

Mediating Effect of Coping Strategies between Personality and Anxiety during COVID-19

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Abstract

Introduction: Several studies have highlighted the psychological consequences (anxiety, depression) of COVID-19 in India. However, the effect of personality on anxiety, mediated by coping, remains scarce.

Method: For carrying out this study, 215 healthy, unmarried, educated Indian adults participated in an online form-based study comprising measures of personality (The Big Five Inventory-2-S), coping (Coping Inventory for Stressful Situations-21), and anxiety (State-Trait Anxiety Inventory-6).

Results: Analyses were done after controlling gender, age, work, and family status. Negative-emotionality and emotion-oriented coping were the highest predictors of anxiety. A contradictory finding showed conscientiousness to predict and increase anxiety upon using coping strategies. Emotion-oriented coping mediated the relationship between negative-emotionality and anxiety. Open-mindedness had an insignificant total effect on anxiety but reduced it when mediated by emotion-oriented coping. Additionally, higher anxiety was reported in those who watched one hour or more of pandemic news per day.

Conclusion: Emotion-oriented coping was found to be an ineffective strategy to alleviate anxiety in those with higher trait neuroticism. The flexibility provided by trait openness facilitated effective use of emotion-oriented coping in reducing anxiety.

Keywords: Personality, Coping, Anxiety, COVID-19, Mediation

Introduction

In the initial stages of the Novel Coronavirus (COVID-19) spread, India was preoccupied with treatment and patient management plans, unaware of the insidious psychological toll of the pandemic. In an early study across 64 Indian cities, 33.2% of participants (N = 653) reported having a significant psychological impact of COVID-19 [1]. In West Bengal, nearly three-quarters of the sample (N = 507) reported feeling worried and irritable, experienced sleep disturbances, and panicked about contracting the infection [2]. India consists of diverse groups of people and to account for all the unique psychological stressors would be unfeasible. However, notable efforts have been made to cover a wide range of factors. For instance, Sharma and Subramanyam [3] highlighted that certain groups, particularly, sexual minorities and those with a psychiatric history were at a greater risk of (re)developing anxiety or depressive symptoms. Sleep and appetite disturbances were also associated with an increase in the psychological impact of the pandemic. Expanding on India's lockdown that began on the 26th of March, 2020, Grover et al., covered well-being, perceived stress, depression, and anxiety in a sample of 1685 participants [4]. A majority reported moderate levels of stress, minimal depressive symptoms, and improved relationships. Non-healthcare workers reported more depressive symptoms than healthcare workers. Nearly a third of the participants experienced an increase in anxiety, sadness, and irritability which were also

negatively correlated with well-being. Another Indian study conducted during the lockdown period reported mild to severe psychological distress in 42% of its participants (N = 231). The distress was largely related to body-vigilance, disgust-sensitivity and propensity, fatalism, and death anxiety [5].

Accounting for individual differences in previous research would contribute towards a broader explanation of the ongoing psychological effects. Furthermore, knowing what makes individuals more vulnerable to anxiety and how they deal with such a situation could help mental health professionals devise targeted counselling plans. This study is an effort to understand other psychological factors associated with pandemic anxiety and add to the repertoire of mental health professionals in India.

Personality refers to the characteristic patterns of thinking, feeling, and behaving [6]. It is widely explained by the Big Five model which comprises five global factors namely, Extraversion (sociable, enthusiastic), Agreeableness (friendly, kind), Conscientiousness (organized, diligent), Emotional Stability (calm, tranquil), and Openness (creative, curious) [7]. Personality is an important factor in the identification and appraisal of stressful situations. It influences the decision to either approach or avoid a stressful situation. It also influences the interpretation of the stressor, the available resources, and the coping strategies employed to deal effectively with the situation [8].

Coping refers to the cognitive and behavioral strategies that are used to prevent or reduce stress [9]. While there are several ways to understand coping, it can be conceptualized as consisting of three main domains: task, emotion, and avoidance orientation. The task-oriented strategy is a problem-focused approach and involves problem-solving actions to alleviate stress. The emotion-oriented strategy involves either rumination or changing emotional reactions to stressors. Distancing oneself from the situation by denial or engaging in unrelated activities indicates an avoidance-oriented approach. Coping can be stylistic (i.e., attributional) or strategic (i.e., dispositional) [10].

In a meta-analysis by Connor-Smith and Flachsbart [11], all five personality dimensions predicted specific coping strategies. Compared to neuroticism, extraversion and conscientiousness predicted more problem-solving and cognitive-restructuring approaches. Neuroticism better-predicted strategies of wishful-thinking, withdrawal, and emotion-focused coping. Stronger associations between neuroticism and emotion-focused coping were moderated by younger age and intensity of stress. Similarly, a review by Carver and Connor-Smith [12] reported a tendency to undermine coping resources in those with high neuroticism. Furthermore, extraversion, conscientiousness, and openness were related to perceiving events as challenges rather than threats and to positively appraise the available coping resources.

There are many changes associated with the pandemic: the fear of losing one's livelihood due to isolation or travel limitations, constant insecurity for self and others, lack of contact of loved ones due to social distancing, mixed emotions from moving into a larger family, the fear of

leaving home, and the panic reinforced by all forms of media [13]. The COVID-19 pandemic is a stressful situation with the potential to trigger or exacerbate psychological distress, particularly anxiety and depression.

An anxiety state is a transitory emotional state which is characterized by consciously perceived feelings of tension, apprehension, worry, nervousness, and activation or arousal of the autonomic nervous system [14]. High neuroticism and low extraversion have been found to increase the risk of anxiety [15]. In terms of coping, the task-oriented strategy has been found to correlate negatively with stress and anxiety, whereas the emotion-focused strategy has shown a positive correlation [16]. The preference of a specific strategy (task-oriented or emotion-oriented) is also dependent on the nature of the stressor [17]. For instance, those suffering from chronic fatigue syndrome (no definite cure) may use more emotion-focused coping by attributing their illness to uncontrollable factors; whereas, controllable factors might involve the use of more problem-oriented strategies.

The aforementioned studies have explained the relationship between personality, coping, and anxiety. They have also highlighted the psychological effects of COVID-19 in the Indian scenario. However, there is a dearth of research using personality factors to predict anxiety during COVID-19. Furthermore, the mediating effect of coping during the pandemic remains scarce. This study aims to explain the influence of personality on anxiety and the mediating role of coping strategies.

Method

A Google form was circulated via the internet beginning with an informed consent letter, followed by sociodemographic details, and measures of personality factors, coping strategies, and anxiety. Only consenting participants were allowed to access the questionnaires. Specifiers in the instructions of the coping and anxiety scales requested participants to consider the COVID-19 pandemic while responding. Responses were accepted for 10 days in April, 2020.

The tools used in this study were as follows:

Sociodemographic Questionnaire: The sociodemographic questionnaire collected information on gender, age, country and state, education, occupation, marital status, average exposure to COVID-19 news per day, working status, and family setup.

The Big Five Inventory-2 Short Form (BFI-2-S): This 30-item inventory assesses personality factors of extraversion, agreeableness, conscientiousness, negative emotionality, and open-mindedness. It is a reliable and valid self-report inventory with a 5-point Likert scale ranging from "Disagree strongly" to "Agree strongly" [18]. In the current study, Cronbach's alpha was .68 for extraversion, .58 for agreeableness, .66 for conscientiousness, .78 for negative emotionality, and .59 for open-mindedness.

Coping Inventory for Stressful Situations- Short Form (CISS-21): This 21-item inventory assesses task-oriented coping, emotion-oriented coping, and avoidance coping. As required by the current study, it assesses

situational coping rather than the dispositional coping of the full scale. It is a reliable and valid self-report inventory with a 5-point Likert scale ranging from "Not at all" to "Very much" [19]. For the present study, Cronbach's alpha was .79 for task-oriented coping, .80 for emotion-oriented coping, and .67 for avoidance coping.

State-Trait Anxiety Inventory (STAI-6): This self-report inventory was used to assess anxiety. The 6-item version was selected for its brevity and similarity in scores with the full 20-item form ($\alpha = .82$). It employs a 4-point Likert scale ranging from "Not at all" to "Very much" [20]. For the current study, the internal consistency was found to be .85.

Appropriate tests were employed to check for outliers, linearity, homoscedasticity, and normality. Group differences in sociodemographic variables (gender, education, COVID-19 news, and present working and family status) were examined using independent samples t-test. Hierarchical regression was used to predict coping from personality. All statistical analyses were computed on SPSS v23.

Specification model 4 of the PROCESS macro for SPSS was used to evaluate the mediating effect of coping strategies in the relationship between personality factors (as five predictors) and anxiety (one dependent variable), controlling for gender, age, work and family status. Direct, indirect, and total effects were calculated using three mediator variables (coping strategies) in parallel. PROCESS plugin allows only one predictor for analysis at a time. Following the recommendation of Hayes [21], the other predictors were entered as covariates. Multiple analyses were done such that a different predictor would be used each time while the remainders would enter as covariates.

Results

The Google form was filled by 282 healthy individuals at random. Records were rejected of those who were below 18 years of age (7), non-Indian (8), married (25), and those who had acquiescent responding (27). The finalized sample consisted of 215 records. The sociodemographic profile of the participants and scale scores are given in Table 1. Anxiety score differences in sociodemographic variables are presented in Table 2.

A two-step hierarchical regression was done to predict coping strategies from personality factors. The analysis was done on each coping strategy separately. Each time, gender, age, work, and family status were controlled in step 1. Personality variables were entered in step 2. Table 3 presents the unstandardized estimates (B), 95%

confidence intervals (CI) of B , standardized estimates (β), and change in R^2 (ΔR^2) and F (F for ΔR^2). For task-oriented coping, personality variables explained 31% variance ($p < .001$); for emotion-oriented coping, 28% ($p < .001$), and 7% for avoidance coping ($p < .05$).

The mediation analysis result is presented in Table 4. The total effect is the effect of a personality factor on anxiety in the absence of a coping strategy. The direct effect is the effect accounted by the personality factor in the presence of a coping strategy. The indirect effect is the effect of a personality factor which is mediated by a coping strategy and consists of two components: specific indirect effect and total indirect effect. The former is the effect of a single coping strategy in the complete mediation model whereas the latter is the combined indirect effect of all three coping mediators.

Table 1. Sociodemographic Profile and Scale Scores

Gender	N	% / M (SD)
Male	103	47.9
Female	112	52.1
Age	Range:18-30	24 (2.1)
Urban	215	100
Rural	0	0
Never married	215	100
Married	0	0
Undergraduate	95	44.2
Postgraduate	120	55.8
Staying with family	156	72.6
Staying without family	59	27.4
Not working	104	48.4
Working	111	51.6
Less than 1 hour	107	49.8
1 hour or more	108	50.2
Hindu	165	76.7
Other	39	18.1
None	11	5.1
Open-mindedness		23.2 (3.7)
Agreeableness		22.6 (3.5)
Conscientiousness		21.4 (4.1)
Extraversion		19.8 (4.3)
Negative emotionality		16.7 (4.8)
Task-oriented		26.7 (4.7)
Avoidance		23 (5.4)
Emotion-oriented		20.5 (6.1)
Anxiety (STAI-6)		12.8 (4.1)

Note. BFI-2-S = The Big Five Inventory-2 Short Form; CISS-21 = Coping Inventory for Stressful Situations-Short Form; STAI-6 = State-Trait Anxiety Inventory-6

Table 2. Anxiety Score Differences in Sociodemographic Variables

Gender	N	M (SD)	t	p	df	d
Male	103	13 (4.08)	0.71	.477	213	0.10
Female	112	12.6 (4.20)				
Undergraduate	95	13.4 (4.15)	1.73	.084	213	0.24
Postgraduate	120	12.4 (4.10)				
Family status						
With family	156	12.7 (4.04)	-0.69	.489	213	0.10
Without family	59	13.1 (4.41)				
Not working	104	12.7 (3.83)	-0.24	.813	213	0.05
Working	111	12.9 (4.43)				
Less than 1 hour	107	12 (4.33)	-2.97	.003	213	0.41
1 hour or more	108	13.6 (3.78)				

Table 3. Summary of Hierarchical Regression Analysis of Personality Factors Predicting Coping Strategies

Variable	TC			EC			AC		
	<i>B</i>	95% CI for <i>B</i> [LL to UL]	β	<i>B</i>	95% CI for <i>B</i> [LL to UL]	β	<i>B</i>	95% CI for <i>B</i> [LL to UL]	β
Step 1									
Constant	24.8***	17.2 to 32.5		22.2***	12.4 to 32.7		22.8***	14.1 to 31.6	
Gender	-0.37	-1.69 to 0.94	-0.04	0.56	-1.14 to 2.25	0.05	0.21	-1.29 to 1.72	0.02
Age	0.07	-0.24 to 0.39	0.03	-0.10	-0.50 to 0.31	-0.03	-0.04	-0.39 to 0.32	-0.01
Work status	0.37	-0.92 to 1.66	0.04	0.18	-1.48 to 1.85	0.02	1.50	0.02 to 2.98	0.14
Family status	0.53	-0.91 to 1.98	0.05	0.66	-1.20 to 2.52	0.05	0.58	-1.07 to 2.24	0.05
Step 2									
Constant	14.1**	5.42 to 22.7		12.8*	1.35 to 24.2		15.2*	3.64 to 26.8	
Gender	-0.77	-1.89 to 0.35	-0.08	0.35	-1.13 to 1.83	0.03	0.05	-1.45 to 1.55	0.01
Age	-0.07	-0.33 to 0.20	-0.03	0.05	-0.30 to 0.41	0.02	-0.08	-0.43 to 0.28	-0.03
Work status	0.25	-0.85 to 1.34	0.03	0.72	-0.73 to 2.17	0.06	1.48	0.02 to 2.95	0.14
Family status	0.45	-0.77 to 1.67	0.04	0.63	-0.98 to 2.24	0.05	0.36	-1.27 to 1.99	0.03
E	0.09	-0.05 to 0.22	0.08	0.11	-0.08 to 0.29	0.08	0.30	0.12 to 0.49	0.24**
A	0.20	0.03 to 0.37	0.15*	0.07	-0.15 to 0.29	0.04	0.07	-0.15 to 0.29	0.05
C	0.20	0.04 to 0.35	0.17*	-0.09	-0.29 to 0.12	-0.06	-0.09	-0.30 to 0.12	-0.07
N	-0.21	-0.33 to -0.08	-0.21**	0.60	0.44 to 0.77	0.48***	0.04	-0.13 to 0.21	0.03
O	0.32	0.16 to 0.48	0.25***	-0.27	-0.48 to -0.06	-0.16*	0.11	-0.11 to 0.32	0.07
<i>R</i> ²		0.32			0.29			0.09	
ΔR^2		0.31			0.28			0.07	
<i>F</i> for ΔR^2		18.9***			16.1***			2.95*	

Note. CI = confidence interval; LL = lower limit; UL = upper limit.

TC = task-oriented coping; EC = emotion-oriented coping; AC = avoidance coping; E = extraversion; A = agreeableness; C = conscientiousness; N = negative-emotionality; O = open-mindedness

* = $p < .05$, ** = $p < .01$, *** = $p < .001$. $N = 215$

Discussion

The current study explored personality factors, coping strategies, and anxiety during the COVID-19 pandemic in India. It also aimed to quantify the mediating effect of coping strategies between personality and anxiety.

Coinciding with the results obtained in a comprehensive study by Carver and Connor-Smith [12], agreeableness, conscientiousness, open-mindedness, and negative emotionality were predictors of task-oriented coping; negative emotionality also strongly predicted emotion-oriented coping. Similar to a finding reported in an older population, extraversion better-predicted avoidance coping and not task-oriented coping [22], which could be explained by a change in the social setting brought about by the pandemic. People high in extraversion, while being more sociable and outgoing, experienced a failure of such abilities due to various restrictions. Instead, they were indulging in activities which were primarily distractions, such as treating themselves to different kinds of food, bingeing media, risking an outdoor visit, or online shopping.

Contradictory to previous research [23], conscientiousness not only predicted anxiety but also increased it upon using coping strategies. Rosellini and Brown [24], in their study on the latent structure of the NEO-FFI with anxiety and depressive disorders, found a positive path from conscientiousness to generalized anxiety. Their explanation could be applied to the present study: conscientiousness indicates perfectionistic tendencies of excessive planning or preparation as a response to ongoing uncertainties. Therefore, it is possible that greater investment in

controlling and organizing the environment (safety measures, caretaking of febrile family members, rationing daily needs, etc.) could pave the way for more frequent experiences of anxiety and tension over minor matters. Therefore, during the pandemic, the characteristics associated with being high on trait conscientiousness overpower any anxiety-diminishing effect of coping strategies.

Negative emotionality predicted emotion-oriented coping and both predicted anxiety; emotion-oriented coping also positively mediated the relationship between negative emotionality and anxiety. These associations have been repeatedly found across different populations [25] indicating that the traits of negative affect, irritability, moodiness, coupled with an emotion-focused approach, lead to an exacerbation of maladjusted anxiety. The emotion-focused approach possibly disrupts the management of emotions aggravating the self-inspecting behaviors and ruminative thinking characteristic of negative emotionality. The trait of open-mindedness did not significantly predict anxiety, however, when mediated by emotion-focused coping, it resulted in a significant anxiety reduction. Open-mindedness also predicted task-oriented coping. Open-mindedness involves being welcoming to new experiences, thoughts, and ideas. It reflects flexibility and intellectual curiosity, which increases the capability to use the depth and breadth of cognitive activity [12]. This flexibility allows the appropriate use of emotional reactions or problem-solving strategies leading to better stress-management. In essence, anxiety-reduction largely depends on the platform of flexibility and curiosity provided by being open-minded irrespective of the coping strategy.

Table 4. Effect of Personality on Anxiety via Coping Strategies

Personality factor	Total effect	Direct effect	Indirect effect	Effect size
	95% CI [LL, UL]	95% CI [LL, UL]	(Specific and Total)	95% CI [LL, UL]
E	-0.16 [-0.27, -0.05]	-0.17 [-0.28, -0.06]	via TC	-0.01 [-0.04, 0.01]
			via EC	0.02 [-0.02, 0.06]
			via AC	0.06 [-0.02, 0.04]
			Total	0.02 [-0.03, 0.07]
A	0.05 [-0.09, 0.18]	0.05 [-0.08, 0.18]	via TC	-0.02 [-0.06, 0.01]
			via EC	0.01 [-0.02, 0.05]
			via AC	0.001 [-0.01, 0.02]
			Total	-0.01 [-0.05, 0.04]
C	0.14 [0.01, 0.26]	0.17 [0.05, 0.30]	via TC	-0.02 [-0.07, 0.01]
			via EC	-0.02 [-0.06, 0.03]
			via AC	-0.002 [-0.02, 0.01]
			Total	-0.04 [-0.10, 0.07]
N	0.57 [0.47, 0.67]	0.44 [0.32, 0.55]	via TC	0.03 [-0.01, 0.07]
			via EC	0.13 [0.06, 0.2]
			via AC	0.002 [-0.01, 0.02]
			Total	0.15 [0.08, 0.24]
O	0.04 [-0.09, 0.17]	0.12 [-0.01, 0.25]	via TC	-0.03 [-0.08, 0.01]
			via EC	-0.04 [-0.09, -0.01]
			via AC	0.002 [-0.01, 0.02]
			Total	-0.07 [-0.13, -0.02]

Note. Controls = gender, age, work, and family status.

CI = confidence interval; LL = lower limit; UL = upper limit.

E = extraversion; A = agreeableness; C = conscientiousness; N = negative-emotionality; O = open-mindedness; TC = task-oriented coping; EC = emotion-oriented coping; AC = avoidance coping.

cs = completely standardized

In a secondary finding, watching pandemic-related news for one hour or more per day was associated with increased anxiety. Similar findings were reported in Szabo and Hopkinson's experimental study on undergraduates [26]. They found that merely 15 minutes of news produced negative affect, total mood disturbance, and anxiety. The duration, personal relevance and negativity of news content are also related to increased negative effects and anxiety [27]. Gender, education, staying with or without family, working or non-working status did not reveal any significant differences in anxiety scores. The findings run contradictory to the alleviating effect of social support provided by family and friends [28], and could be explained by the novelty and uniformity of the pandemic-scary during its initial days.

Considering the findings of the present study, a variety of methods can be used for managing anxiety during the pandemic. McCrae and Costa [29] had conceptualized personality traits as enduring, stable, and fixed patterns. However, cognitive behavior therapy (CBT; 20-weeks) has shown evidence for a change in extraversion and neuroticism [30]. Mindfulness training in medical students changed conscientiousness, agreeableness, and neuroticism [31]. Social skills training for those with a substance-use problem increased agreeableness, conscientiousness, and emotional stability [32]. Using these approaches, desirable changes at the trait-level could be achieved.

However, a more effective treatment approach would be one that targeted coping strategies instead of changing traits owing to the lack of resources during a pandemic. For those who are worrisome at the trait-level, the emotion-focused approach may not be effective. However, with the support of a counsellor, an emotion-

focused approach that skillfully reappraises emotional reactions might benefit the individual. Task-oriented coping involves tackling the problem and working towards developing a solution. It is more effective than emotion-focused coping which relies solely on emotional reactions to the problem without an attempt to solve it. Therefore, interventions utilizing problem-solving techniques would prove beneficial in alleviating anxiety. To achieve this, Cohen and Cromwell [33] suggested using directed-creativity which involves having a clearly defined problem (such as, information about stressors at job, home, relationships, etc.), followed by divergent thinking of multiple solutions. This activity creates an awareness of having resources, which reinforces emotional stability. Such activities can be easily incorporated in cases using tele-counselling modes.

Trait-openness helps in creative problem-solving. Jackson et al. [34], conducted a cognitive training exercise spanning 16 weeks on an older population and found an increase in openness. The training involved inductive reasoning problems supplemented with puzzles. COVID-19 or any similar situation is notorious for the uncertainty it induces in people. Although a full-fledged training module is unreasonable, especially considering that people deal with unemployment and major lifestyle changes during such times, counsellors can incorporate a few minutes of activities that require problem-solving skills. Video games, puzzles, indoor games with family members, small house projects, auditing of finances could help the individual to develop flexibility, and reduce ruminative thinking and hopelessness.

This study faced a few limitations as well. Firstly, the number of participants who attempted the form were lower than expected. Secondly, the evidence for

conscientiousness to increase anxiety was not sufficient and could be due to unexamined factors. Third, while best attempts have been made to report all findings, the meaning of effect sizes in mediation remains unclear.

Conclusion

The present study explored the relationship between personality factors, coping strategies, and anxiety while controlling for gender, age, work, and family status among Indian adults during the COVID-19 pandemic. It showed that having perfectionism, ruminating tendency, irritability, and negative affect strongly contributed to anxiety. Emotion-focused coping mediated the relationship between neuroticism, openness, and anxiety. The study also provided general directions for appropriate interventions, which included CBT, social skills training, mindfulness, cognitive training, and activity-based interventions. Future studies can include couples and family units. Moderating effects of sociodemographic factors, and accounting for other stressors could broaden the understanding of these variables in the Indian population.

Conflict of Interest

The authors declare no conflicts of interest.

Ethical Approval

This study was conducted according to ethical standards.

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