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Social support coping styles and psychological distress during the COVID-19 pandemic: The moderating role of sex

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ABSTRACT

Background: The coronavirus disease 2019 (COVID-19) pandemic led to the onset and exacerbation of mental health problems, such as stress, anxiety, and depression; yet stay-at-home-orders affected individuals' ability to make use of social support as a coping skill in managing distress. We aimed to evaluate how social support (emotional and instrumental) and biological sex were associated with stress, anxiety, and depression early in the COVID-19 pandemic.

Methods: Participants ($n = 7256$) had an average age of 50.13 years ($SD = 16.75$) and 51.6% were male. Using a cross-sequential design, seven cohorts of individuals completed baseline (T1) and one-month follow-up (T2) questionnaires online from March to July of 2020. We used a series of hierarchical regressions to identify types of social support (Brief-COPE, T1) associated with stress (Perceived Stress Scale-10, T1 and T2), anxiety and depression (Patient Health Questionnaire-4, T2).

Results: Greater emotional support was associated with less perceived stress, anxiety and depression (all $ps < 0.001$), whereas greater instrumental support predicted increased distress (all $ps < 0.036$) on all four outcomes. Moderation analyses revealed that greater emotional social support was associated with lower perceived stress at T1 for both women and men, with a stronger association for women relative to men. For women, greater emotional social support predicted lower anxiety.

Limitations: Self-selection may have introduced bias and participant self-report on brief measures may not have fully captured coping and distress.

Conclusions: Interventions enhancing emotional social support strategies, which appear especially important for women, might help manage enduring stressors such as the COVID-19 pandemic.

1. Introduction

The emotionally charged nature of the coronavirus disease 2019 (COVID-19) pandemic has led to the onset and exacerbation of mental health problems (Torales et al., 2020). Social support is a particularly effective coping strategy during emotionally charged events (e.g., buffering against psychological distress following 9/11 and improving psychological adjustment to chronic health threats; see Taylor, 2011 for a review). Broadly, social support refers to the provision of resources from meaningful groups of people around an individual, such as family members, friends, neighbors, and colleagues (Cohen and Syme, 1985). The literature further divides social support into instrumental support, which involves attempts to address the source of distress through tangible assistance such as providing information, services, or goods; and emotional support, which entails attempts to manage the stressor through emotional comfort provided through warmth, validation, or positive regard (Taylor, 2011). This distinction proves useful, as support-seeking styles appear to have different outcomes and interact uniquely with each situation. For example, emotional support was associated with fewer depression symptoms and higher quality of life in

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women with ovarian cancer, whereas instrumental support was not (Hill, 2016). The present study examines whether a similar pattern is present in the context of a different health threat, the COVID-19 pandemic.

Environmental stressors and available resources also inform the way individuals respond to transitory conditions. Variables such as sex,[1] age, race and ethnicity have been associated with increased distress during the pandemic (Breslau et al., 2021; Czeisler et al., 2020; McGinty et al., 2020). Sex, for example, is a particularly important determinant of health; women reported poorer health-related quality of life than men prior to the pandemic (Centers for Disease Control and Prevention, 2013). Women have borne a disproportionate stress burden in the context of the pandemic: in comparison to men, more women have lost their jobs, and those who remain employed are more often employed in positions that require increased exposure to infection (Carli, 2020). Women also have experienced an increase in childcare and other responsibilities as schools closed (Carli, 2020). Further, early data suggest that "lockdown" policies may have left women vulnerable to abuse in the wake of social and physical isolation, with increases in domestic violence following stay-at-home orders (Boserup et al., 2020). "Social distancing" policies may have led to increased social isolation, increasing the need for social support interventions as we continue to navigate COVID-19-related restrictions.

Due to the uncertainty of the pandemic and increased social isolation, our first aim was to examine the role of the use of social support in psychological distress (perceived stress, anxiety, and depression). We hypothesized that increased use of emotional support, but not instrumental support, would be predictive of better psychological outcomes. Because the pandemic exacerbated structural and institutional limitations on the coping resources available to women, our secondary aim was to examine sex as a moderator in the relationship between use of social support and psychological outcomes. We hypothesized the effect of social support would vary by sex, with women benefitting more from emotional support compared to men.

2. Method

2.1. Participants

Subjects were 7680 adults in the U.S. recruited via Amazon Mechanical Turk (MTurk) and Qualtrics Online Panels, online crowdsourcing platforms for social science survey completion. Eligibility criteria for the 15–20 minute research study titled "Thoughts and Feelings about COVID-19" were: being 18 years of age or older, fluency in English, and residing in the U.S. In addition, the MTurk questionnaire was only available to those who had a 95% or higher approval rate on MTurk. Cases were removed for concerns about data quality (4 for age > 91 years, 313 did not pass the Qualtrics quality check). Demographics for the final sample ($n = 7256$) are presented in Table 1.

Table 1
Participant characteristics.

	Time 1 ($n = 7256$)	Time 2 ($n = 3461$)	Test of difference
Measure	*n* (%)	*n* (%)	X^2
Age in years, $M \pm SD$, t	50.13 ± 16.75	49.63 ± 15.98	2.45**
Sex			16.43***
Male	3745 (51.6)	1705 (49.3)	
Female	3506 (48.3)	1755 (50.7)	
Other	5 (0.1)	1 (0.0)	
Ethnicity			0.37
Latinx/Hispanic	655 (9.0)	305 (8.8)	
Race			10.75
White/Caucasian	5924 (81.6)	2800 (80.9)	
Black/African American	610 (8.4)	302 (8.7)	
Asian	405 (5.6)	208 (6.0)	
Native Hawaiian, Pacific Islander	10 (0.1)	7 (0.2)	
American Indian, Alaska Native	57 (0.8)	22 (0.6)	
Mixed race/other	250 (3.4)	122 (3.5)	
Sexual orientation			6.25
Heterosexual	6578 (90.7)	3154 (91.1)	
Gay/lesbian/bisexual	554 (7.6)	250 (7.2)	
Asexual	47 (0.6)	26 (0.8)	
Other	12 (0.2)	5 (0.1)	
Marital status			12.34*
Single	2031 (28.0)	1009 (29.2)	
Married/domestic partnership	4276 (58.9)	2017 (58.3)	
Divorced/separated	697 (9.6)	342 (9.9)	
Widowed	239 (3.3)	93 (2.7)	
Annual household income			15.03
$0–$25,000	776 (10.7)	375 (10.8)	
$25,000–$50,000	1570 (21.6)	775 (22.4)	
$50,000–$100,000	2666 (36.7)	1280 (37.0)	
$100,000–$150,000	1198 (16.5)	581 (16.8)	
$150,000+	789 (10.9)	359 (10.4)	
Education			10.60
No high school degree	54 (0.7)	19 (0.5)	
High school degree	1630 (22.5)	788 (22.8)	
2-year degree	1063 (14.3)	536 (15.5)	
4-year degree	2970 (40.9)	1400 (40.5)	
Master's degree	1228 (16.9)	570 (16.5)	
Professional degree or PhD	298 (4.1)	148 (4.3)	
Emotional coping, $M \pm SD$	4.70 ± 1.82	–	
Instrumental coping, $M \pm SD$	4.20 ± 1.72	–	
Perceived stress, $M \pm SD$, t	15.01 ± 8.09	14.28 ± 8.23	4.51***
Anxiety, $M \pm SD$		0.97 ± 1.45	
Depression, $M \pm SD$		0.84 ± 1.38	

Note. Data are given as a number (valid percentage), except where indicated otherwise.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

2.2. Procedure

This study was approved by the University of California San Diego Institutional Review Board (Protocol #20042949). Using a cross-sequential design, seven cohorts of individuals completed a baseline (T1) questionnaire between March and June 2020. Those who entered their email address at the end of the questionnaire were sent, one month later, an email invitation to complete the follow-up (T2) questionnaire with a three-day window for completion. From the original sample, 5684 completed all T1 questions and 3461 participants completed T2. There was 47.7% retention of the original sample and 60.9% of those who completed T1, which is comparable to other studies conducted during the early pandemic (e.g., 49.1% for Hoffart et al., 2022; 56.9% for Matthes et al., 2021). These data were collected as part of a larger battery that included measures related to COVID-19 impacts, public health attitudes, psychosocial functioning, and health outcomes (Karnaze et al., 2022).

2.3. Measures

Demographic questions included age, sex, race, ethnicity, sexual orientation, marital status, educational status, and annual income. Sex was dichotomously coded into male (0) and female (1), as only 5 (0.1%) participants indicated anything other than male or female. To examine any associations between race-ethnicity and outcomes, five categories were created: Latinx/Hispanic, White-non-Latinx, Black-non-Latinx,

[1] We wish to acknowledge the important distinction between sex and gender and lack of precision caused by interchangeability in earlier literature. Because the current study collected data on sex, we use sex here.

Asian-non-Latinx-non-Black, and Other-non-Latinx (White-non-Latinx was the reference group) following the analytic guidelines of the National Center for Health Statistics (National Center for Health Statistics, 2018).

Use of emotional and instrumental social support were measured using items from the abbreviated COPE Inventory (Brief-COPE; Carver, 1997). The Brief-COPE measures efforts to minimize distress related to stressful life experiences across 14 two-item subscales. The two of focus in the present study are the use of emotional social support (emotional coping subscale) and instrumental social support (instrumental coping subscale). Items were rated on a four-point Likert-scale and summed with higher scores indicating more effective coping (range = 2–8). The two subscales have adequate psychmetric properties (Carver, 1997). Coping was measured at T1 with Cronbach's alphas (α) of 0.88 for use of emotional support and 0.85 for instrumental support.

Perceived stress was measured using the Perceived Stress Scale-10 (PSS; Cohen et al., 1983), which measures the degree to which life circumstances are appraised as stressful during the past month. The measure consists of 10 items that are scored on a five-point Likert-scale and summed for a total score (range = 0–40). Higher scores indicate more perceived stress. The PSS has good psychometric properties (Cohen et al., 1983). PSS was measured at both T1 (α = 0.90) and T2 (α = 0.91).

Anxiety and depression were measured using the Patient Health Questionnaire-4 (Kroenke et al., 2009). The questionnaire consists of a 2-item anxiety scale and a 2-item depression scale that measure core symptoms and signs of anxiety and depression during the past two weeks. Items are scored on a four-point Likert-type scale and summed (range = 0–6), with higher scores indicating more symptoms. The anxiety and depression scales have good psychometric properties (Kroenke et al., 2009). Anxiety (α = 0.89) and depression (α = 0.90) were measured at T2.

2.4. Data analysis

Preliminary analyses consisted of testing group differences between participants who completed T2 and those who did not, using *t*-tests and chi-square tests (see Table 1). Main analyses consisted of hierarchical regressions to identify types of social support (emotional and instrumental; T1) associated with PSS (T1, T2), anxiety (T2) and depression (T2) with sex as a moderator. In these regressions, four blocks of variables were sequentially entered: the first block included covariates (age, Latinx, Black-non-Latinx, Asian-non-Latinx-non-Black, Other-non-Latinx, and cohort administration; cohort was controlled for due to the rapid changes and adaptation during the pandemic found by Daly and Robinson, 2021); the second block included sex; the third block included use of emotional and instrumental support; the fourth block included the interactions between sex and each factor of social support. All continuous predictor variables were mean-centered to test for interaction effects. Multicollinearity analysis revealed that neither sex nor the social support variables had correlations greater than 0.7 and that no tolerance values were below 0.2 indicating no collinearity (Hair et al., 2014). Statistical analyses were conducted using Statistical Package for the Social Sciences (SPSS) 27.0 software.

3. Results

Table 2 shows results of four hierarchical logistic regressions. Across all outcomes, types of social support used explained 1–2% of the variance. Both emotional (all *ps* < 0.001) and instrumental (all *ps* < 0.036) social support contributed significantly to all four models. Higher emotional support scores predicted lower scores for all four distress outcomes, whereas increased instrumental support predicted greater distress, while holding all else constant.

Moderation analyses showed two significant interaction effects: for PSS-T1 and anxiety the effects of emotional support differed by sex. Simple slopes indicated that, for women, greater emotional support was associated with decreased PSS-T1 ($b = -0.95$, $t = -7.77$, $p < .001$) and anxiety ($b = -0.19$, $t = -5.95$, $p < .001$). However, for men, more emotional support was associated with decreased PSS-T1 ($b = -0.55$, $t = -4.67$, $p < .001$), but not anxiety ($p = .312$).

Table 2
Hierarchical regression models of the moderating effect of sex on the relationships between types of social support and perceived stress, anxiety, and depression.

	Stress T1 (n = 6020)	Stress T2 (n = 3358)	Anxiety (n = 3345)	Depression (n = 3345)
	β, *t*	β, *t*	β, *t*	β, *t*
First block: covariates				
Age	−0.29, −22.15***	−0.26, −14.79***	−0.10, −5.76	−0.01, −5.53***
Latinx[a]	0.04, 3.33**	0.06, 3.42**	0.05, 2.59*	0.05, 3.03**
Black non-Latinx[a]	−0.02, −1.90	−0.03, −1.83	0.00, 0.21	0.02, 0.85
Asian non-Latinx-Black[a]	0.02, 1.23	0.02, 1.33	−0.04, −2.33*	−0.02, −1.15
Other non-Latinx[a]	−0.01, −0.80	0.01, 0.30	0.01, 0.44	−0.00, −0.15
Cohort	−0.07, −5.29***	−0.01, −0.50	0.07, 4.15***	0.06, 3.26**
R^2	0.101	0.078	0.018	0.016
F	112.26***	47.24***	10.26***	9.13***
Second block: sex				
Sex	0.12, 10.12***	0.12, 7.30***	0.13, 7.87***	0.05, 2.83**
Δ R^2 since first block	0.015	0.014	0.018	0.002
F	112.49***	48.74***	17.81***	8.99***
Third block: social support				
Emotional coping	−0.17, −9.10***	−0.21, −8.16***	−0.14, −5.37***	−0.18, −6.64***
Instrumental coping	0.20, 10.52***	0.16, 6.09***	0.15, 5.58***	0.10, 3.66***
Δ R^2 since second block	0.016	0.018	0.010	0.014
F	101.79***	46.04***	17.80***	12.44***
Fourth block: interactions				
Sex*emotional coping	−0.06, −2.44*	−0.03, −0.94	−0.14, −3.79***	−0.06, −1.56
Sex*instrumental coping	0.02, 0.64	0.01, 0.26	0.07, 1.92	0.01, 0.12
Δ R^2 since third block	0.001	0.000	0.005	0.001
F	84.23***	37.79***	16.12***	10.65***

Note. T1 = time 1, T2 = time 2.
[a] Reference group = non-Hispanic White.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

4. Discussion

The present research sought to examine emotional and instrumental social support and their associations with psychological outcomes during the COVID-19 pandemic. Using data from a large sample of U.S. adults, we found that both types of social support were significantly associated with perceived stress, anxiety and depression symptoms. Overall, greater use of emotional support was consistently linked to better outcomes, whereas using instrumental support was linked to worse outcomes. For both women and men, emotional support was associated with fewer anxiety symptoms and was associated with less stress at time 1, with a stronger association for women relative to men. This supports prior findings documenting the importance of emotional social support when managing enduring stressors that cannot be quickly and, often, individually resolved (e.g., Compas et al., 2001; Snow-Turek

et al., 1996). Instrumental support seeking may increase awareness related to the inability to control situational factors related to the pandemic and in turn increase anxiety symptoms, or result from situational factors that are difficult to control. Similarly, instrumental social support may function as a form of emotional avoidance, subsequently leading to heightened anxiety in women (Panayiotou et al., 2017). For example, those with heightened anxiety surrounding COVID-19 may engage in behaviors to reduce fears through heightened vigilance (e.g., protecting themselves and loved ones from exposure), which then leads to more awareness of possible threat and increased anxiety. Surprisingly, moderation effects were apparent for perceived stress at time 1 but not time 2, perhaps due to attrition of men and individuals with slightly elevated perceived stress scores.

These findings generally align with studies on a global scale on coping styles and mental health outcomes during the COVID-19 pandemic. In a large cross-sectional Australian sample, the use of instrumental social support was associated with higher anxiety though neither emotional nor instrumental support were associated with depression or stress (Gurvich et al., 2021). Whereas family support (broadly, a form of social support) was found to be a protective factor against poor mental health in college students in China (Huang et al., 2021). Yet, family support was not parsed into emotional and informational support. A study that sampled 100 people living in lockdown in Saudi Arabia used a four-factor model of coping, which separated items from emotional and instrumental support into problem-focused coping and positive coping factors (Agha, 2021). However, no significant associations were found between these factors and stress, anxiety, and depression. Instead, active avoidance and religious/denial factors were associated with increases in these mental health outcomes. While different coping strategies were evaluated, hindering direct comparisons, this research highlights the need for global studies to better understand if these constructs hold in non–Western, Educated, Industrialized, Rich, and Democratic (WEIRD) contexts.

These findings should be interpreted in consideration of study limitations and strengths. Data were collected via an online survey and may not generalize to the U.S. general population, although data collection was through large U.S. national sampling. The most impacted and distressed individuals (e.g., those ill, healthcare workers) may have prioritized immediate concerns as opposed to completing a survey. Illness and increased distress may also account for individuals who did not complete all of time 1 and time 2. While use of both types of social support were significant predictors of all outcomes, they explained minimal model variance (1–2%) after accounting for covariates. Albeit small, this finding generally aligns with the relative importance of various forms of coping on mitigating psychological outcomes, such as when managing ovarian cancer (Hill, 2016) and during the COVID-19 pandemic in a sample of Polish students (Rogowska et al., 2020). This finding may also be explained by the current study sampling the general population, where the pandemic demonstrated a wide range of impact. Additionally, the brevity of measures (which were selected to prioritize a range of measures, length of administration, and funding in the early months of the pandemic) may not have fully captured the breadth of social support, and anxiety and depression symptoms, although all are well-established measures. Moreover, we evaluated social support as a specific type of coping that was likely affected by stay-at-home orders and social distancing restrictions and did not include other potentially relevant coping strategies. Lastly, the moderation analyses must be interpreted in the context of sex and not gender, as the item asked about sex and did not explicitly include non-binary response options. Due to the use of social support being linked to gender socialization (Reevy and Maslach, 2001) and that COVID-19 pandemic has negatively impacted perceived social support and mental health disproportionally in gender minority populations (Moore et al., 2021), future research would benefit from evaluating gender. Despite these limitations, the sample was from a large U.S. convenience sample and conducted using a cohort design where data were collected from March to July 2020, and account for each two-week period during that time, a period in which the nature of the pandemic was rapidly changing.

Generally, emotional social support played a protective role for psychological outcomes, while instrumental social support was associated with more intense perceived stress, anxiety and depression symptoms during the COVID-19 pandemic. These findings, albeit small, have important implications for clinical practice and psychoeducation to help manage uncontrollable and enduring periods of distress.

As coping skills deficits are amenable to treatment (Folkman and Moskowitz, 2004), future interventions should emphasize enhancing the use of emotional social support, which may include seeking out and strengthening relationships with others who offer empathy, reassurance, and compassion. While not tested, the offering of emotional support to others might foster mutually beneficial relationships. Using emotional support appears especially important for women to help manage distress during a public health threat characterized by uncertainty. Additionally, as informational social support might be ineffective against worsening stress, anxiety, and depression, health professionals might recommend alternatives.

As rates of infections decrease and restrictions are lifted, there remains a strong likelihood that negative mental health impacts are likely to remain for select populations. We must consider these findings, which implicate promoting more effective social support, to help inform mental health interventions in our efforts to attenuate deleterious mental health impacts of the COVID-19 pandemic and future public health threats.

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CRediT authorship contribution statement

Study concept and design: CLM, GMC, AJL. Acquisition, analysis, or interpretation of data: CLM, MMK, CSB, AJL. Drafting of the manuscript: CLM, GMC. Critical revision of the manuscript for important intellectual content: All authors.

Conflict of interest

None of the authors report any conflicts of interest with this work.

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