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https://doi.org/10.1590/1982-4327e3613

Submitted on: 2026-05-18
Posted on: 2026-05-18 (version 1)
(YYYY-MM-DD)

Paidéia

2026, Vol. 36, e3613.https://doi.org/10.1590/1982-4327e3613

ISSN 1982-4327 (online version)

Psychology of Health

Predicting Psychological Distress, and Flourishing During the COVID-19 Pandemic in Brazil

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Paidéia, 36, e3613

Abstract: This study investigated the positive and negative predictors of depression, anxiety, stress, and flourishing among Brazilian adults during the first wave of the COVID-19 pandemic. The sample consisted of 665 adults (women: 77%), aged between 18 and 79 years (M = 36.70; SD = 13.12). Participants completed a sociodemographic questionnaire, the Brief-COPE Inventory; the Depression, Anxiety and Stress Scale; the PERMA Profiler; the Acceptance and Action Questionnaire-II; and the Meaning-Centered Coping Scale. Multiple regression analyses indicated that avoidance coping, and psychological inflexibility were significant predictors of stress, anxiety, and depression. Age, flourishing, and perceived physical health acted as protective factors, with significant differences between participants with and without prior psychological diagnoses. Meaning-centered coping predicted flourishing in both groups. These findings suggest that interventions should address prior diagnoses, and foster flourishing dimensions, alongside adaptive coping strategies, including meaning-centered coping.

Keywords: depression, anxiety, stress, coping, COVID-19

Explicando Sofrimento Psicológico e Florescimento Durante a Pandemia da COVID-19 no Brasil

Resumo: Este estudo investigou preditores positivos e negativos de depressão, ansiedade, estresse e florescimento entre adultos brasileiros durante a primeira onda da pandemia de COVID-19. A amostra consistiu em 665 adultos (mulheres: 77%), entre 18 e 79 anos (M = 36,70; DP = 13,12), que responderam um questionário sociodemográfico; o Inventário Brief-COPE; a Escala DASS-21; o PERMA Profiler; o *Acceptance and Action Questionnaire*-II; e a Escala de Coping Centrado no Sentido. Regressões múltiplas sugeriram que evitação e inflexibilidade foram preditores diretos de estresse, ansiedade e depressão. Idade, florescimento e saúde física percebida atuaram como fatores protetores, com diferenças

significativas entre participantes com e sem diagnósticos prévios de transtornos. Coping centrado no sentido foi preditor do florescimento em ambos os grupos. Os resultados sugerem que intervenções devem considerar diagnósticos prévios, fortalecer dimensões do florescimento e estratégias de enfrentamento adaptativos, incluindo o coping centrado no sentido.

Palavras-chave: depressão, ansiedade, estresse, coping, COVID-19

Prediciendo Malestar Psicológico y Florecimiento Durante la Pandemia de COVID-19 en Brasil

Resumen: Este estudio investigó predictores positivos y negativos de la depresión, la ansiedad, el estrés y el florecimiento en adultos brasileños durante la primera ola de COVID-19. Participaron un total de 665 adultos (mujeres: 77%) entre 18 y 79 años (M = 36,70; DP = 13,12), completaron un cuestionario sociodemográfico; Brief-COPE; Escala de Depresión, Ansiedad y Estrés; PERMA Profiler; Cuestionario de Aceptación y Acción-II; y Escala de Afrontamiento Centrada en el Sentido. Regresiones múltiples sugirieron que evitación y inflexibilidad fueron predictores directos de estrés, ansiedad, y depresión. Edad, florecimiento y percepción de la salud física actuaran como factores protectores, con diferencias significativas entre los participantes previamente diagnosticados y los no diagnosticados con trastornos psicológicos. Afrontamiento centrado en el sentido fue predictor de florecimiento em ambos grupos. Intervenciones para reducir el malestar psicológico deben considerar diagnósticos previos, fortalecer dimensiones de florecimiento y estrategias adaptativas de afrontamiento, incluido el sentido.

Palabras clave: depresión, ansiedad, estrés, estrategias de afrontamiento, COVID-19

As the COVID-19 pandemic unfolded, it emerged as one of the most impactful events of a generation. Its harmful effects on the physical health of the world's population are extensively reported (United Nations, 2020). In 2020, during the pandemic's first wave, the Brazilian government mandated the closure of shops, schools, universities, and all non-essential services to contain the virus's spread. Social distancing measures were established, varying across states, according to regional severity of the pandemic.

Psychological distress during the pandemic was influenced by a range of factors, including threats to one's physical health, loneliness, grief, financial instability, uncertainty about the future, physical distancing from loved ones, and other related events (United Nations, 2020). Additional stressors included prolonged social distancing, frustration, boredom, multitasking, excessive working, lack of essential supplies, ambiguous information, fear of infection, lack of psychological support, concern for loved ones, and job-related risks (García-Iglesias et al., 2024; Hossain et al., 2020).

Research on the topic indicates a wide range of mental health issues linked to the pandemic, such as depression, anxiety, stress, panic attacks, irrational anger, impulsiveness, substance use, sleep disorders, emotional dysregulation, posttraumatic stress disorder, social phobia, agoraphobia, and suicidal behavior (Hossain et al., 2020; Searby et al., 2024). Previous mental health diagnoses are also considered a risk factor, as individuals with pre-existing conditions are particularly vulnerable to stress, displaying impaired cognitive and emotional regulation of positive and negative affect, higher relapse risk, and more severe symptoms (Liu et al., 2020).

Other factors influencing mental health during the pandemic included stigma, psychosocial support, coping mechanisms, age, income reduction, high-risk occupations such as healthcare workers (Duarte et al., 2020; Hossain et al., 2020). A range of additional variables were associated with a decrease in well-being and an increase in mental health

disorders, such as high negative affect, low positive affect, excessive media exposure, social network overuse, young age, and the lack of activities (Dubey et al., 2020; Kupcova et al., 2023; Prati, 2021).

Other studies aimed at investigating social distancing (Duarte et al., 2020) and loneliness (Okruszek et al., 2020) as predictors of mental health problems. Social distancing was not considered a significant risk factor for depression, anxiety, and stress in Brazil's South Region (Duarte et al., 2020). In contrast, loneliness, financial concern, and social isolation were strongly linked to the development of mental health issues (Okruszek et al., 2020). Perceived poor physical health also represented a potential risk factor, as concerns and vulnerability to infection and comorbidities may impact on one's psychological well-being (Prati, 2021).

Psychological inflexibility – characterized by rigid patterns of thoughts, emotions, and/or behaviors – and avoidance of difficult experiences are associated with poor mental health (Dawson & Golijani-Moghaddam, 2020). A longitudinal study conducted in Spain demonstrated that psychological inflexibility predicted mental health symptoms during lockdown (Hernández-López et al., 2021), highlighting the importance of investigating the association between psychological flexibility and distress.

In Brazil, studies primarily assessed anxiety, depression, and stress during the pandemic, emphasizing the relevance of examining both risk and protective factors. Severe depression was observed to be directly associated with confronting, escaping, or distancing as coping mechanisms (Ferreira et al., 2021). Escaping, self-control, and accepting responsibility for the situation were also associated with depression, anxiety, and stress in the Patias et al. (2021) study. In both studies, only depressive symptoms were negatively associated with

problem-solving and positive reappraisal strategies, thus working as a potential protective factor.

Lewis et al. (2022) point to the need to investigate factors associated with positive mental health outcomes. Effective coping mechanisms are important for people's adaptation to situations that are perceived as threatening (Prati, 2021). Consequently, adaptive coping styles may have an important role as protective factors against psychological distress and increase individuals' well-being. Acceptance, positive reinterpretation, and resilient coping strategies, were considered a potential protective factor for anxiety in the literature (Campos et al., 2024; Pires et al., 2024). Also, during the pandemic, studies pointed to the significant association of hope, optimism, and gratitude with lower levels of anxiety (Almansa et al., 2024; Pires et al., 2024). Contributing to the necessary adaptation process during quarantine, a meaning-centered coping strategy (MCCS) could be valuable. Defined as strategies that contribute to maintaining and restoring one's sense of meaning and purpose in life, MCCS is a predictor of well-being in the literature (Eisenbeck et al., 2022).

Another possible protective factor is the individual's level of flourishing. Defined as the psychological state "that arises from functioning well across multiple psychosocial domains" (Butler & Kern, 2016, p. 2), the flourishing construct is composed of five domains on the PERMA theory: positive emotion (P), engagement (E), relationships (R), meaning (M), and accomplishment (A). The importance of each of these domains for mental health was revised in a study by Butler and Kern (2016). However, it is also important to investigate the coping mechanisms associated with increased levels of flourishing.

To understand which variables may be associated with an increase or reduction of these symptoms, this study aimed to investigate positive and negative predictors of depression, anxiety, stress, and flourishing in Brazilian adults during the first wave of the COVID-19 pandemic.

Method

Participants

Participants were required to be at least 18 years old, consenting to participate, and completing the questionnaire in full. Participants who did not agree to the consent form were not given access to the questionnaire. Those younger than 18 or who did not complete the questionnaire in full were not included. No additional exclusion criteria were applied.

The final sample consisted of 665 adults who completed the survey, composed primarily by women *(n* = 510; 77%), aged from 18 to 79 (*M* = 36.7; *SD* = 13.12), representing all five main regions of Brazil, divided as follows: Center-West (*n* = 75, 11%); North (*n* = 111, 17%); Northeast (*n* = 122, 18%); South (*n* = 156, 24%); and Southeast (*n* = 201, 30%). Most participants were single (*n* = 234; 35%). The respondents considered themselves to be religious in their own way (*n* = 334; 50%), had completed undergraduate studies (*n* = 398; 60%), and reported an average socioeconomic status (*n* = 399; 60%).

Instruments

This questionnaire is part of a larger international research project evaluating the psychological impact of the COVID-19 pandemic with many other instruments. However, for the purpose of this work, the instruments described here are the ones of interest to the present study. Participants were requested to answer an online questionnaire composed of the instruments described below.

Sociodemographic and psychological questions. Gender, age, relationship status, religiousness, state of residence, perceived socioeconomic status, highest level of education achieved and the number of days they had been practicing social distancing. They were also asked if they had been diagnosed with any psychological or psychiatric disorder. For

affirmative responses, they were asked to specify the diagnosis, if they were undergoing treatment and, if so, which treatment.

***Depression, Anxiety and Stress Scale – Short Form (DASS-21*).** This instrument evaluates symptoms of common psychological / psychiatric disorders. It was adapted to Brazilian Portuguese by Vignola (2014). Participants were asked to indicate if the statements (e.g., *I tended to over-react to situations*) applied to them over the previous week, varying between 0 ("Did not apply to me at all") and 3 ("Applied to me very much or most of the time"). Higher values indicate the symptoms are more severe. Cronbach's alpha for this sample was .86 for Anxiety, .91 for Stress, and .92 for Depression.

***Brief Coping Orientation to Problems Experienced (Brief COPE*).** The reduced version of the COPE Inventory was adapted to Brazilian Portuguese by Maroco et al. (2014). The short version comprises 28 items that are grouped into 14 dimensions of coping strategies. Items (e.g., *I've been expressing my negative feelings*) must be answered on a Likert-type scale that ranges from 1 ("I haven't been doing this at all") to 4 ("I've been doing this a lot"). Higher values indicate the coping strategies that are most used by the participants. Second-order dimensions used here are those proposed and tested by Guerra et al. (2023). Cronbach's alpha for the inventory in this sample was .83.

***PERMA Profiler*.** Adapted to the Brazilian context by Carvalho et al. (2023), this instrument consists of 23 items that measure the five dimensions of flourishing (Positive emotions, Engagement, Relationships, Meaning, and Achievement) with additional items to evaluate negative emotions, loneliness, and physical health. In this version, participants should answer the items (e.g., *In general, to what extent do you lead a purposeful and meaningful life?*) on a 7-point Likert-type scale. Apart from the negative emotions and loneliness scales, higher values indicate a higher level of flourishing. Cronbach's alpha for the

complete scale was .93 in this sample, with the indices for the dimensions ranging from .65 (Engagement) to.88 (Positive emotions).

Acceptance and Action Questionnaire – II. Developed to measure psychological inflexibility, the scale was adapted to Brazil by Barbosa and Murta (2015). It is composed of seven items (e.g., *Emotions cause problems in my life*) and participants should indicate how true the statements are for them, ranging from 1 (Never true) to 7 (Always true). Higher values indicate stronger inflexibility. Cronbach's alpha in this sample was .94.

Meaning-Centered Coping Scale – MCCS. This instrument aims at evaluating coping strategies that focus on the meaning of the traumatic event, including positive reframing, hope, life appreciation, and courage in face of adversity (Eisenbeck et al., 2022). Participants rate its nine items on a seven-point scale that ranges from 1 (I do not agree at all) to 7 (I completely agree), with higher scores indicating higher degrees of meaning-centered coping. To verify its structure in the Brazilian Portuguese sample, a confirmatory factor analysis was conducted with JASP using the DWLS estimator. All fit indexes corroborated the unidimensional structure: χ^2 (27) = 15.47; p = 0.96; CFI = 1.00; NFI = 1.02; RMSEA = 0.000 (0.000 – 0.000); SRMR = 0.062. Regression weights varied between 0.406 (item 4) and 0.819 (item 6). The model showed an average variance extracted (AVE) equal to 0.520 and reliability indexes were 0.90 for both Cronbach's alpha and McDonald's omega.

Procedures

Data collection: This study was part of an international project that aimed to understand the psychological impact of the COVID-19 pandemic. Participants were recruited via snowball sampling method in the second semester of 2020. A link to a questionnaire built on Google Forms was shared via direct e-mail, social networking sites and apps (such as Facebook, Instagram, and Whatsapp). The first page of the questionnaire was the consent

form, where participants indicated their agreement to have access to the complete questionnaire.

Data analysis: Analyses conducted in this study were exploratory and descriptive. Alll analyses were conducted using JASP (version 0.8.6.0.). The Shapiro-Wilks test was used for normality testing and bootstrapping methods (1000 resamples; 95% CI BCa) were performed to correct non-normal distributions and differences between group sizes. Descriptive analyses (e.g., medians, means, standard deviations, frequencies) of sociodemographic questions, previous mental health diagnostics, and social distancing period; independent samples t-tests were conducted to investigate possible gender differences and participants with (PD) or without (ND) previous mental health diagnoses in their levels of psychological distress symptoms. Pearson correlations were used to identify the relations among constructs. After examining these preliminary correlation analyses, multiple linear regression analyses with a forward method were conducted to investigate which of the proposed dimensions (i.e., coping strategies, meaning-centered coping style, flourishing, perception of own physical health, loneliness, psychological inflexibility, age and number of days in social distancing), entered as independent variables to predict depression, anxiety, stress, and flourishing (the dependent variables).

Ethics Committee Approval Statement

The research was submitted to and approved by the National Research Ethics Committee (CONEP, CAAE nº 30892620.3.0000.5542, Parecer 4.073.224). Participants did not receive any financial compensation for taking part in the research.

Results

Participants indicated they had practiced social distancing from 0 to 120 days (*M* = 43; *SD* = 21.9; *Mdn* = 40). Of the total sample, 157 participants (24%) reported they had been previously diagnosed with a psychological and/or psychiatric disorder. The most common diagnosis was depression (*n* = 84) closely followed by anxiety (*n* = 82). Other disorders mentioned were panic syndrome (*n* = 22), ADHD (*n* = 7), obsessive-compulsive disorder (*n* = 6), eating disorders (*n* = 4), bipolar disorder (*n* = 3) and borderline (*n* = 2). A total of 178 participants (27%) indicated they were currently being treated. Psychotherapy was the most common treatment mentioned (*n* = 114, 52.5%), followed by prescribed drugs (*n* = 85; 39.2%).

To determine whether without a prior diagnosis (ND - *n* = 508) differed from those with a priori diagnosis (PD - *n* = 157) regarding variables of psychological distress (stress, anxiety, and depression) and flourishing, independent samples t-tests were performed. Results showed that ND participants presented lower scores on their levels of stress (*M* = 12.87; *SD* = 10.22), anxiety (*M* = 6.46; *SD* = 7.45), and depression (*M* = 12.08; *SD* = 10.62), and higher levels of flourishing (*M* = 4.02; *SD* = 1,09) when compared to PD participants: Stress, *M* = 17.94 (*SD* = 11.33), *t* (663) = 5.29, *p* < .001, *d* = -.48; Anxiety, *M* = 11.06 (*SD* = 10.68), *t* (663) = 6.05, < 0.001, *d* = -.55; Depression, *M* = 16.88 (*SD* = 12.57), *t* (663) = 4.72, *p* < .001, *d* = -.43; and Flourishing, *M* = 3.76 (*SD* = 1.21), *t* (663) = 2.497, *p* = .013, *d* = .22. Considering that these two groups of participants differed significantly from each other regarding the main variables, all subsequent analyses were conducted separately for these two groups.

An independent samples t test was conducted to verify possible gender differences between participants identified as female and male regarding stress, anxiety, depression, and flourishing. Results showed no significant difference between PD men and women. However,

ND women showed significantly higher levels of stress and anxiety when compared to men in the same group (see Table 1). No significant difference was observed regarding flourishing levels.

Table 1
Levels of stress, anxiety, and depression according to gender per diagnostic

ND Participants (with no previous diagnoses - N = 508)					
	Female *M (SD)*	Male *M (SD)*	*t* (*df*)	*p*	Cohen's *d*
Stress	13.54 (10.37)	10.93 (9.58)	2.53 (506)	.01*	.26
Anxiety	6.89 (7.53)	5.21 (7.12)	2.24 (506)	.03*	.23
Depression	12.57 (10.69)	10.70 (10.33)	1.74 (506)	.08	.18
PD Participants (with previous diagnoses - N = 157)					
	Female *M (SD)*	Male *M (SD)*	*t* (*df*)	*p*	Cohen's *d*
Stress	18.24 (11.55)	16.25 (10.08)	.79 (155)	.43	.18
Anxiety	11.58 (11.09)	8.17 (7.62)	1.44 (155)	.15	.32
Depression	16.75 (10.31)	17.58 (14.21)	-.30 (155)	.77	-.07

Note. * $p < .05$

Findings from correlation analyses, presented in Table 2, showed that stress levels were directly correlated with loneliness, psychological inflexibility, and coping by avoidance for both groups and with seeking social support for ND participants. For both groups, negative correlations were observed with age, flourishing, physical health, coping by hope, and meaning-centered coping. For PD participants, stress was also negatively correlated with positive problem-solving.

Anxiety symptoms were positively related to loneliness, psychological inflexibility, and coping by avoidance for both groups. ND participants also showed a direct correlation between anxiety and seeking social support. Negative relations were observed with age, flourishing, physical health, and meaning-centered coping style for both groups.

Depression symptoms were significantly and directly associated with loneliness, psychological inflexibility, and coping by avoidance for both groups. For ND participants, a small direct association was also observed for coping by seeking social support. Negative associations were observed in both groups for age, flourishing, physical health, coping by positive problem solving, hope, and meaning-centered coping style.

Based on these correlations, depression, anxiety, and stress were inserted as dependent variables in multiple linear regression analyses with a forward method. Proposed predictors controlling each other's covariances were coping strategies, meaning-centered coping style, flourishing, perception of own physical health, loneliness, psychological inflexibility, age and number of days in social distancing. Predictors of flourishing were also investigated. Results for ND participants can be observed in Table 3, and Table 4 for PD participants.

Direct predictors for stress in ND participants were coping by avoidance, psychological inflexibility, and seeking social support. Age and flourishing acted as protective factors against stress, $R^2_{adj} = .46$, $F\ (5, 458) = 77.873$, $p < .001$. For anxiety, direct predictors were also coping by avoidance, psychological inflexibility, and seeking social support, whereas there was only one negative predictor, which was the perception of their own physical health, $R^2_{adj} = .35$, $F\ (4, 459) = 64.41$, $p < .001$.

Table 2

Intercorrelations for Study Variables Disaggregated by Group

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Age	—	-.03	-.35**	-.25**	-.41**	.33**	.26**	-.27**	-.39**	-.15	.32**	.31**	.09	.44**
2. Distancing	-.07	—	.10	.05	.15	.02	.07	.02	.06	.06	.02	.00	.16	-.06
3. Stress	-.33**	.08	—	.77**	.77**	-.44**	-.37**	.31**	.57**	.51**	-.24**	-.22**	.11	-.38**
4. Anxiety	-.20**	.06	.76**	—	.73**	-.40**	-.41**	.29**	.48**	.53**	-.19*	-.16*	.02	-.29**
5. Depression	-.36**	.06	.77**	.67**	—	-.65**	-.49**	.38**	.66**	.57**	-.45**	-.42**	-.12	-.57**
6. Flourishing	.15**	.02	-.35**	-.28**	-.53**	—	.63**	-.28**	-.63**	-.44**	.59**	.52**	.33**	.73**
7. PhysHealth	.15**	.04	-.22**	-.23**	-.33**	.58**	—	-.22**	-.46**	-.23**	.40**	.38**	.28**	.47**
8. Loneliness	-.15**	-.03	.30**	.29**	.38**	-.25**	-.15**	—	.39**	.36**	-.08	-.12	-.04	-.21**
9. PsychInflex	-.28**	-.00	.53**	.50**	.59**	-.41**	-.23**	.41**	—	.44**	-.41**	-.38**	-.17*	-.44**
10. Avoid	-.17**	.09	.56**	.51**	.54**	-.28**	-.18**	.30**	.46**	—	-.17*	-.16*	.09	-.35**
11. PPS	.13**	.00	-.06	-.05	-.20**	.49**	.30**	-.03	-.09*	.10*	—	.74**	.38**	.61**
12. Hope	.29**	-.04	-.10*	-.04	-.25**	.38**	.20**	-.09*	-.12**	.05	.71**	—	.41**	.64**
13. SSS	-.08	.07	.22**	.23**	.09*	.19**	.12**	.11*	.11*	.38**	.42**	.33**	—	.32**
914. MCCS	.22**	-.01	-.21**	-.16**	-.36**	.72**	.41**	-.07	-.21**	-.16**	.57**	.54**	.20**	—

Note. Results for the ND participants (n = 508) are shown below the diagonal. Results for PD participants (n = 157) are shown above the diagonal. * $p < .05$, ** $p < .01$. PhysHealth = Physical Health; PsychInflex = Psychological inflexibility; Avoid = Coping by avoidance; PPS = Coping by Positive Problem Solving; Hope = Coping by hope; SSS = Coping by Seeking Social Support; MCCS = Meaning-centered coping style.

Table 3

Regressions of Psychological Distress Dimensions and Flourishing for ND Participants

Variable	B	SE	β	*t*	*p*	95% CI
			Stress			
Avoidance	8.259	.994	.355	8.312	< .001	[6.307; 10.212]
Psychological inflexibility	1.737	.292	.251	5.956	< .001	[1.164; 2.310]
Age	-.130	.027	-.173	-4.803	< .001	[-.183; -.077]
Flourishing	-1.337	.391	-.139	-3.418	.001	[-2.105; -.568]
Seeking social support	.948	.466	.080	2.037	.042	[.033; 1.864]
			Anxiety			
Avoidance	5.275	.772	.312	6.831	< .001	[3.757; 6.792]
Psychological inflexibility	1.593	.214	.317	7.430	< .001	[1.172; 2.014]
Physical health	-.624	.227	-.108	-2.751	.006	[-1.069; -.178]
Seeking Social Support	.766	.353	.090	2.168	.031	[.072; 1.461]
			Depression			
Psychological inflexibility	1.763	.281	.244	6.280	< 001	[1.212; 2.315]
Flourishing	-2.788	.371	-.278	-7.520	< .001	[-3.517; -2.060]
Avoidance	7.425	.858	.306	8.653	< .001	[5.738; 9.111]
Age	-.120	.026	-.153	-4.601	< .001	[-.172; -.069]
Loneliness	.473	.182	.088	2.598	.010	[.115; .831]
Hope	-1.026	.423	-.085	-2.427	.016	[-1.856; -.195]
			Flourishing			
Meaning-centered coping style	.444	.027	.600	16.201	< .001	[.390; .498]
Psychological inflexibility	-.186	.023	-.257	-8.021	< .001	[-.231; -.140]
Positive Problem Solving	.325	.082	.175	3.955	< .001	[.164; .468]
Hope	-.159	.049	-.132	-3.219	.001	[-.256; -.062]
Avoidance	-.275	.085	-.114	-3.251	.001	[-.442; -.109]
Seeking Social Support	.132	.041	.108	3.228	.001	[.052; .213]

Table 4

Regressions of Psychological Distress Dimensions and Flourishing for PD Participants

Variable	B	SE	β	*t*	*p*	95% CI
			Stress			
Psychological inflexibility	2.673	.556	.364	4.785	< .001	[1.569; 3.777]
Avoidance	6.612	1.532	.294	4.317	< .001	[3.584; 9.639]
Seeking social support	2.666	.888	.191	3.001	.003	[.910; 4.422]
Age	-.137	.062	-.144	-2.227	.028	[-.259; -.015]
Physical health	-1.183	.586	-.140	-2.019	.045	[-2.341; -.025]
			Anxiety			
Avoidance	8.316	1.525	.390	5.455	< .001	[5.303; 11.329]
Physical health	-1.854	.577	-.231	-3.214	.002	[-2.995; -.714]
Psychological inflexibility	1.404	.541	.202	2.594	.010	[.334; 2.174]
			Depression			
Psychological inflexibility	3.000	.517	.370	5.801	< .001	[1.978; 4.022]
Meaning-centered coping style	-2.160	.564	-.238	-3.833	< .001	[-3.274; -1.046]
Avoidance	7.253	1.461	.292	4.966	< .001	[4.367; 10.140]
Physical health	-1.324	.577	-.142	-2.296	.023	[-2.464; -.184]
			Flourishing			
Meaning-centered coping style	.392	.054	.455	7.309	< .001	[.286; .499]
Psychological inflexibility	-.242	.044	-.314	-5.511	< .001	[-.328; -.155]
Positive problem solving	.390	.136	.172	2.858	.005	[.120; .659]
Avoidance	-.269	.128	-.114	-2.111	.036	[-.521; -.017]

For depressive symptoms in the same group, the direct predictors were psychological inflexibility, coping by avoidance, and loneliness. Acting as buffers to these symptoms were age, flourishing, and coping by hope, R^2_{adj} = .57, F (6, 457) = 102.52, p < .001. Flourishing was directly predicted by MCCS, positive problem solving, and seeking social support. Negative predictors were psychological inflexibility, hope, and avoidance, R^2_{adj} = .63, F (6, 457) = 134.58, p < .001.

Regarding PD participants, direct predictors of stress were psychological inflexibility, coping by avoidance, and seeking social support. The negative predictors were the participants' perception of their physical health, and age, R^2_{adj} = .47, F (5, 144) = 27.15, p < .001. For anxiety, direct associations were observed with coping by avoidance and psychological inflexibility, whereas the only negative predictor was physical health, R^2_{adj} = .38, F (3, 146) = 32.02, p < .001. Depressive symptoms were predicted directly by the level of psychological inflexibility and coping by avoidance. Meaning-centered coping scores and perceived physical health acted as buffers against depression, R^2_{adj} = .60, F (4, 145) = 57.04, p < .001. Flourishing was positively predicted by MCCS and positive problem-solving, and negatively by psychological inflexibility and avoidance, R^2_{adj} = .67, F (4, 145) = 76.27, p < .001.

Discussion

Given the projected increase in the number and severity of mental health problems due to the impact of the COVID-19 pandemic (United Nations, 2020), this study aimed to identify predictors of depression, anxiety, and stress among Brazilian participants during the period of safety measures implemented by regional and national health authorities in 2020. Notably, results underscore the importance of paying greater attention to individuals with prior diagnoses, as they appear to be more vulnerable to the psychological effects of the pandemic.

Supporting prior research on the vulnerability of this population (Duarte et al., 2020; Ferreira et al., 2021; Hossain et al., 2020; Liu et al., 2020), participants with mental health disorders scored higher in levels of stress, anxiety, and depression, and scored lower in flourishing. Although social isolation is an important risk factor for this group (Okruszek et al., 2020), no relationship was observed between the number of days in social distancing and psychological suffering scores.

Gender emerged as a significant variable only in the ND group, showing women's heightened vulnerability to stress and depression in the current context. These results corroborate with previous research (Giordani et al., 2021; Hossain et al., 2020; Kupcova et al., 2023). Literature suggests that during the pandemic women were more likely to lose their jobs and have their income reduced when compared to men (Dang & Nguyen, 2020). Possible contributors include increased responsibilities involving childcare and house chores, considering schools have closed and children need full-time care (Ribarovska et al., 2021), and lack of social support (Okruszek et al., 2020). Further research is needed to investigate the factors associated with this expression of gender inequality, and how interventions and public policies might address this issue.

The main risk factors observed across all symptoms in both groups were avoidance coping (Dawson & Golijani-Moghaddam, 2020; Ferreira et al., 2021; Hossain et al., 2020; Patias et al., 2021; Prati, 2021) and psychological inflexibility (Dawson & Golijani-Moghaddam, 2020). Further research could investigate whether these results are due to high levels of distress intolerance and/or intolerance of the uncertainty of the situation. These two constructs were associated with higher levels of stress, anxiety, and depression even when controlling each other's variances. These findings suggest that interventions should focus on improving psychological flexibility as a mechanism that promote adaptive

coping strategies, as well as exercising emotional regulation to reduce their negative impact (Hernández-López et al., 2021; Pires et al., 2024; Tindle et al., 2022).

Seeking social support was associated with an increase in symptoms of stress and anxiety, but not for depression in ND participants; and an increase in symptoms of stress in PD participants. During the isolation period, seeking instrumental and emotional support may have been stressful due to the risk of contamination, lack of information, and widespread misinformation surrounding the disease. Further research is suggested on this topic.

The main protective factors were flourishing, age, and physical health, especially for PD participants. While MCCS was a significant predictor for depressive symptoms in PD participants, its primary relevance was as the main predictor of flourishing in both groups. This indicates that addressing the psychosocial domains central to the theory of flourishing (i.e., positive emotions, engagement, relationships, meaning, and achievement) might have an important and positive impact on protecting individuals from the detrimental effects of the pandemic (Eisenbeck et al., 2022). Also, these findings emphasize the relevance of investigating positive variables that could inform future interventions (Almansa et al., 2024; Pires et al., 2024).

Regarding the impact of age, which played an important role in understanding stress and depression in ND participants, results corroborated previous research in Brazil (Campos et al., 2024; Giordani et al., 2021) and elsewhere (Hossain et al., 2020; Prati, 2021). Younger participants seem to be more vulnerable to the pressure of the social distancing measures during the pandemic, with increasing levels of stress and depressive symptoms. A higher prevalence of generalized anxiety and depression in younger people is observed in the literature (Hossain et al., 2020), in addition to low scores on adaptive coping strategies (Campos et al., 2024). This higher prevalence of mental health disorders would include them

in the vulnerable group, with increasing levels of psychological distress (Kupcova et al., 2023).

The perception of their physical health was important to mitigate anxiety in ND, and symptoms of stress, anxiety, and depression in PD participants. These results suggest that PD participants, who are already more vulnerable to relapses, rely on their physical health as a buffer against the impact of the pandemic. Some of these results corroborate previous research conducted during the pandemic (Prati, 2021), confirming their relevance and the importance of promoting physical and mental health care to the population as public policy.

Although the pandemic occurred approximately five years ago, when data were collected, it is important to address the relevance of these results in the current context. Firstly, the prolonged negative impact of stress levels during the COVID-19 pandemic is referred to as a 'mental health pandemic' (Parrish, 2020), which emphasized a significant increase in mental health disorders from 2020 onwards. Therefore, its effects are still currently perceived, and data regarding the association of psychological distress with different constructs are valid and may be useful for providing informed treatment.

Additionally, registering and sharing data regarding the mental health impact of a potentially traumatic event such as the pandemic is relevant as it contributes to identifying potential risk and protection factors regarding a prolonged stress experience. Future interventions might consider this information when planning for actions that help to reduce the impact of further events.

Regarding the limitations of this study, it is important to acknowledge that these findings are based on self-report measures of psychological distress, coping, and other variables. Most vulnerable groups regarding psychological disorders are underrepresented in the study. Penninx et al. (2022) emphasize that studies using online data collection with self-reported measures of psychological distress during the pandemic presented high levels of

anxiety and depression symptoms, which should be interpreted as an increased vulnerability and risk for developing mental disorders, but not having a causal effect reflected in an increase in the number of clinical cases. While these limitations must be recognized, they do not diminish the significance of the findings.

The sociodemographic heterogeneity of the sample is a relevant factor, considering that adverse outcomes might be identified according to different populational subgroups. In a country such as Brazil, where diversity is an intrinsic cultural, economic, and sociodemographic characteristic, it is important to recognize the impact of various social determinant aspects on mental health (Moeti et al., 2022). In this paper, we focused on gender and previous diagnoses of mental disorders. Further studies could also focus on the intersection of these aspects with race, geographical region, religious beliefs, relationship status, and other variables that are relevant to mental health issues.

Further studies could address high resilience scores as a protective factor and test their relation to psychological inflexibility. In conclusion, it is necessary to propose psychological interventions that help individuals manage these symptoms. Schmidt et al. (2021) suggest interventions directed towards the public, such as booklets and other informative materials; psychological first-aid care; psychological support online or by phone; and the development of online research projects that could provide information that helps to better understand the state of the population mental health, to provide adequate care.

Based on the results presented here and those found in the growing literature on mental health during the COVID-19 pandemic, interventions need to work with the development of psychological flexibility, resilience, physical health, and psychological well-being as protective factors. Remote psychotherapeutic services should be offered, improving remote communication with work, friends, and family; shorter work hours, regular rest periods, and rotating shifts for health workers (Hamouche, 2023); and the importance of helping people

with practical guidance on maintaining regular sleep cycles and physical activities. Also, especially for those with previous mental health disorders, it is necessary to maintain the supply of prescribed medications and psychotherapy via remote methods, as well as long-term psychological follow-up (Dubey et al., 2020). These results are relevant and valid in the current context, especially when associated with the development of mental health care strategies and psychosocial support to help those in need of psychological care.

Data Availability

The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Research Data Availability

The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

Conflict of interest

The authors have no conflicts of interest to declare.

AI Use Disclosure

The authors declare that no artificial intelligence tools were used in the writing or editing of this manuscript.

Authors' Contribution:

All authors made substantial contributions to the conception and design of this study, to data analysis and interpretation, and to the manuscript revision and approval of the final version. All the authors assume public responsibility for the content of the manuscript.

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Associate editor:

Clarissa Mendonça Corradi-Webster,

Received: Apr. 02, 2024

1st Revision: Oct. 05, 2025

Approved: Mar. 02, 2026

How to cite this article:

Guerra, V. M., Carreno, D. F., Eisenbeck, N., Vazquez. A. C. S., Miranda, G. U., Monteiro, R. P., Giacomoni, C. H., Oliveira, C. M., Freires, L. A., Henklain, M. H. O., & Silva, J. A. (2026). Predicting Psychological Distress, and Flourishing During the COVID-19 Pandemic in Brazil. *Paidéia (Ribeirão Preto), 36,* e3613. https://doi.org/10.1590/1982-4327e3613

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