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Original Article

Coping Styles and Depression in Working Mothers During Covid-19

Christina Pavlov[1]*, MA; Christine Limbers[1], PhD

[1]Department of Psychology and Neuroscience, Baylor University, Waco, USA

Corresponding author:* Christina Pavlov, MA; One Bear Place One Bear Place #97334, Postal code: 76798, Waco, TX 76798, USA. **Tel: +1 805 7201500; **Email:** Christina_McCollum1@baylor.edu

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Abstract

Background: The pandemic of Coronavirus-2019 (COVID-19) has exposed working mothers to a disproportionate amount of stress. The present study aimed to examine the coping strategies associated with depression in this group during the early months of the COVID-19 pandemic in the United States.
Methods: The cross-sectional sample consisted of 192 working mothers from the United States (76% married, 70.3% white, mean age=33.4 years). The participants were recruited through a Qualtrics panel in April 2020 and completed the questionnaires of the Brief-COPE and the Patient Health Questionnaire-8 (PHQ-8) online. The results from t-tests, ANOVAs, Pearson correlations, and hierarchical linear regression analyses were examined.
Results: The coping styles of self-distraction (r=0.17, P=0.02), denial (r=0.32, P<0.001), substance abuse (r=0.39, P<0.001), instrumental support (r=0.22, P=0.002), behavioral disengagement (r=0.464, P<0.001), venting (r=0.44, P<0.001), planning (r=0.22, P=002), humor (r=0.26, P<0.001), and self-blame (r=0.57, P<0.001) were found to be significantly correlated with depression. The hierarchical linear regression revealed the followings: venting (B=0.561 and P=0.033) and self-blame (B=1.212 and P<0.001).
Conclusion: These results, coupled with the elevated prevalence of depression in the sample, highlighted the importance of considering coping strategies when evaluating the depression-related risk factors in working mothers during the COVID-19 pandemic.

Keywords: Coping, Depression, COVID-19, Mothers

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1. Introduction

1.1. Working Mothers and COVID-19

Over the last several decades, the employment rate of mothers in the U.S. has grown substantially (1). As the number of mothers in the workforce has risen, a growing number of studies have documented the unique stressors experienced by this population (2). Data indicated that women invest significantly more hours in household labor than men, regardless of demographic or life course characteristics, including employment status and education level (3).

The pandemic of Coronavirus-2019 (COVID-19) has led us to take numerous public health measures in order to decelerate the spread of the virus. A combination of geographic and social distancing has created an environment in which mental health problems drastically increased (4). According to the available data, since the beginning of the COVID-19 pandemic, there has been a significant increase in the rates of psychological issues worldwide (5-9). Due to stay-at-home orders during the early months of the pandemic, numerous employees had to work remotely. This had certain implications for working parents, particularly working mothers, who experienced an increased demands on their time due to balancing work and domestic responsibilities (10, 11). Disproportionate to their male counterparts, working mothers during the lockdowns have had to adapt their workdays so that they fit child-care responsibilities, which led to overtaxing their energy (11). This has attributed to higher levels of mental health problems in mothers compared to fathers during the COVID-19 pandemic (12, 13). It is important to elucidate the factors associated with adverse mental health outcomes during the COVID-19 pandemic for working mothers, including coping strategies.

1.2. Depression

One mental health issue that has risen substantially since the beginning of the COVID-19 pandemic is believed to be depression (12). It is characterized by the presence of various negative symptoms, such as anhedonia, lethargy, and depressed mood. These factors have severe impacts on daily functioning; typically affecting up to about 17% of women

throughout their lifespan (14). Social isolation has been demonstrated to be an important factor to consider when examining depression (15). With this in mind, there is a reason to believe that the COVID-19 lockdown would have a significant effect on the rate of depression. The data from a large (n=10,368) national sample collected in the early months of the COVID-19 pandemic suggested that the general population scored on average a point higher than the cutoff score of clinical symptomology in the Center of Epidemiological Studies Depression Scale (16). Additionally, vulnerable groups, including women, were distinguished as being at an even greater risk (16). During the COVID-19 pandemic, the rate of depression among working mothers has been shown to be much higher than the average prevalence rate (~37%) (17). An additional study conducted in March 2020 revealed that vulnerable groups, such as women, were also at an increased risk of suicidality due to the COVID-19 pandemic. This rise in the rate of depressive symptomology and suicidality indicates unique risk factors for this population, which need to be explored more thoroughly.

1.3. Coping Strategies

Coping is defined as responses to adversity and the distress as a result of it (18). Adaptive coping strategies (cognitive restructuring, problem-solving) focus on dealing with/ changing the problem or one's response to them and are related to positive outcomes, including resilience (19, 20). Conversely, maladaptive coping strategies (denial, substance abuse) focus on avoiding the problem and are associated with negative outcomes, like heightened levels of stress and depression (19). Coping strategies applied in response to the COVID-19 pandemic have been shown to be associated with mental health outcomes; for example, utilization of the adaptive coping strategy of seeking social support was correlated with fewer symptoms of anxiety in Chinese college students during COVID-19 (6). Maladaptive/avoidant coping strategies, such as denial, self-blame, substance use, venting, behavioral disengagement, and self-distraction, have been associated with elevated symptoms of depression in adults during the pandemic (8). Working mothers are known as a population facing increased demands and experiencing disproportionate levels of stress and depression during this time (21, 22). Nonetheless, no studies to date have examined the association between depression and coping strategies used by this population in the United States during the beginning months of the COVID-19 pandemic.

1.4. Current Study

We conducted this study to assess the depression-associated coping strategies in working mothers during the beginning months of the COVID-19 pandemic. It was hypothesized that avoidant coping strategies, such as denial, self-blame, substance use, venting, behavioral disengagement, and self-distraction, would be correlated with depression.

2. Methods

2.1. Participants

The cross-sectional data for this study were collected as part of a larger project in the United States examining the moderating effect of physical activity on the association between parenting stress and quality of life in working mothers during the COVID-19 pandemic in April 2020 (23). The sample consisted of 192 working mothers. In order to participate, an individual needed to meet the following inclusion criteria: being a woman aged 18 years or older; having at least one child aged five years old or younger who lives with them at least 50% of the time; working a minimum of 30 hours per week, which is consistent with the definition of a full-time employee according to the Internal Revenue Service (24); reporting that despite normally working outside of their home, they have been forced to work full-time remotely due to COVID-19. Mothers who were not literate in English or were not from the United States were excluded from the study. The Institutional Review Board (IRB) at the authors' university approved the present work. In compliance with the IRB approval for this study, due to privacy concerns, the data used herein is not openly available.

2.2. Measures

2.2.1. Coping Strategies

To measure coping styles, the Brief-COPE (19) was administered. The Brief-Cope consists of 28 items measuring 14 different adaptive and maladaptive coping styles. Adaptive coping comprised religion, active coping, planning, acceptance, positive reframing, instrumental support, emotional support, and humor. Meanwhile, maladaptive coping included self-distraction, self-blame, venting, behavioral disengagement, denial, and substance abuse. The Brief-COPE has been previously validated in multiple age groups (25) and culturally different populations (26, 27). The participants were asked to respond based on what

they had been doing to cope with the COVID-19 outbreak over the week before. They used a four-point Likert-type scale ranging from "*I haven't been doing this at all (1)*" to "*I've been doing this a lot (4)*". The responses were summed for a total score with higher scores indicating the increased utilization of the coping strategy. In this study, the Cronbach's alpha for this scale was 0.88.

2.3. Depression

To measure the self-reported depressive symptoms, we employed the Patient Health Questionnaire (PHQ-8) (28). The PHQ-8 has been previously validated as a diagnostic tool and a measure of depression in clinical settings (29, 30), and in large population-based surveys (28). The participants were asked to indicate on eight items (little interest or pleasure in doing things, and feeling down, depressed, or hopeless) how often they were bothered by the symptom in the week before on a four-point Likert-type scale ranging from "*Not at all (0)*" to "*Nearly every day (3).*"

Participant's responses were totaled with possible scores ranging from 0-24. The scores of 0-4 were classified as minimal/no depression, 5-9 as mild depression, 10-14 as moderate depression, 15-19 as moderately severe depression, and 20-24 as severe depression. Cronbach's alpha for the PHQ-8 was .89 in this study.

2.4. Demographic Information

The subjects were also asked to complete a demographic questionnaire assessing the following information: age, number of children aged 18 years and younger, race/ethnicity, singular annual income, household annual income, marital status, highest level of education, child-care responsibility during COVID-19, and the availability of daycare/school for children during COVID-19.

2.5. Procedures

Data collection for this study was carried out in April 2020 through a Qualtrics panel. Qualtrics obtains panels of people meeting specific criteria set by researchers to serve as participants in online research studies. The study was advertised as one about how physical activity and eating behaviors impact working mothers and how working mothers can be supported to reach an adequate level of physical activity. The potential participants were asked to respond to a set of screening questions online to determine if they met the inclusion criteria of the study. Via email, we invited those meeting the following criteria to complete the online consent form and surveys: being a woman aged 18 years or older with at least one child aged five years old or younger who lived with them at least 50% of the time, working a minimum of 30 hours per week, and having normally worked outside of the home, but being currently forced to work from home full-time due to COVID-19. The participants that met the inclusion criteria and filled out the questionnaires received compensation through Qualtrics Panels. Compensation included a variety of different types of e-commerce compensation options valued between $1.50 and $2.00.

The subjects who met the inclusion criteria were also able to proceed with the questionnaires, including the PHQ-8, Brief-COPE, and a demographic questionnaire. The potential participants who indicated they were not literate in English and were not from the United States were not permitted to continue with the questionnaires.

2.6. Statistical Analysis

Previous literature using the Brief-COPE in a multiple linear regression analysis with measures of depression demonstrated generally weak effect sizes (*r*=0.1 to *r*=0.3) (31). Therefore, a power analysis specifying the desired effect size, power, and alpha level (r=0.3, 1-β=0.95, α=0.05) was conducted using G*Power resulting in a minimum desired sample size of 160 participants. IBM Statistical Package for the Social Sciences (SPSS) Version 26 was utilized to complete the remaining quantitative analysis for this work. The data were plotted and examined for normality. The missing data were minimal (n=2) and were deleted listwise.

2.7. T-Tests and ANOVA

Responses to demographic questions were coded numerically prior to the analysis. In order to determine which demographic variables should be controlled in the regression analysis, a series of independent samples t-tests and a one-way analysis of variance (ANOVA) with Tukey post-hoc tests were employed to assess the systematic differences in depression based on demographic variables. The demographic variables of age, race, and number of children under the age of 18 were dichotomized prior to being analyzed in the independent samples t-test analysis (less than or greater than 35 years old, white

and non-white, and greater or less than 2 children, respectively). The following factors were also included in the independent samples t-tests: marital status (0=not married, 1=married), primary caregiver status (0=not primary caregiver, 1=primary caregiver), and daycare open status (0=not open, 1=open). ANOVAs were computed to assess the systematic differences in depression based on the highest education level (High School Degree=1, Some college=2, 4-year college degree (BA, BS)=3, Master's degree (MS, MA, MBA)=4, Doctoral or Professional Degree (JD, MD, RN, PsyD)=5, Doctoral Academic Degree (PhD,)=6), singular annual income (Under $10,000=1, $10,000 - $19,999=2, $20,000 - $29,999=3, $30,000 - $39,999=4, $40,000 - $49,999=5, $50,000 - $74,999=6, $75,000 - $99,999=7, $100,000 - $150,000=8, Over $150,000=9), and combined annual income (Under $10,000=1, $10,000 - $19,999=2, $20,000 - $29,999=3, $30,000 - $39,999=4, $40,000 - $49,999=5, $50,000 - $74,999=6, $75,000 - $99,999=7, $100,000 - $150,000=8, Over $150,000=9). A P-value of less than 0.05 was set as the level of significance.

2.8. Pearson Correlations

Pearson correlations were examined between BRIEF-Cope coping strategies (self-distraction, active coping, denial, substance abuse, emotional support, instrumental support, behavioral disengagement, venting, positive reframing, planning, humor, acceptance, religion, and self-blame), and depression. Pearson correlations were classified as small ≤0.1, medium ≥0.3, or large ≥0.5 (32).

2.9. Main Analysis

A hierarchical linear regression analysis was conducted to assess the explanatory power of the coping strategies associated with depression above and beyond the relevant demographic variables. Block 1 contained the demographic variables that demonstrated statistically significant differences based on the demographic group by the independent samples t-tests (age and daycare open status). Block 2 comprised the coping strategies associated with depression in the Pearson correlation analysis (self-distraction, denial, substance abuse, instrumental support, behavioral disengagement, venting, planning, humor, and self-blame). The resulting standardized beta coefficients, confidence intervals, and $\Delta R2$ were examined for explanatory power. The level of significance in explanatory power was determined with the standardized beta and the $\Delta R2$ at P<0.05.

3. Results

3.1. Demographic Variables

The socio-demographic characteristics of the subjects are presented in Table 1. The majority of the participants reported being married (76%) and were identified to be white (70.3%). Their mean age was 33.4 years (SD=6.17; Range=19-60 years). The number of children under the age of 18 living at home with the participants ranged from 1-10 children with the average being 1.70 (SD=1.26). Approximately 94% of the subjects indicated that they were the primary one responsible for child-care in their household at the time that the study questionnaires were completed. Most of them had obtained a minimum of a four-year college degree (81.3%) and approximately 78% reported that the daycare or school that their child (five years old or younger) attended had closed due to COVID-19. Almost half of the mothers (48.1%) reported a minimum household annual income of at least $75,000. On the PHQ-8, 28.3% of the participants reported minimal depression, 36.6% mild depression, 19.3% moderate depression, 11% moderately severe depression, and 4.7 % reported severe depression.

3.2. T-tests and ANOVAs

After computing the independent samples t-tests for the demographic variables in this study, only age (t=-3.25, P=0.001) and daycare open status (t=2.32, P<0.001) demonstrated significant differences concerning depressive symptoms based on group affiliation. The one-way ANOVA revealed no statistically significant group differences in terms of depressive symptoms based on the highest education level, singular annual income, and combined annual income.

3.3. Pearson Correlations

Table 2 depicts the correlations between coping styles and depression. The coping styles of self-distraction (r=0.17, P=0.02), denial (r=0.32, P<0.001), substance abuse (r=0.39, P<0.001), instrumental support (r=0.22, P=0.002), behavioral disengagement (r=0.464, P<0.001), venting (r=0.44, P<0.001), planning (r=0.22, P=0.002), humor (r=0.26, P<0.001), and self-blame (r=0.57, P<0.001) were significantly correlated with depression in this sample. All of these associations were in a limited range with the exception of correlation between depression and behavioral disengagement and that between depression and venting, both of which were in a wide range.

Table 1: Demographic data of the participants

Characteristics	N or Mean	% or SD	Range
Age	33.40	6.17	19-60
Number of children aged 18 years and younger at home	1.70	1.26	1-10
Marital status			
Married	146	76.0%	-
Not married	46	24.0%	-
Daycare or school of their child aged five years or younger closed due to COVID-19			
Yes	149	77.6%	-
No	43	22.4%	-
Mother is identified as primarily responsible for caring for the child or children during COVID-19			
Yes	180	93.8%	-
No	12	6.3%	-
Highest level of education			
High school	11	5.7%	-
Some college	25	13.0%	-
Four-year college	85	44.3%	-
Master's	60	31.3%	-
Doctorate	11	5.7%	-
Race/ Ethnicity			
White	135	70.3%	-
Black	11	5.7%	-
Hispanic	20	10.4%	-
Asian	23	12.0%	-
Other	3	1.6%	-
Singular annual income			
Under $10,000	1	.5%	-
$10,000 to $19,999	5	2.6%	-
$20,000 to $39,999	37	19.3%	-
$40,000 to $74,999	91	47.4%	-
$75,000 to $150,000	51	26.6%	-
Over $150,000	7	3.6%	-
Combined annual income			
$10,000 to $19,999	4	2.2%	-
$20,000 to $39,999	16	8.8%	-
$40,000 to $74,999	42	23.2%	-
$75,000 to $150,000	81	44.7%	-
More than $150,000	38	21.0%	-
Decline to answer	11	5.7%	-

N=192

3.4. Hierarchical Linear Regression Analysis

Table 3 demonstrates the R^2, ΔR^2, and 95% confidence interval for the multiple linear regression analysis. Only venting (B=0.561 and P=0.033) and self-blame (B=1.212 and P<0.001) accounted for a significant proportion of variance above and beyond the relevant demographic variables (age, the number of children under the age of 18, and open status of daycare/school). Overall, this model accounted for about 40% (R^2=0.399) of the variance in depression for this sample.

4. Discussion

The current study assessed the depression-associated coping strategies in working mothers during the early months of the COVID-19 pandemic. Our hypothesis was supported in that maladaptive/avoidant coping strategies, including self-distraction, denial, substance abuse, behavioral disengagement, venting, and self-blame, which were attributed to greater symptoms of depression in our sample of working mothers. This is consistent with previous literature that indicates maladaptive/avoidant coping strategies are associated with poorer mental health outcomes (33). It is worth noting that in our sample of working mothers, we did not observe adaptive coping skills to assign to fewer depressive symptoms. In certain cases, adaptive coping skills (planning, instrumental support) were found to be associated with higher symptoms of depression.

Table 2: Pearson correlations of demographic and study variables

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. PHQ-8	8.22	5.56	-														
2. Self-distraction	5.34	1.52	0.19**	-													
3. Active coping	5.24	1.45	0.12	0.34**	-												
4. Denial	3.45	1.65	0.28**	0.11	0.26**	-											
5. Substance abuse	3.30	1.75	0.37**	0.03	0.06	0.33**	-										
6. Emotional support	4.88	1.73	0.11	0.30**	0.31**	0.24**	0.06	-									
7. Instrumental support	4.23	1.70	0.22**	0.27**	0.34**	0.34**	0.14	0.68**	-								
8. Behavioral disengagement	3.36	1.54	0.46**	0.12	0.14	0.53**	0.43**	0.22**	0.29**	-							
9. Venting	4.27	1.65	0.45**	0.26**	0.29**	0.41**	0.28**	0.45**	0.47**	0.48**	-						
10. Positive reframing	5.48	1.58	0.09	0.34**	0.53**	0.20**	-0.04	0.28**	0.33**	0.11	0.31**	-					
11. Planning	5.10	1.65	0.24**	0.35**	0.57**	0.23**	-0.00	0.32**	0.37**	0.23**	0.36**	0.46**	-				
12. Humor	4.36	1.80	0.25**	0.26**	0.28**	0.10	0.17*	0.22**	0.26**	0.28**	0.37**	0.25**	0.25**	-			
13. Acceptance	5.80	1.50	-0.03	0.41**	0.33**	-0.12	0.00	0.28**	0.22**	-0.14*	0.12	0.47**	0.41**	0.22**	-		
14. Religion	4.71	2.14	-0.02	0.21**	0.40**	0.31**	0.02	0.36**	0.37**	0.09	0.22**	0.40**	0.29**	0.17*	0.21**	-	
15. Self-blame	3.66	1.66	0.57**	0.20**	0.18*	0.42**	0.47**	0.14*	0.30**	0.62**	0.51**	0.19**	0.35**	0.27**	0.01	0.10	-

N=192, *P<0.05, **P<0.01

One potential explanation for this finding is that working mothers in our sample generally reported high levels of depressive symptoms; for example, 35% of the mothers in our sample reported moderate to severe symptoms of depression. Nonetheless, other research on coping strategies and depression during the COVID-19 pandemic has also found none of the coping strategies related to fewer depressive symptoms (34). These results highlight the importance of studying the associations between coping and depression during this unprecedented time and point to the elevated symptoms of depression many people were experiencing during the early months of the pandemic.

After controlling the relevant demographic variables, the coping strategies of venting and self-blame accounted for a significant proportion of variance in depression scores. As such, for this population, the use of venting and self-blame as coping strategies could be associated with an increased risk of depressive symptoms. While efficacious treatments for depression in mothers include cognitive-behavioral therapy, interpersonal psychotherapy, and antidepressant medication (35), our findings suggested that interventions that target thoughts of self-blame and facilitate the development of more proactive coping strategies may be particularly valuable in working mothers during times of crisis (36).

The coping strategy with the most explanatory power in this study was self-blame. Self-blame often involves a distorted perception of the outcome of an unpreventable event to be the responsibility of oneself (37). This may involve perceived external stressors as being uncontrollable/unstable while perceiving negative internal traits as being stable, such as "I am lazy and weak" (37, 38). Self-blame has been associated with elevated rates of depression in many different contexts (39). However, it is not often the main target of depression-related interventions. Cognitive-behavioral therapies may be effective in reducing the distortion of the cognitions, thereby reducing the utilization of self-blame (40). Nevertheless, there is evidence to support that the application of Self-Blame and Perspective-Taking Intervention (SBPI) may decrease depressive symptoms by specifically targeting self-blame in a group-therapy setting (41). While it might not be standard, the results of this study revealed that it is important to target self-blame in this population of working mothers in order to reduce depressive symptomology.

One consideration for interventions that address depression in working mothers is time constraints.

Table 3: Linear regression analysis results

	PHQ-8 Depression				
Predictor	R^2	ΔR^2	β	P	95% CI
Block 1	0.048	-	-		-
Age	-	-	-.029	0.591	[-0.242, 0.007]
Daycare open status			1.326	0.099	[0.317, 4.011]
Block 2	0.399	0.351***	-		-
Self-distraction	-	-	0.136	0.559	[-0.323, 0.595]
Denial	-	-	0.038	0.877	[-0.446, 0.522]
Substance abuse	-	-	0.189	0.411	[-0.264, 0.643]
Instrumental support	-	-	-0.125	0.580	[-0.571, 0.321]
Behavioral disengagement	-	-	0.525	0.076	[-0.055, 1.105]
Venting	-	-	0.561*	0.033*	[0.046, 1.076]
Planning	-	-	-0.122	0.606	[-0.589, 0.345]
Humor	-	-	0.116	0.564	[-0.279, 0.511]
Self-blame	-	-	1.212***	<0.001***	[0.656, 1.767]

N=192, *P<0.05, **<0.01, ***<0.001.

As noted previously, numerous working mothers have had increased demands placed on them during the COVID-19 pandemic as they balance work and family responsibilities (10). Over 90% of the working mothers in our sample indicated that despite working from home full-time, they were the primary caregiver for their young child(ren) during the early months of the pandemic. Thus, interventions, such as online interventions, that can be completed by mothers at their convenience and do not require a mother to physically attend an in-person session and find childcare may be particularly useful for this population. O'Mahen and colleagues found that a community population of women in the United Kingdom could be provided with an internet-based behavioral activation-treatment for postnatal depression (42).

There were a number of limitations in the current study; our sample comprised a disproportionate number of white, married, and highly educated working mothers. The potential participants also needed to have access to a computer and active email account to be recruited herein. Hence, our findings may not generalize to the samples of working mothers in the U.S. as a whole, including those who are racially diverse and from lower educational backgrounds. Finally, our study was cross-sectional. Consequently, causation cannot be inferred from our analysis.

5. Conclusion

It is well documented that working mothers often experience elevated work-life conflict due to disproportionate responsibilities compared to their male counterparts. This problem aggravated by the COVID-19 pandemic. As a result, working mothers who were already in a high-risk category for depression have shown a disproportionate increase in the rate of depression. The results of the current study supported the original hypothesis and suggested that the coping mechanisms employed by these working mothers may be risk factors for depression. Specifically, venting accounted for a significant proportion of variance in depression above and beyond the relevant demographic variables. These results, coupled with the elevated prevalence of depression in the sample, highlighted the importance of considering coping strategies when evaluating the depression-related risk factors in working mothers during the COVID-19 pandemic. Future research should further explore the causal direction of this association.

Ethical Approval

The Institutional Review Board (IRB) at the authors' university approved the present work. Also, we invited those meeting the following criteria to complete the online consent form and surveys

Conflict of Interest: None declared.

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