

COVID-19: Coping Strategies Predicting Mental Health Outcomes

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Why is this study important?

1. As of today, there have been *267 million* cases with *5 million* deaths affected by the COVID-19 virus around the world.
2. Increase in the rates of depression, anxiety, and stress during the pandemic
3. Limited longitudinal studies on how coping strategies can predict one's psychological distress during COVID-19

What are coping strategies?

1) Folkman & Lazarus (1984)

- Coping strategies: behavioral and cognitive responses engaged to deal with psychological distress
- Problem-focused vs. Emotion-focused
- Developed "Goodness of Fit" model for coping

2) Carver et al. (1989)

- *Brief Coping Orientation to Problems Experienced (COPE)*
- Problem-focused vs. emotion-focused vs. "less useful" coping

Carver's Coping Strategies (Brief COPE)

- **Problem-focused**: active coping, planning, instrumental support
- **Emotion-focused**: emotional support, acceptance, positive reframing, denial, religion, self-blame, humor
- **"Less useful"/dysfunctional coping strategy**: venting, behavioral disengagement, self-distraction



Current literature on coping during covid-19

Self-blame & behavioral disengagement showed increase in anxiety levels (Gurvich et al., 2020)

Active coping was correlated with lower psychological distress (Yu et al., 2020)

Emotion-focused coping strategies related to higher depressive and anxiety symptoms (Mariani et al., 2020)

Substance use was negatively associated with stress (Prowse et al., 2021)

Aims and Hypothesis

Aim:

Investigated how coping strategies predict mental health outcomes during the Covid-19 pandemic.

Hypothesis:

- Psychological distress may decrease over time
- Adaptive strategies (active coping, acceptance, positive reframing, instrumental support, emotional support, religion, humor and planning) predicts lower psychological distress
- Maladaptive (denial, venting, behavioral disengagements, substance use, self-blame, self-distraction) predicts higher psychological distress

Methods

Data collection & participants

- Data (DASS scores & Brief COPE scores) were collected across three time-points: April, May and June 2020) through Qualtrics
- Participants were collected through WMU student sample and snowball recruitment
- Participants were offered a drawing for \$25 Visa Gift Card, while students were additionally offered extra credit opportunities.
- Number of participants:
 - April (n=277)
 - May (n=124)
 - June (n=88)

Demographics

Participants were:

- Averagely around 40 and above
- Mostly female
- Mostly White individuals
- Mostly stayed with another person

Demographic Variables and Living Situations Over Three Time Points

Variables	Time point 1 n = 277		Time point 2 n = 124		Time point 3 n = 124
	M/count	SD/%	M/count	SD/%	M/count
Age	40.7	24.0	39	15.2	42.5
Gender					
Male	50	18.1	26	21	19
Female	223	80.5	98	79	69
Another gender	4	1.4	0	0	0
Race					
White	248	89.5	114	91.9	83
Mixed	8	2.9	5	4	2
Asian	7	2.5	2	1.6	2
Hispanic	4	1.4	2	1.6	0
Black	6	2.2	0	0	0
Middle Eastern	2	0.7	0	0	0
Pacific Islander	0	0	0	0	0
Living Situation					
Alone	47	17	25	20.2	17
With other people ^a	226	81.6	89	71.8	62
Other	4	1.4	10	8.1	9

Note. ^a Living situation with other people included partner, children, multigenerational, parents, etc.

Measures

Depression, Anxiety and Stress Scales (DASS-21)

- Self-report questionnaire of 21 items with 3 subscales (depression, anxiety, and stress)
- Measures psychological distress
- 4-point rating scale for each 7 items (points can range from 0 to 21) :
 - Did not apply to me at all - 0 ; Applied to me to some degree, or some of the time - 1; Applied to me to a considerable degree, or a good part of time - 2; Applied to me very much, or most of the time - 3
- Internal consistency for each subscale (Cronbach's α) :
 $\alpha = .94$ for depression, $\alpha = .94$ for anxiety, and $\alpha = .94$ for stress

Measures

Brief Coping Orientation to Problems Experienced (COPE)

- 14 subscales with 2 items each, of self-report questionnaire
- Measures coping strategies
- 4-point rating scale for each 2 items
- 1 - *I haven't been doing this at all* ; 2 - *I've been doing this a little bit* ; 3 - *I've been doing this a medium amount* ; 4 - *I've been doing this a lot*
- Internal consistency for each subscale was calculated.

Measures

Internal Consistencies of Each Subscales in Brief COPE

- *Unacceptable*: self-distraction ($\alpha < 0.50$)
- *Poor*: Acceptance ($\alpha = 0.57$)
- *Questionable*: active coping ($\alpha = 0.67$), venting ($\alpha = 0.64$), planning ($\alpha = 0.67$), and self-blame ($\alpha = 0.63$)
- *Acceptable*: Denial ($\alpha = 0.76$), use of instrumental support ($\alpha = 0.79$), behavioral disengagement ($\alpha = 0.76$), and positive reframing ($\alpha = 0.75$)
- *Good*: use of emotional support ($\alpha = 0.83$) and humor ($\alpha = 0.81$)
- *Excellent*: substance use ($\alpha = 0.97$) and religion ($\alpha = 0.90$)

Statistical Analyses

1. Ran a series of Linear Mixed Models with R

- Fixed effects: time and Brief COPE subscales
- Random effect: participants
- Controlled variables: age and gender
- alpha: .05

2. *p*-values: Satterthwaite method

3. Holm-correction method

- To control family-wise error rate in multiple comparisons

4. Participants were screened for:

- Careless responding
- Consecutive repeated responses
- Mahalanobis Distance: Outliers (2)

Main & exploratory analyses

Main analysis:

1. Changes psychological distress over three time-points
2. Relationship of coping strategies on overall psychological distress

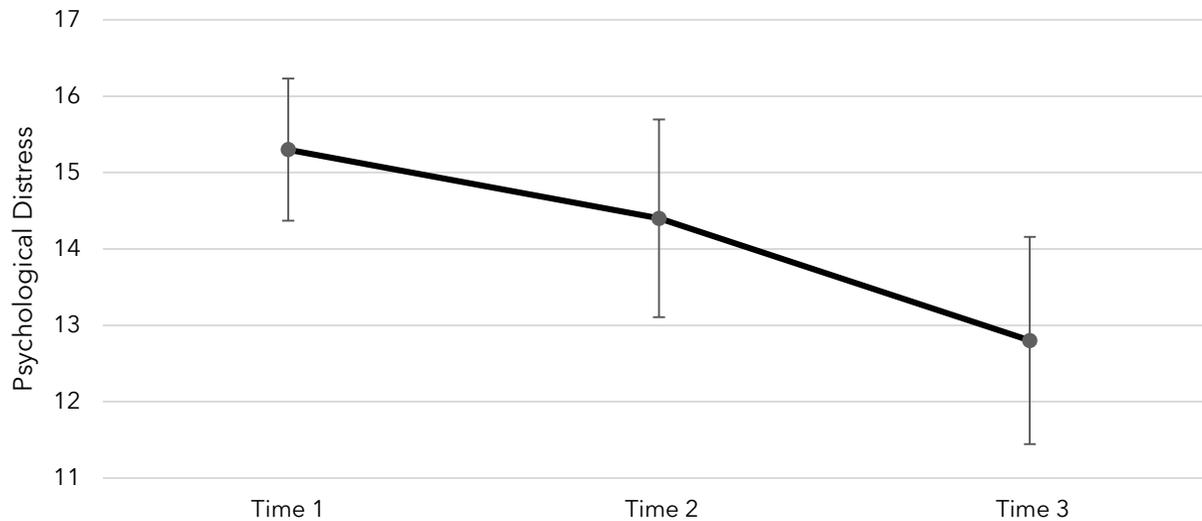
Exploratory analyses:

The relationship between each subscale in the DASS-21 for every coping strategy on brief COPE.

- Associations between 14 coping strategies and depression/anxiety/stress respectively

Results (Main analyses)

Psychological Distress Over Time



- **Decrease** in psychological distress over time
- Average of Time-point 1: 15.3
- Average of Time-point 2: 14.4
- Average of Time-point 3: 12.8

Note. Psychological distress measured through the total score of the Depression, Anxiety, Stress Scale (DASS) throughout three time points. Error bars shows standard error of the mean.

Post hoc comparison

Contrasts between 3 time points

- Examined changes in rate of psychological distress between three time-points
- Fixed effect: time
- Significance:
 - Time 1 (April) and Time 3 (June) (est. = -2.208, $p = .01$)
 - Time 1 (April) and Time 2 (May) (est. = -1.575, $p = .046$)

Coping Strategies Over Time

Descriptive Statistics on Coping Strategies throughout Three Time Points

Coping strategies	Time point 1 n = 267		Time point 2 n = 122		Time point 3 n = 88	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Active coping	5.1	1.6	5.3	1.5	5.4	1.7
Denial	2.7	1.2	2.6	1.2	2.5	1.2
Substance use	3.3	1.8	3.2	1.5	2.9	1.4
Use of emotional support	5.3	1.8	5.5	1.5	5.5	1.7
Use of instrumental support	4.5	1.7	4.8	1.5	4.9	1.7
Behavioral disengagement	3.1	1.5	3.0	1.4	2.8	1.2
Venting	4.3	1.4	4.6	1.5	4.5	1.5
Positive reframing	5.3	1.6	5.1	1.7	5.2	1.7
Planning	5.1	1.6	5.3	1.5	5.1	1.6
Humor	4.6	1.8	4.5	1.5	4.3	1.8
Acceptance	6.6	1.3	6.5	1.2	6.5	1.3
Religion	4.3	2.1	4.0	2.2	4.1	2.1
Self-blame	3.4	1.5	3.3	1.5	3.3	1.4

Note. Means and standard deviations were generated from using the R software.

Effects of Coping Strategies on Overall Psychological Distress

Significant Coping Strategies measured with Brief COPE

Predictor Variables	Est.	β	S.E.	<i>t</i>	<i>d.f.</i>	<i>p</i>
Denial	2.595	0.262	0.377	6.876	435.269	0.000
Intercept	13.167	-0.018	2.044	6.44	341.623	0.000
Substance use	1.259	0.180	0.295	4.264	463.927	0.000
Intercept	15.701	-0.015	2.114	7.427	327.982	0.000
Behavioral disengagement	3.22	0.395	0.272	11.846	419.995	0.000
Intercept	8.489	-0.025	1.869	4.541	352.929	0.000
Venting	1.529	0.196	0.306	5.001	423.18	0.000
Intercept	13.31	-0.007	2.283	5.831	383.534	0.000
Humor	0.922	0.136	0.279	3.305	451.091	0.001
Intercept	15.539	-0.013	2.335	6.656	373.218	0.000
Self-blame	3.045	0.387	0.286	10.652	452.315	0.000
Intercept	8.754	-0.020	1.901	4.606	348.859	0.000

Note. *p* values were corrected for multiple comparisons with Holm correction method. Coping strategies presented were positively associated with psychological distress.

Results

(Exploratory analyses)



Association between Coping Strategies and **Depression**



Decreases depression:

Active coping ($p < .001$), acceptance ($p = .026$),
positive reframing ($p = .016$)

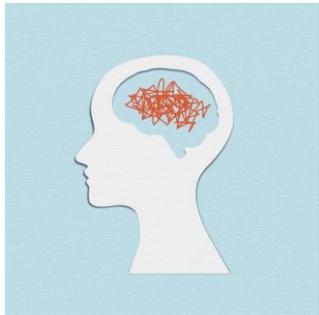
Increases depression:

denial ($p < .001$), substance use ($p < .001$),
behavioral disengagement ($p < .001$), venting ($p < .001$), humor ($p = .026$), self-blame ($p < .001$)

No associations:

Emotional support, instrumental support,
planning & religion

Association between Coping Strategies and **Anxiety**



Decreases anxiety:

positive reframing ($p = .002$)

Increases anxiety:

denial ($p < .001$), substance use ($p < .001$),
behavioral disengagement ($p < .001$), venting ($p < .001$), humor ($p < .001$), self-blame ($p < .001$)

No significance:

Active coping, emotional support, instrumental support, planning, acceptance & religion

Association between Coping Strategies and Stress



Decreases stress:

Acceptance ($p = .039$)

Increases stress:

Denial ($p < .001$), substance use ($p = .001$), behavioral disengagement ($p < .001$), venting ($p < .001$), humor ($p = .006$), self-blame ($p < .001$)

No significance:

Emotional support, Instrumental support, & planning, active coping, positive reframing, and religion

Discussion





Current findings and previous literatures

Self-blame & behavioral disengagement showed increase in anxiety levels (Gurvich et al., 2020) - CONSISTENT

Active coping was correlated with lower psychological distress (Yu et al., 2020) - INCONSISTENT

Emotion-focused coping strategies related to higher depressive and anxiety symptoms (Mariani et al., 2020) - PARTIALLY CONSISTENT

Substance use was negatively associated with stress (Prowse et al., 2021) - CONSISTENT

All together

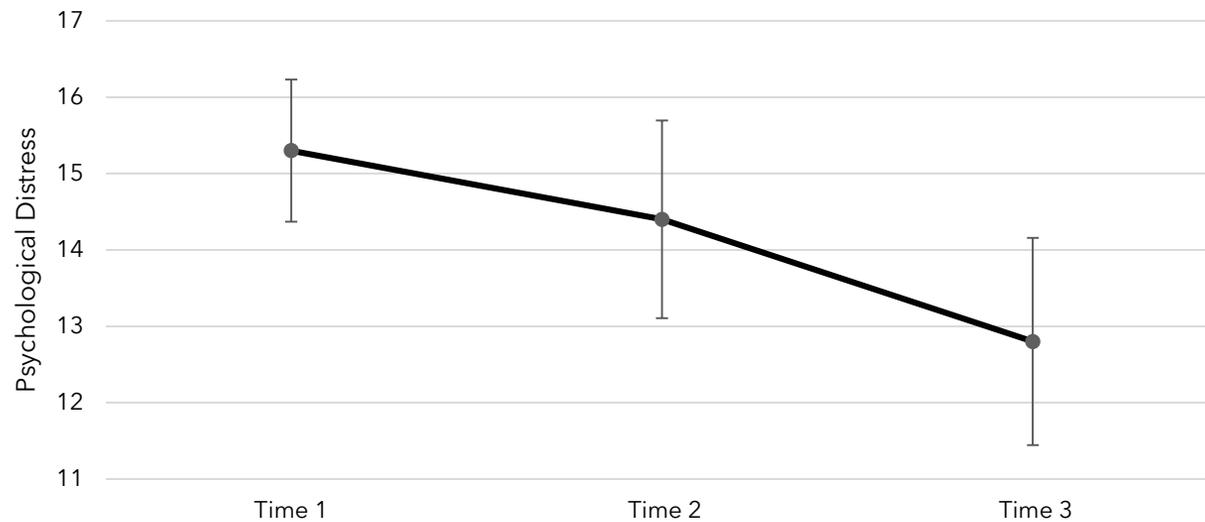
Main:

- Psychological distress decreased over time
- 6 coping strategies (denial, substance use, behavioral disengagement, venting, humor, and self-blame) predicted greater psychological distress.

Exploratory:

- For depression, active coping, positive reframing, and acceptance were helpful.
- For anxiety, positive reframing was helpful.
- For stress, acceptance was helpful.

Decrease in Psychological Distress Over Time



Note. Psychological distress measured through the total score of the Depression, Anxiety, Stress Scale (DASS) throughout three time points. Error bars shows standard error of the mean.

COVID-19:

- Consistent with previous literature (Robinson & Daly, 2021; Zhou et al., 2020; Bendau et al., 2021)

Past pandemics (H1N1 and SARS):

- Consistent with previous literature (Bults et al., 2011; Leung et al., 2005; Cheng & Cheung, 2005)

Why might this be?

1. Build-up psychological resiliency (Wu et al., 2020; Shamblaw et al., 2020)
2. Coping flexibility (Cheng et al., 2021)



Interesting findings: Humor

- Humor predicted higher psychological distress
 - Inconsistent with previous findings (Gurvich et al., 2021; Saxon et al., 2017), where humor helped decrease stress
 - Understanding how humor is used, specifically, coping humor

Interesting findings: Religion

- Findings: Not related with depression, anxiety, and stress
- Consistent with previous findings (Gurvich et al., 2021)
- Inconsistent with Babore et al. (2020) and Mahmoud et al. (2012), where turning to religion led to lower depression and stress
- Understand how people use religion to cope (Ano & Vasconcelles, 2005)

Active coping & depression

- Predicted to be more helpful for depression, rather than anxiety and stress
 - Consistent with previous study: active coping correlated to less symptoms of depression (Chou et al., 2011; Langford et al., 2020)
- Why?
 - Active coping involves the behavioral activation system in which individuals engage in healthy alternative behavior.
 - High level of stress might lead to passive coping instead (Chou et al., 2011)

Acceptance

- Found to be helpful for stress and depression, not anxiety
- Inconsistent as Shamblaw et al. (2021) found no association between acceptance and depression, anxiety, or stress.
- Hayes defined acceptance as being "open, receptive, and flexible" according to every experience in life (Hayes et al., 2013).
- Pre-COVID: Past study found that a virtual acceptance-based service helped students feel less depressed
- Pandemic: Chinese international students had lower stress levels once an ACT intervention was performed (Xu et al., 2020)

Positive reframing

- Predicted to be more helpful for depression and anxiety, rather than stress (Roohafza et al., 2014; Horwitz et al., 2017; Gurvich et al., 2021)
- Why?
 - reframing may not resolve the stressful situation itself
 - Self-compassion and positive reframing (Sirois et al., 2015)



Implications

- Highlights the need to explore positive/helpful coping strategies
- Informs the need to appraise the situation before deploying certain coping strategies
- Affirms the data on psychological distress decreasing over time and may need a period of adjustment
- Highlight the need for government to introduce and educate the public on more effective coping strategies

Limitations

1. Survey collected data
 - Self-reported data
 - Lack of prior medical records of pre-existing mental health
 - Lack of information on emotional processing style
2. Internal Consistency of Brief COPE
 - Some poor and questionable scores
3. Disproportioned demographics

Future Directions

- Use alternative coping scales
 - With higher internal consistency: Coping Inventory for Stressful Situations (CISS) (Parker & Endler, 1992) with good reliability (McWilliams et al., 2003).
- Collect more details on pre-existing mental health conditions
- Diversify the demographics and investigate how age and gender might affect coping strategies
- Compare coping strategies during pandemics/outbreaks and other stressful situation
- Investigate the effectiveness of types of humor and religion during a pandemic

Conclusion

- **Psychological distress decrease over time**
- **Maladaptive:** Denial, substance use, behavioral disengagements, humor, venting, and self-blame predicts higher psychological distress.
 - Religion, seeking emotional and instrumental support does not predict lower distress; had no significance.
- **Adaptive:** dependent upon the different types of psychological distress (depression, anxiety, and stress)
- More longitudinal research should be done on coping strategies that are adaptive towards the pandemic with alternative coping scales.

References

- Ano, G. G., & Vasconcelles, E. B. (2005). Religious coping and psychological adjustment to stress: A meta-analysis. *Journal of clinical psychology*, 61(4), 461-480. <https://doi.org/10.1002/jclp.20049>
- Babore, A., Lombardi, L., Viceconti, M. L., Pignataro, S., Marino, V., Crudele, M., Candelori, C., Bramanti, S. M., & Trumello, C. (2020). Psychological effects of the COVID-2019 pandemic: Perceived stress and coping strategies among healthcare professionals. *Psychiatry research*, 293, Article 113366. <https://doi.org/10.1016/j.psychres.2020.113366>
- Baker, J. P., & Berenbaum, H. (2008). The efficacy of problem-focused and emotional approach interventions varies as a function of emotional processing style. *Cognitive Therapy and Research*, 32(1). Doi: 10.1007/s10608-007-9129-y
- Centers for Disease Control and Prevention. (2021, December 2). *Science Brief: Omicron (B.1.1.529) Variant*. <https://www.cdc.gov/coronavirus/2019-ncov/science/science-briefs/scientific-brief-omicron-variant.html>
- Chou, P.-C., Chao, Y.-M. Y., Yang, H.-J., & Lee, T. S.-H. (2011). Relationships between stress, coping and depressive symptoms among overseas university preparatory Chinese students: a cross-sectional study. *BMC Public Health*, 11(1), <https://doi.org/10.1186/1471-2458-11-352>
- Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: a theoretically based approach. *Journal of Personality and Social Psychology*, 56(2), 267-283. <https://doi.org/10.1037/0022-3514.56.2.267>
- Carver, C. (1997). You want to measure coping but your protocol's too long: Consider the Brief COPE. *International Journal of Behavioral Medicine*, 4(1), 92-100. https://www.researchgate.net/publication/7515511_You_want_to_Measure_Coping_But_Your_Protocols_Too_Long_Consider_the_Brief_COPE

References

- Folkman, S., & Lazarus, R. S. (1984). *Stress, appraisal, and coping*. New York: Springer Publishing Company.
- Hayes, S. C., Levin, M. E., Plumb-Villardaga, J., Villatte, J. L., & Pistorello, J. (2013). Acceptance and commitment therapy and contextual behavioral science: examining the progress of a distinctive model of behavioral and cognitive therapy. *Behavior therapy*, 44(2), 180-198. <https://doi.org/10.1016/j.beth.2009.08.002>
- Holm, S. (1979). A simple sequentially rejective multiple test procedure. *Scandinavian Journal of Statistics*, 6, 65-70. <http://www.jstor.org/stable/4615733>.
- Mariani, R., Renzi, A., Di Trani, M., Trabucchi, G., Danskin, K., & Tambelli, R. (2020). The impact of coping strategies and perceived family support on depressive and anxious symptomatology during the coronavirus pandemic (COVID-19) lockdown. *Frontiers in psychiatry*, 11, Article 587724. <https://doi.org/10.3389/fpsy.2020.587724>
- McWilliams, L. A., Cox, B. J., & Enns, M. W. (2003). Use of the Coping Inventory for Stressful Situations in a clinically depressed sample: factor structure, personality correlates, and prediction of distress. *Journal of clinical psychology*, 59(4), 423-437. <https://doi.org/10.1002/jclp.10080>
- Parker, J. D. A., & Endler, N. S. (1992). Coping with coping assessment: A critical review. *European Journal of Personality*, 6(5), 321-344. <https://doi.org/10.1002/per.2410060502>
- Roohafza, H. R., Afshar, H., Keshteli, A. H., Mohammadi, N., Feizi, A., Taslimi, M., & Adibi, P. (2014). What's the role of perceived social support and coping styles in depression and anxiety? *Journal of research in medical sciences: the official journal of Isfahan University of Medical Sciences*, 19(10), 944-949. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4274570/>

References

- Shamblaw, A. L., Rumas, R. L., & Best, M. W. (2021). Coping during the COVID-19 pandemic: Relations with mental health and quality of life. *Canadian Psychology/Psychologie canadienne.*, 62 (1), 92-100.
<https://doi.org/10.1037/cap0000263>
- Sirois, F. M., Molnar, D. S., & Hirsch, J. K. (2015). Self-compassion, stress, and coping in the context of chronic illness. *Self and Identity*, 14(3), 334-347. <https://doi.org/10.1080/15298868.2014.996249>
- Taha, S., Matheson, K., Cronin, T., & Anisman, H. (2014). Intolerance of uncertainty, appraisals, coping, and anxiety: The case of the 2009 H1N1 pandemic. *British Journal of Health Psychology*, 19(3), 592-605.
<https://doi.org/10.1111/bjhp.12058>
- Satterthwaite, F. E. (1946). An approximate distribution of estimates of variance components. *Biometrics Bulletin*, 2(6), pp. 110-114. <https://doi.org/10.2307/3002019>
- Wyer, R. S., & Collins, J. E. (1992). A theory of humor elicitation. *Psychol. Rev.* 99(4), 663-668.
<https://doi.org/10.1037/0033-295x.99.4.663>
- Yu, H., Li, M. L., Li, Z. X., Xiang, W. Y., Yuan, Y. W., Liu, Y. Y., Li, Z., & Xiong, Z. Z. (2020). Coping style, social support and psychological distress in the general Chinese population in the early stages of the COVID-19 epidemic. *BMC Psychiatry*, 20(1), 426. <https://doi.org/10.1186/s12888-020-02826-3>

Thank you for
listening!

