predictor ($\beta_1 \ldots \beta_5$), a country-specific random intercept (μ_{0j}), country-specific random effects ($\mu_{1j \ldots} \mu_{3j}$), and a person-specific residual error term (ϵ_{ij}).

Similar to the procedure outlined for H1, country-specific slope coefficients were derived with 95% confidence intervals for $\overline{\text{postDASS}}_j - \overline{\text{postDASS}}_{ij}$, gender, and stress communication (stress com.). These coefficients are represented in Figure 1, Panels B, C, and D, respectively.

Australia, Portugal, and Romania. Key variables were missing from the Australian, Portuguese, and Romanian datasets, which precluded including data from these countries in the models above. Specifically, the Australian team did not include measures of stress communication, and the Portuguese and Romanian teams used a shortened version of relationship quality. To address this, individual multiple regression models were conducted for participants from these countries, and the results are presented below.

Hypothesis 3. It was hypothesized perceived partner DC would moderate the association between COVID-19 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 COVID-19 psychological distress and relationship quality. PDC and NDC were disaggregated into

between- ($\overline{\text{PDC}}_{\text{j}}$; $\overline{\text{NDC}}_{\text{j}}$) and within-country ($\overline{\text{PDC}}_{\text{j}} - \overline{\text{PDC}}_{\text{ij}}$; $\overline{\text{NDC}}_{\text{j}} - \overline{\text{NDC}}_{\text{ij}}$) components.

PDC. Fixed and random effects were included for $\overline{\text{PDC}}_{\text{j}}$, $\overline{\text{PDC}}_{\text{j}} - \overline{\text{PDC}}_{\text{ij}}$, and an interaction term ($\overline{\text{PDC}}_{\text{j}} - \overline{\text{PDC}}_{\text{ij}}$ * $\overline{\text{postDASS}}_{\text{j}} - \overline{\text{postDASS}}_{\text{ij}}$). 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, $\chi^2(3) = 3339.8$, $p < 0.01$, and took the form:

$$\begin{aligned}\text{Relationship Quality}_{\text{ij}} = {} & \beta_0 + \beta_1(\text{preDASS}) + \beta_2(\text{Gender}) + \beta_3(\text{Stress Com.}) \\ & + \beta_4(\overline{\text{postDASS}}_{\text{j}}) + \beta_5(\overline{\text{postDASS}}_{\text{j}} - \overline{\text{postDASS}}_{\text{ij}}) \\ & + \beta_6(\overline{\text{PDC}}_{\text{j}}) + \beta_7(\overline{\text{PDC}}_{\text{j}} - \overline{\text{PDC}}_{\text{ij}}) + \beta_8(\overline{\text{PDC}}_{\text{j}} - \overline{\text{PDC}}_{\text{ij}} \\ & * \overline{\text{postDASS}}_{\text{j}} - \overline{\text{postDASS}}_{\text{ij}}) + \mu_{0\text{j}} + \mu_{1\text{j}}(\overline{\text{postDASS}}_{\text{j}} \\ & - \overline{\text{postDASS}}_{\text{ij}}) + \mu_{2\text{j}}(\overline{\text{PDC}}_{\text{j}} - \overline{\text{PDC}}_{\text{ij}}) + \mu_{3\text{j}}(\overline{\text{PDC}}_{\text{j}} - \overline{\text{PDC}}_{\text{ij}} \\ & * \overline{\text{postDASS}}_{\text{j}} - \overline{\text{postDASS}}_{\text{ij}}) + e_{\text{ij}}\end{aligned} \tag{3}$$

with fixed effects for $\overline{\text{PDC}}_{\text{j}}$ (β_6), $\overline{\text{PDC}}_{\text{j}} - \overline{\text{PDC}}_{\text{ij}}$ (β_7), and the interaction term (β_8), and random effects for $\overline{\text{PDC}}_{\text{j}}$ ($\mu_{2\text{j}}$) and the interaction term ($\mu_{3\text{j}}$). Similar to hypothesis 1 and 2, country-specific interaction terms with 95% confidence intervals are depicted graphically (Figure 2, Panel A).

NDC. Fixed and random effects for $\overline{\text{NDC}}_{\text{j}}$, $\overline{\text{NDC}}_{\text{j}} - \overline{\text{NDC}}_{\text{ij}}$, and an interaction term ($\overline{\text{NDC}}_{\text{j}} - \overline{\text{NDC}}_{\text{ij}}$ * $\overline{\text{postDASS}}_{\text{j}} - \overline{\text{postDASS}}_{\text{ij}}$ 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, $\chi^2(3) = 1694.8$, $p < 0.01$. The final model took the same form as Equation 3. Country-specific interaction terms with 95% confidence intervals are depicted graphically (Figure 2, Panel C).

Results

Hypothesis 1. On average, participants reported higher psychological distress after the COVID-19 restrictions were in place than before ($b_0 = 2.33$, *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 were in place ($\mu_0 = 2.81$). 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 psychological 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 psychological distress (i.e., 95% CI were above zero, depicted by a solid vertical line). On average, participants in 11 of

Table 3. Parameter estimates for the model with relationship quality as the outcome (Hypothesis 2).$32#

					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.

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 were above the dotted line). Conversely, participants in 5 of 27 countries did not report higher post-COVID-19 psychological distress (e.g., Greece, Indonesia, and Romania; 95% CI includes zero), and 3 of 27 countries reported lower post-COVID-19 psychological distress (i.e., Italy, Pakistan, and South Korea; 95% CI were below zero).

Hypothesis 2. On average, participants with higher stress communication reported higher relationship quality ($b_3 = 8.63$, 95% CI = [7.58, 9.69]). Countries with higher post-COVID-19 psychological distress reported neither lower nor higher relationship quality ($b_4 = -0.05$, *CI 95%* = [−0.56, 0.45]). However, individuals who reported above-average post-COVID-19 psychological distress relative to others in their country reported lower relationship quality ($b_5 = -0.18$, 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 Figure 1, Panels B, C, and D, respectively.

Overall, countries appeared to differ significantly in the association between post-COVID-19 psychological distress and relationship quality. As shown in Figure 1, Panel B, the negative association between post-COVID-19 psychological distress and relationship quality held in 18 out of 24 countries (i.e., 95% CIs were above zero). This association was negligible in Bangladesh, Israel, Pakistan, South Korea, Turkey, and the USA (i.e., 95% CIs includes zero), and was most pronounced in Germany, Hungary, Indonesia, and Italy (i.e., 95% CIs were 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 ($b_6 = 7.98$, 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 psychological 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. Perceived partner 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 were above zero). However, the associations were negligible in Bangladesh, Canada, Chile, Ghana, and Spain (95% CI includes zero) and were particularly pronounced in Greece and Hungary (95% CIs were above the average effect for all other countries).

After 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 β_5 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 4.

Perceived Partner Negative DC. At the between-country level, perceived partner negative DC was not associated with relationship quality ($b_6 = -1.20$, 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 psychological distress and relationship quality in only 6 out of 28 countries

Table 4. Parameter estimates for the model with perceived partner positive and negative 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			

					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

(continued)

Table 4. (continued)

Fixed Effects	Estimate	SE	Df	t	95% CI Lower	95% CI Upper	p
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

Random Effects	Var.	SD	Correlations (Intercept)	Correlations postC19 Distress	Correlations 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; PDC = positive dyadic coping; NDC = negative dyadic coping.

(i.e., Belgium, Greece, Hungary, India, Ireland, and South Korea). This association was particularly pronounced in Belgium, Ireland, and South Korea (95% CIs were 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]). 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 COVID-19 pandemic, the current study used a large multinational sample across 27 countries to examine whether perceived partner dyadic coping moderated the association between COVID-19 psychological distress and relationship quality during the early phases of the pandemic (March–July, 2020). It was hypothesized that COVID-19 psychological distress, associated with the country-level restrictions put in place, would be associated with higher self-reported psychological distress, compared to self-reports of psychological distress before these restrictions. Additionally, we examined whether reports of COVID-19 psychological distress would be negatively associated with relationship quality, and whether perceived partner dyadic coping moderated this association. Given national responses and community resources in coping with the pandemic have differed (e.g., Gelfand et al., 2020), along with cultural ideas and practices around preferred ways of coping with stress (Kim et al., 2008), we explored cultural variation in the strength of these associations across countries.

Overall, hypotheses in the study were largely supported. In most (not all) countries, participants reported more psychological distress after COVID-19 country-level restrictions were implemented compared to before, and reports of psychological distress were associated with lower relationship quality. Importantly, and in line with prior research on dyadic coping (e.g., Falconier et al., 2016), perceived partner positive dyadic coping buffered the negative association between post-COVID-19 psychological distress and relationship quality for most participants in our sample. Not surprisingly, perceived partner negative dyadic coping exacerbated the negative association between post-COVID-19 psychological distress and relationship quality; however, this association was only found in a subset 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 positive dyadic coping 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 (i.e., Canada, Chile, Ghana and Spain), we could not identify a simple unifying factor that could account for these results. 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 dyadic coping did not 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 the 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. Please refer to the supplementary file for the dates of data collection across countries. However, because participants in each country were asked their perception of their own 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 allowed us to draw conclusions about individuals' COVID-19 psychological distress ratings without overgeneralizing across populations.

Strengths, limitations, and future directions

A cross-sectional design was implemented wherein participants were asked to reflect on their symptoms of psychological distress prior to their country's COVID-19 restrictions (i.e., pre-COVID-19 psychological distress), and again following these restrictions (i.e., post-COVID-19 psychological distress) during the early phases of the pandemic (March–July, 2020). While the DASS-21 (Lovibond & Lovibond, 1995) is widely used to measure psychological distress, it has not been validated to examine perceptions of distress pre- and post- a specific time (here COVID-19 restrictions). By implementing the DASS-21 in this way, results demonstrated

perceived differences in participants' psychological distress from pre- to post-COVID-19 country-level restrictions. Further, in controlling for pre-COVID-19 psychological distress ratings, although assessed retrospectively, results reflected how post-COVID-19 psychological distress, above and beyond pre-COVID-19 reports, 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 of dyadic coping across cultures (Falconier et al., 2016), the inclusion criteria focused on individuals who were in a relationship for at least 1 year and living with their partner, which limits the ability to generalize these results to other couples, especially those who may have been isolated from their partner and/or experiencing additional stressors due to their minority status(es) as examples. 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) asks participants to respond to how they and their partners cope with stress in the context of their relationship. While the DCI has traditionally been applied to understanding the presence of common, relatively minor stressors (Falconier et al., 2016), the current COVID-19 pandemic is undoubtly associated with a multitude of stressors; therefore, how each participant responded to the scale prompt of "stress" likely differed.

Importantly, 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 individuals' daily lives—from working remotely, to home schooling children, to facing continued lockdowns and associated restrictions. Additional research on the reliability of such measures, especially within a longitudinal design and applied to the context of a global pandemic, is warranted.

Finally, and perhaps most importantly, future research is encouraged to explore the cultural variation in these results. 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 have have impacted participants' perception of stress and coping. Overall, our results show that perceived partner positive dyadic coping may be helpful in moderating the association between COVID-19 psychological distress and relationship quality across countries. However, it is possible that participants from certain cultural contexts may benefit from specific types of positive dyadic coping compared to others. For example, the study of close relationships in Asian contexts found people generally 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., engaging in delegated dyadic coping) may be more beneficial than helping one to analyze the problem (i.e., problem-focused dyadic coping) or showing empathy (i.e., emotion-focused dyadic coping) in mitigating symptoms of psychological distress.

Conclusion

Based on self-report data 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 multination data point to the importance of partners' positive dyadic coping behaviors in mitigating the associations between COVID-19 psychological distress and relationship quality, which further highlights positive dyadic coping as a generalizable relationship maintenance behavior that may buffer the damaging effects of stress (Randall & Messerschmitt, 2019), especially when community coping resources are low (Gelfand et al., 2020). Nonetheless, it is important to acknowledge 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. These mediating factors include, but are not limited to, the types of stress that are associated with elevated symptoms of psychological distress, individuals' coping responses, and propensity to communicate the stress (verbally or nonverbally) to one's romantic partner. Identifying how romantic partners experience and respond to stress within their relationship 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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Supplemental material

Supplemental material for this article is available online.

Open research statement

As part of IARR's encouragement of open research practices, the authors have provided the following information: This research was pre-registered: https://osf.io/s7j52/. The data used in the research are available. The data can be obtained by emailing the first author at Ashley.K.Randall@asu.edu. The materials used in the research are available. The materials can be obtained by emailing the first author at Ashley.K.Randall@asu.edu.

Note

1. Inclusion criterion were selected based on prior research conducted with the systemic transactional model of stress and coping (STM; Bodenmann et al., 2016). The STM is predicated on partners' interdependence, wherein partners living together have greater opportunity for shared experiences of stress communication and associated coping behaviors.

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