

## EMOTIONAL STABILITY AND ANXIETY SYMPTOMS DIFFERENTIATES PEOPLE LEAVING THE HOME USUALLY DURING THE COVID-19 PANDEMIC

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## Abstract

**Objective:** The population's adherence to measures to ensure social distancing represents a great management challenge in a pandemic context. Despite of evidence shown that social distancing is effective, lack of adherence still persists in many countries. Therefore, it is challenging to separate the effectiveness of government measures, from social distancing driven by personal initiatives. **Theory:** It is possible that the output of protective behaviors, such as adherence to protective measures and staying in social isolation, is influenced by individual characteristics, such as personality traits or symptoms of mental distress of anxiogenic nature. We hypothesized that individuals with more expressive symptoms of fear or anxiety would have a more protective behavioral tendency in terms of risk exposure, leaving less home during the pandemic. In contrast, individuals with greater emotional stability, as they feel more secure and with a lower perception of risk, could go out more often.

**Method:** A total of 2709 individuals from all regions of Brazil participated in the study (mean age = 42 years; 2134 women). Correlation analysis was performed to investigate the relationships between personality traits according to the big five model and Psychopathological Symptoms (BSI). Then, correlation analysis was performed to investigate how people that go out often differ from people that stay at home, in both symptoms and personality traits. Finally, to investigate the predictors for going out usually, we use multiple regression analysis, using gender, marital status, level of education, and personality traits.

**Results:** During the second wave of COVID-19 in Brazil, individuals with higher emotional stability tended to leave home more than those with more expressive levels of anxiogenic dysregulation. These results reinforce the role of both personality traits and psychopathological symptoms in prophylactic behavior during COVID-19 pandemics.

**Conclusions:** Individuals with greater emotional stability were more likely to leave home during the second wave of COVID-19 than those with higher levels of anxiogenic dysregulation.

**Key words:** sars-cov-2, emotional stability, social distancing, COVID-19

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## 1. Introduction

In December 2019, the SARS-CoV-2 virus emerged in Wuhan, China, spreading exponentially worldwide and disseminating the COVID-19 outbreak. As a result, the World Health Organization (WHO) (WHO, 2020)

declared a global pandemic in March 2020. In Brazil, the current pandemic crisis of COVID-19 is an unprecedented condition. The mortality has already exceeded the number of casualties from previous catastrophes as the Paraguayan War or the victims of the Spanish flu (Resende, 2020).

Impacts of the health crisis on the behavior and mental health of the population have been under investigation. As a result, orientation campaigns for the population on prevention measures such as social distancing, quarantine, and lockdown have been intensely recommended as first-order actions in the fight against viral dissemination (Aquino et al., 2020; Joaquim et al., 2021).

According to Geldsetzer (2020) (Geldsetzer, 2020), people worldwide have a good understanding of what behavioral measures can prevent the spread of COVID-19. These strategies include hand washing, avoiding touching faces, and ultimately social distancing. However, compliance with social distancing measures poses a great management challenge to behavioral scientists, leading to investigating ways to convince people of its demonstrated effectiveness. According to Moosa (2020) (Moosa, 2020), social distancing can be defined as a set of behavioral interventions to prevent the spread of infectious diseases. These aims to maintaining physical distance between people to reduce the number of times they have close contact. Social distancing involves travel restrictions, cancellation of social events, concerts, closures of workplaces, and avoidance of public places. Moosa (2020) (Moosa, 2020) examined the performance of 10 countries based on the emphasis each government placed on social distancing measures. The results showed that social distancing is adequate. However, it is not easy to disentangle the effect of government measures from that of social distancing driven by personal initiatives (Moosa, 2020) (Moosa, 2020).

### *1.1 Rules of social distance and Individual Differences*

Containing the spread of SARS-CoV-19 largely depends on the ability of citizens to respond to crisis, thus, behavioral interventions constituted the first line of defense in the fight against COVID-19 and placed the need for population adherence and cooperation in a prominent place (Götz, Gvirtz, Galinsky, & Jachimowicz, 2021). Among the most commonly employed strategies were remaining isolated and adopting social distancing measures, which are widely advocated and recommended by the world health organization (WHO, 2020).

In this sense, individual characteristics such as personality traits, automatisms, and behavioral tendencies have been able to impact people's adherence response to social distancing measures (Carvalho & Machado, 2020; Lunn et al., 2020). Carvalho and colleagues (2020) report data from a sample of 715 Brazilian adults aged 18 throughout 78 years in personality and self-reported social distancing measures. Higher scores in extroversion were associated with lower social distancing behavior (Carvalho & Machado, 2020). On the other hand, higher scores for conscientiousness were associated with higher social distancing and handwashing. This study reinforces the role of personality traits in people's engagement with the behavioral strategies to deal with COVID-19.

In another study, Carvalho and Machado (2020) investigated the relationships with low levels of empathy tended to adhere less to behavioral strategies (Carvalho & Machado, 2020). This result corroborates previous evidence that personality traits would influence adherence to prevent contamination during the COVID-19 pandemic (Carvalho & Machado, 2020; Pfattheicher, Nockur, Böhm, Sassenrath, & Petersen, 2020).

The adhesion to protective measures such as wear-

ing masks and social distancing is being investigated in the specialized literature, which has sought to understand the impact of psychological traits in terms of protective attitudes and behavior (Xu & Cheng, 2021).

The state of health crisis due to the COVID-19 pandemic may affect behavioral responses and mental health in several ways. The perception or non-perception of imminent risk of virus infection may be decisive in approach or avoidance behaviors. It is possible that the issuing of protective behaviors, such as adherence to social distancing and remaining in social isolation is influenced by individual characteristics such as emotional stability or mental illness, manifested through the absence or presence of anxiety symptoms. It is possible that individuals with high scores in emotional stability, as well as those with mental disorders, respond differentially in terms of adherence to measures of social distancing.

For the big five model of personality traits, the terms emotional stability and neuroticism correspond to opposite sides and ends of the dimensional continuum of the same trait. On the one hand, neuroticism refers to the ease with which some individuals experience negative affects, on the other, emotional stability refers to a person's ability to remain stable and balanced (Chaturvedi & Chander, 2010).

Yan (2005) developed an emotional stability construct based on the self-organizational theory that defines it as a property that is characterized as a complex emotional system that can automatically and efficiently maintain its balance (Yan, 2005). Although the literature is discussing the importance of the association of personality traits and protective behaviors in relation to the COVID-19 pandemic, further investigations related to the emotional stability trait are needed.

Individuals who score high on emotional stability tend to handle stress and events well in a relaxed and carefree manner, most likely because of the sense of security and control they experience. In this sense, investigations that can analyze the impact of the trait on objective behaviors in relation to protective measures against COVID-19 can greatly contribute to the production of evidence to support the strategic implementation of public prevention policies in pandemic contexts.

## **2. Material and Methods**

The present article presents a cross-sectional study that derives from a longitudinal project aimed at assessing the impact of COVID-19 on the mental health of the Brazilian population. The project was approved by the National Research Ethics Committee (Registration Number: 30.823.620.6.0000.5149). The dataset was exported from SurveyMonkey and imported into Knime, containing 3048 participants, from a second wave, who answered the questionnaires specified here between November 2020 and January 2021, from all regions of Brazil. Details from sample are specified at **table 1**. A questionnaire item that sought to find out whether the participants, went out normally or stayed home more during the 2nd wave of the COVID-19 was included. Essentially, the participants were asked to answer yes or no, to the following statement: "I leave home normally, as I did before COVID-19".

**Brief Symptoms Inventory (BSI):** For comparative purposes, participants were divided into two groups, those who claimed to go out and those who claimed not to go out during the 2nd wave. Anxiety, Phobic Anxiety, and Somatization symptoms were assessed based on items from the Brazilian Version of the Brief Symptom Inventory (BSI) (Adawi et al., 2019; Joaquim et al.,

2021). The BSI assesses nine psychological dimensions: Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism. The scale also features an overall score (GSI). Participants complete an online questionnaire including mental health questions.

**Ten Item Personality Measure (TIPI):** The personality trait emotional stability was assessed based on the ten-item personality measure, the TIPI (Gosling, Rentfrow, & Swann, 2003; Nunes, Limpo, Lima, & Castro, 2018) Brazilian Portuguese version. The TIPI is a brief measurement instrument that possesses adequate levels in terms of (a) convergence with widely used Big-Five measures in self-report, peer-observation scales, (b) test-retest reliability, (c) predicted patterns of external correlates, and (d) convergence between observer's own assessments. Based on these tests, a 10-item measure of the Big Five dimensions is offered for situations where quick measures are needed.

### 2.1. Data Analysis

Data analysis was conducted using the statistical program Jamovi 1.6 (2021) (Project, 2021). First, we present a descriptive statistic for sociodemographic variables of sample. After that, a correlation analysis was performed, using Pearson's correlation test, to investigate the relationships between Personality traits and

Psychopathological Symptoms (BSI) like Anxiety, Phobic Anxiety, and Somatization. Then a *Student-t* test was conducted to investigate how people that goes out normally differ from people that stay at home, in symptoms and personality traits. Finally, to investigate what are the predictors for the behavior of going out normally, we use a multiple regression analysis, using gender, marital status, level of education, and personality traits. All analysis were performed using  $p < 0.05$  as alpha level.

### 3. Theory

We hypothesize that individuals with emotional stability or who show significant symptoms of anxiogenic dysregulation respond differentially to social distancing measures, how to stay or not at home. In the present study, we investigated in a sample of the Brazilian population the behavior of leaving or not, usually during quarantine, during the second wave of COVID-19.

### 4. Results

The descriptive analysis of the sample can be seen in **table 1**. Participants had a mean age of 39.6 (SD = 13.2) in females (majority of the sample) and a mean age of 40.0 (SD = 14.9) in males, for a total of 2645 participants.

**Table 1.** Descriptive statistics for demographic information

Variable	Total ( n = 3048)		Out normally			
	f	%	No (n = 2886)		Yes (n = 162)	
			f	%	f	%
<b>Sex</b>						
Female	2179	78.6	2075	71.89	104	64.19
Male	594	21.4	536	18.57	58	35.80
<b>Education</b>						
Illiterate / Elementary school incomplete	2	0.1	2	0.06	0	0.0
PhD	156	5.6 %	153	5.30	3	1.8
Primary complete/ Gymnasium incomplete	18	0.6	18	0.62	0	0.0
Elementary school complete/ incomplete high school	78	2.8	70	2.42	8	4.93
Masters	312	11.2	299	10.36	13	8.02
High School complete / Higher Education incomplete	783	28.2	722	25.01	61	37.65
College degree complete	1426	51.4	1349	46.74	77	47.53
<b>Marital status</b>						
Married/ Live together	1225	44.3	1158	40.12	67	41.35
Separated/Divorced	257	9.3	237	9.10	20	12.34
Single	1237	44.7	1162	40.26	75	46.29
Widower	46	1.7	46	1.59	0	0.0
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Age	39.6	13.7	39.654	13.684	39.019	13.418
<b>BSI</b>						
BSI_GSI	1.179	0.791	0.779	0.757	0.680	0.746
BSI_Somatization_EB	0.773	0.756	1.522	1.032	1.417	1.001
BSI_ObsCom_EB	1.516	1.031	1.203	1.076	1.122	1.052
BSI_IntSens_EB	1.198	1.074	1.439	1.065	1.267	1.062
BSI_Depression_EB	1.428	1.065	1.328	0.977	1.039	0.861
BSI_Anxiety_EB	1.311	0.972	1.106	0.951	1.118	0.992
BSI_Hostility_EB	1.107	0.953	1.403	1.020	0.593	0.686
BSI_Phobic_EB	1.354	1.021	1.037	0.887	1.040	0.849
BSI_Paranoid_EB	1.037	0.885	0.970	0.890	0.942	0.881
BSI_Psychoticism_EB	0.968	0.889	1.189	0.794	1.017	0.729
<b>TIPI</b>						
TIPI_extraversion	5.517	4.515	5.480	4.521	6.179	4.364
TIPI_agreeableness	6.841	4.809	6.814	4.833	7.315	4.347
TIPI_conscientiousness	7.320	5.234	7.279	5.248	8.056	4.946
TIPI_emotionalstability	5.231	4.340	5.192	4.342	5.926	4.255
TIPI_openness	7.246	5.128	7.215	5.146	7.796	4.780

**Table 2** presents the results of the Correlation Analysis (Pearson) between the variables emotional stability and the symptoms anxiety, phobic anxiety, somatization. The results of the correlations obtained show that the variables anxiety, phobic anxiety and somatization correlated negatively with the variable emotional stability in a statistically significant way ( $r = - .401^{***}$   $p < 0.001$ ) and that emotional stability, showed a positive correlation with extroversion ( $r = 0.645^{***}$   $p < 0.001$ ).

**Table 4** presents the descriptive results of mean, median, standard deviation, and effect size, among the

groups who claimed to exit and not exit normally during the second wave of the COVID-19 pandemic in Brazil.

### 5. Discussion

According to the big five model of personality (Costa & McCrae, 1992; J. A. Johnson, 2017), emotional stability is characterized as a person's ability to remain stable and balanced. To refer to its inverse meaning, at the other end of the scale, the term neuroticism is used. Emotional stability and neuroticism would be two

**Table 2.** Correlation matrix between personality traits (TIPI) and psychopathological symptoms (BSI)

	Extraversion	Agreeableness	Conscientiousness	Emotional stability	Openness
Somatization	-0.070***	-0.074***	-0.092***	-0.285***	-0.060**
Obsessive Compulsive	-0.150***	-0.149***	-0.212***	-0.397***	-0.141***
Interpersonal Sensitivity	-0.179***	-0.147***	-0.168***	-0.405***	-0.127***
Depression	-0.196***	-0.126***	-0.165***	-0.382***	-0.129***
Anxiety	-0.102***	-0.109***	-0.107***	-0.401***	-0.082***
Hostility	-0.115***	-0.212***	-0.142***	-0.409***	-0.092***
Phobic	-0.074***	-0.068***	-0.064**	-0.262***	-0.035
Paranoid	-0.130***	-0.158***	-0.121***	-0.344***	-0.077***
Psychoticism	-0.173***	-0.140***	-0.145***	-0.376***	-0.115***
Global Severity Index (GSI)	-0.159***	-0.152***	-0.162***	-0.434***	-0.113***

Note: \*\*  $p < .01$ ; \*\*\*  $p < .001$

**Table 3.** Descriptive and comparative analysis of the means obtained in the BSI and TIPI according to the group

Variable	Group	N	Mean	SD	SE	t	df	p	Cohen's d	95% CI for Cohen's d	
										Lower	Upper
Somatization	No	2255	0.779	0.757	0.016	1.523	2397	0.128	0.131	-0.038	0.299
	Yes	144	0.680	0.746	0.062						
Obsessive Compulsive	No	2255	1.522	1.032	0.022	1.193	2397	0.233	0.103	-0.066	0.271
	Yes	144	1.417	1.001	0.083						
Interpersonal Sensitivity	No	2255	1.203	1.076	0.023	0.877	2397	0.380	0.075	-0.093	0.244
	Yes	144	1.122	1.052	0.088						
Depression	No	2255	1.439	1.065	0.022	1.872	2397	0.061	0.161	-0.008	0.329
	Yes	144	1.267	1.062	0.088						
Anxiety	No	2255	1.328	0.977	0.021	3.463	2397	< .001	0.298	0.129	0.466
	Yes	144	1.039	0.861	0.072						
Hostility	No	2255	1.106	0.951	0.020	-0.143	2397	0.886	-0.012	-0.181	0.156
	Yes	144	1.118	0.992	0.083						
Phobic	No	2255	1.403	1.020	0.021	9.397	2397	< .001	0.808	0.638	0.978
	Yes	144	0.593	0.686	0.057						
Paranoid	No	2255	1.037	0.887	0.019	-0.040	2397	0.968	-0.003	-0.172	0.165
	Yes	144	1.040	0.849	0.071						
Psychoticism	No	2255	0.970	0.890	0.019	0.373	2397	0.709	0.032	-0.136	0.201
	Yes	144	0.942	0.881	0.073						
Global Severity Index (GSI)	No	2255	1.189	0.794	0.017	2.542	2397	0.011	0.219	0.050	0.387
	Yes	144	1.017	0.729	0.061						
Extraversion	No	2886	5.480	4.521	0.084	-1.918	3046	0.055	-0.155	-0.313	0.003
	Yes	162	6.179	4.364	0.343						
Agreeableness	No	2886	6.814	4.833	0.090	-1.289	3046	0.197	-0.104	-0.262	0.054
	Yes	162	7.315	4.347	0.342						
Conscientiousness	No	2886	7.279	5.248	0.098	-1.839	3046	0.066	-0.148	-0.307	0.010
	Yes	162	8.056	4.946	0.389						
Emotional stability	No	2886	5.192	4.342	0.081	-2.095	3046	0.036	-0.169	-0.327	-0.011
	Yes	162	5.926	4.255	0.334						
Openness	No	2886	7.215	5.146	0.096	-1.404	3046	0.161	-0.113	-0.272	0.045
	Yes	162	7.796	4.780	0.376						

**Table 4.** Results for logistic regression analysis using going out as outcome

Predictor	$\chi^2$	df	p	Estimate	SE	z	Wald Test		
							Wald Statistic	df	p
(Intercept)	52.8	16	< .001	-10.494	443.362	-0.024	5.603e -4	1	0.981
Sex	19.90	1	< .001	-0.410	0.089	-4.616	21.308	1	< .001
Age_y	2.08e-9	1	1.000	-0.000	0.007	-4.571e -5	2.089e -9	1	1.000
Education	21.19	6	0.002	-10.242	2.394.483	-0.004	1.829e -5	1	0.997
Marital_status	7.75	3	0.051	3.565	143.912	0.025	6.135e -4	1	0.980
Extraversion	2.38	1	0.123	0.045	0.029	1.546	2.389	1	0.122
Agreeableness	2.34	1	0.126	-0.057	0.038	-1.520	2.311	1	0.128
Conscientiousness	1.17	1	0.279	0.033	0.030	1.081	1.169	1	0.280
Emotional stability	1.41	1	0.235	0.038	0.032	1.189	1.414	1	0.234
Openness	1.17	1	0.280	-0.036	0.034	-1.082	1.171	1	0.279

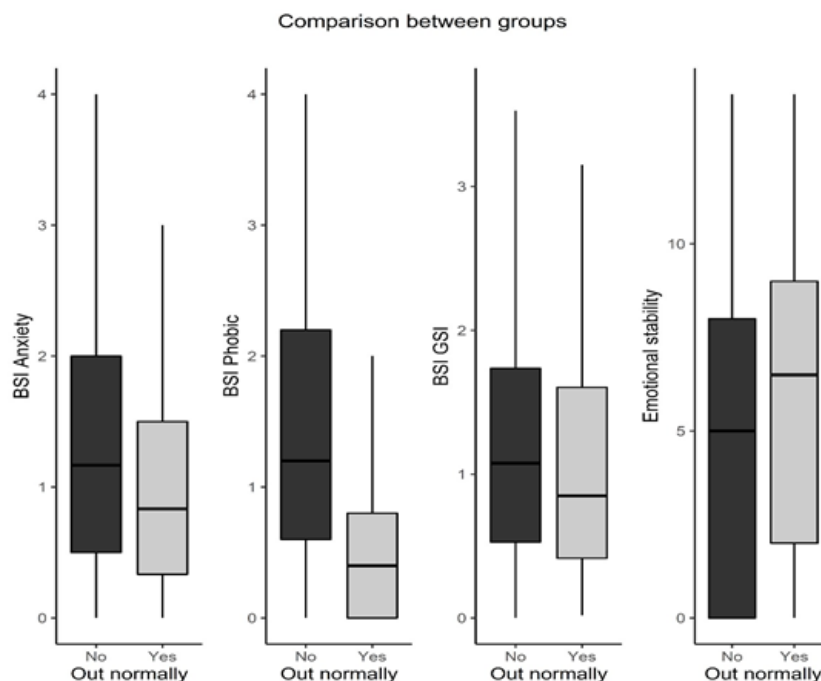
sides of the same coin. Individuals with high levels of neuroticism experience negative emotions easily, tend to be reactive and more sensitive to risks. In accordance with the results of this study, personality traits tend to influence adherence to measures of social distancing, corroborating our hypothesis. If we consider the positive correlation between emotional stability in contrast to people experiencing anxiety symptoms and phobic anxiety, individuals with greater emotional stability may be more likely to underestimate risks inherent in breaking social distancing measures as pointed out by Carvalho & Machado (2020) (Carvalho & Machado, 2020).

Literature has documented that a positive correlation between people with high scores on behavioral inhibition scales (BIS) point to threat sensitivity as a vulnerability factor for the development of psychiatric disorders such as anxiety and depression (S. L. Johnson, Turner, & Iwata, 2003). It makes sense, therefore, as expressed in the results, that individuals exhibiting symptoms of anxiogenic dysregulation would stay longer at home avoiding the risks of potential contamination or death due to unnecessary outings. There is evidence that higher levels of neuroticism, i.e., lower emotional

stability, function as a protective mechanism against death (Gale et al., 2017). It is possible that this protective effect is associated with a more intensified expression of the fear emotion, associated with maladaptive anxiety states, such as generalized anxiety disorder or specific phobias.

Fear is a basic and universal emotion, an emotional state resulting from awareness of danger or threat, whether real, hypothetical, or imagined, which in turn tends to elicit avoidance, evasion, or escape behaviors. In this sense, it is possible that to some extent a higher expressivity of neuroticism may promote greater concern with health, leading to more protective behaviors. Individuals can score high on neuroticism for different reasons. Individuals who score high due to general feelings of anxiety and tension actually appear to have worse health outcomes than those in which vulnerability-related concerns predominate (Weiss & Deary, 2020). There are also studies that suggest that individuals with high neuroticism and high conscientiousness tend to promote protective behaviors with a reduction to health-related risk behaviors (Turiano, Mroczek, Moynihan, & Chapman, 2013). This evidence-based body of information, when combined

**Figure 1.**



with the results of the present study, allows one to think, that the greater tendency for outgoing by emotionally stable, is associated with a potentially decreased risk bias and potentially increased levels of risk behaviors.

### 5.1. Conclusions and Practical Implications

Individuals with greater emotional stability were more likely to leave home during the second wave of COVID-19 than those with higher levels of anxiogenic dysregulation. Governments can, through the use and implementation of actions based on behavioral economics (Martínez Villarreal, Mendéz and Scartascini 2020; Cruz et al, 2020), offer instructions through infographics that promote care behaviors, such as hand washing, emotional control, social distancing. This exploratory and comparative study has some practical implications. The identification of behavioral trends such as those found here, constitutes raw material for the development of public policy strategies aimed at the development of collective management actions aimed at increasing people's adherence to security measures in crisis situations such as the global health crisis in Covid-19.

### 5.2. Limitations

This is a cross-sectional study, with a convenience sample, whose data were collected based on self-report scales. Attention to personality traits was limited to investigating only two aspects of the factors described in the big five model.

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