Exploring the Role of Assessment Regulatory Mode in COVID-19 Traumatic Stress: Negative Agency as a Mediator

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Article info

Abstract

COVID-19 has had a profound impact on global mental health. The pervasive sense of worry, uncertainty, and distress engendered by the crisis has been instrumental in escalating the prevalence of anxiety, depression, and a wide range of psychiatric disorders. The principal objective of this study was to investigate the relationship between assessment regulatory mode, sense of negative agency, and COVID-19 stress traumatic symptoms. The study incorporated a cohort of 297 participants who completed a series of measures evaluating assessment regulatory mode, perception of negative agency, and the extent of COVID-19 stress traumatic symptoms. Corroborating our hypotheses, the empirical data revealed that individuals' assessment regulatory mode significantly and positively predicted COVID-19 stress symptoms. Additionally, the construct of negative agency was identified as a mediating factor elucidating the relationship between assessment regulatory mode and the symptomatic expressions of COVID-19 related stress. The findings of this research emphasize the critical importance of concurrently examining assessment orientation and negative agency to predict COVID-19-related stress, suggesting strategic interventions targeting these elements may offer considerable benefits.

Keywords: Assessment, regulatory modes, sense of negative agency, COVID-19, Covid-19 stress traumatic symptoms

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Introduction

The COVID-19 pandemic, first identified in Wuhan, China, has spread rapidly across the globe, precipitating an acute international public health emergency. The enforcement of lockdown protocols and the global nature of the pandemic have exercised a marked impact on individuals' well-being across international frontiers. Extensive academic research (e.g., F. Wang et al., 2022) has detailed a significant global increase in mental health disorders, leading to heightened anxiety, apprehension, and psychological distress. Numerous scholarly investigations (e.g., Dolić et al., 2023) have corroborated that the apprehension of virus contraction, the demise of close kin, job loss and economic uncertainty were significant contributors to the development of psychological distress. The aim of the present research is to expand the corpus of research concerning the precursors of stress symptoms related to COVID-19. Specifically, this research delves into the roles of assessment regulatory mode and the perception of negative agency as potential contributing factors.

Assessment regulatory mode

Drawing upon the regulatory mode theory advanced by (Kruglanski et al., 2000), this conceptual framework delineates two distinct regulatory modes: locomotion and assessment. The locomotion mode refers to a self-regulatory process focused on transitioning between states and channeling psychological resources into initiating and sustaining progress toward goals with minimal delays or distractions. Individuals who exhibit high levels of locomotion mode tend to emphasize swift action and seamless progression, placing less emphasis on critical evaluation (Higgins et al., 2003). In this study, the emphasis is on the assessment dimension of self-regulation, which empowers individuals to make evaluations and comparisons across various entities, including different methods or objectives. Individuals characterized by heightened assessment levels typically exhibit a predilection for systematic and deliberate analysis of all available options (Higgins et al., 2003).

Prior thorough investigations have determined a substantial association between elevated levels of assessment and a variety of adverse psychological conditions, encompassing diminished well-being as well as increased anxiety and stress (Hong et al., 2004). The link between the assessment orientation and adverse emotional consequences is probably rooted in assessors' inclination to critically evaluate their own and others' behavior, a tendency that does not foster psychological well-being. Further, the propensity of assessors to ruminate on the discrepancy between their actual and ideal self-perceptions can significantly exacerbate negative affect (Higgins, 1987).

In line with these insights, research (De Carlo et al., 2014) has revealed a positive linkage between the trait of assessment and heightened psychological strain and burnout. More specifically, individuals characterized as high assessors exhibited decreased levels of work engagement, subsequently leading to an elevated prevalence of burnout and psychological strain. Furthermore, research (Bélanger et al., 2015) has indicated that assessment exerted a positive direct influence, as well as an indirect effect through obsessive passion, on the experience of work-related stress. Similarly, an orientation towards assessment has been recognized as an antecedent of obsessive passion, which leads to elevated levels of stress in athletes (Lucidi et al., 2016).

Moreover, workers with elevated levels of assessment are inclined to manifest reduced positivity and diminished job satisfaction. Notably, this relationship was found to be more pronounced among those who also exhibited lower levels of locomotion (Lo Destro et al., 2021).

Further research in educational environments (Garcia et al., 2015) has confirmed the negative association between assessment and subjective well-being. Lastly, the predominance of regulatory modes, as determined by the differential between locomotion and assessment scores, predicted occupational stress in a longitudinal design spanning two waves (Lo Destro et al., 2018).

Therefore, a significant body of scholarly evidence has established that high assessment levels of are robustly related with decreased well-being. Nonetheless, findings pertinent to the COVID-19 context remain sparse. Notably, in the milieu of the COVID-19, a recent study (Lo Destro & Costa, 2023) indicated that the locomotion regulatory mode exhibited a negative, albeit statistically nonsignificant, relationship with COVID-19-induced anxiety. However, the indirect effects mediated by resilience were found to be significant. Furthermore, recent research (Jansen et al., 2022) has indicated that individuals with an assessment-oriented disposition are prone to intensified experiences of rumination and decision paralysis, which manifest as difficulty in undertaking activities—particularly notable during the pandemic. When this is coupled with a predisposition towards fear of missing out (FOMO) and increased engagement in activities perceived as negative or frustrating, such a confluence of factors is linked with elevated distress levels.

The role of Sense of agency

The concept of the sense of agency was articulated by (Synofzik et al., 2013) as the recognition of oneself as the initiator of actions. A recent conceptual refinement (Tapal et al., 2017) has delineated two subdimensions, specifically: "sense of positive agency", the feeling of control over one's actions and environment, and "sense of negative agency", the perception of lacking control.

The notion of 'negative' agency constitutes a novel conceptualization, which, however, may be indicative of a more expansive phenomenon akin to that delineated in scholarly discourse on learned helplessness (Maier & Seligman, 1976). Learned helplessness represents a particular instance wherein the external environment, often characterized by its adverseness, is deemed to be outside the sphere of one's influence—a condition that is pervasive across various situations (or "chronic") and spans multiple domains, rather than being confined to an isolated event or a singular facet of the agency experience. Scoring high on negative agency could conceivably have profound and significant repercussions for individuals' motivation to engage in action (Tapal et al., 2017).

Building on this understanding, individuals with a proclivity for assessment, susceptible to self and social evaluation, are noted to be acutely aware of the gap between actual circumstances and their ideal outcomes, especially when faced with significant decisions. As a result, such individuals may experience hesitation and difficulty in making decisions, a state of affairs that can result in a sense of negative agency. In this regard, assessors have been found to be more inclined to experience procrastination, a tendency compounded by concerns related to perfectionism, particularly doubts about one's actions and fears of making mistakes, which can paralyze decision-making process (Pierro et al., 2011). Owing to their propensity for conducting an exhaustive examination of potential alternatives to preceding actions, individuals with an assessor orientation are also more predisposed to engage in a meticulous comparative analysis of realized behaviors against potential alternatives. As a consequence, these individuals exhibit greater engagement with counterfactual thinking and, accordingly, are more inclined to experience sentiments of regret (Pierro et al., 2008). Furthermore, individuals manifesting a heightened propensity for assessment are more susceptible to the phenomenon of inaction inertia, predominantly due to their amplified sensitivity to information regarding losses and a more pronounced reluctance to incur losses. This assertion is substantiated by a recent work (Zhang et al., 2016), which ascertained that people with elevated scores in assessment orientation were less inclined to capitalize on a subsequent opportunity after bypassing an initial, more advantageous chance.

Recent investigations have explored the intricate dynamics between individuals' sense of agency and COVID-19 health related outcomes. In particular, it has been observed (Y. Wang et al., 2023) that a heightened perception of COVID-19 risk was related to a diminished level of sense of agency. Furthermore, in accordance with the biopsychosocial health model, it has been found that social loneliness and sense of agency were key factors in predicting individuals' psychological well-being (PWB), with PWB also being significantly influenced by physical health (Tuason et al., 2021). However, contrasting findings were presented by Lawrance and colleagues (Lawrance et al., 2022), reporting no statistically significant difference in distress scores among participants exhibiting high or low agency in response to the pandemic. Therefore, considering the presented findings, the exact nature of the relationship between sense of agency and COVID-19 pandemic stress remains ambiguous.

Research hypotheses

The current study has the goal to bridge the lacuna in the extant corpus of literature concerning the role of sense of negative agency in the relationship between assessment regulatory mode and COVID-19 stress. Despite the burgeoning corpus of research scrutinizing COVID-19 pandemic psychological effects, insufficient focus has been directed towards examining the impact of assessment on individual stress levels. Importantly, elucidating the link between individuals' sense of agency and COVID-19 traumatic stress symptoms can offer valuable insights for the effective promotion of mental well-being.

The hypotheses advanced in this research suggest that assessment, which is characterized by a focus on comparative evaluations, may influence individuals' perceived control over their actions, thereby exacerbating stress associated with the pandemic. Specifically, it is proposed that assessment is positively associated with both the perception of negative agency and COVID-19 stress traumatic symptoms. Furthermore, it is hypothesized that the impact of assessment on COVID-19 stress should be mediated by individuals' perception of negative agency

Methods

Participants

A total of 297 university students (61 males and 236 females) participated to this online survey to obtain partial course credit. The average age of participants was 31.7 years, with a standard deviation of 11.41. All participants were adequately briefed regarding the research objectives and consented to the anonymous utilization of their data. The initial cohort included 336 individuals; however, 39 were subsequently omitted from the analysis due to incorrect responses to a control question. Educational attainment among participants varied: 6.7% possessed postgraduate qualifications, 36% had completed tertiary education, 55.6% had finished secondary education, and 1.7% had middle school education diploma. The research adhered strictly to the ethical standards stipulated in the Declaration of Helsinki and was approved by the local Ethic committee.

Using the Monte Carlo Power Mediation Analysis Shiny App available at https://schoemanna.shinyapps.io/mc_power_med/, we conducted a sensitivity analysis to determine the required sample size and estimate the power of the study. By using the Standardized Coefficient as the input method, the analysis revealed an estimated power of 0.83 for the study.

Procedure and Materials

The survey was structured in a sequential manner, initially comprising an array of inquiries pertaining to socio-demographic data. Subsequent to this, a second segment delved into aspects related to COVID-19 information, regulatory modes, and the sense of agency. The final section was dedicated to the assessment of symptoms indicative of COVID-19-related traumatic stress.

COVID-19 Vaccination Status. Participants had to respond to a query pertaining their COVID-19 vaccination status, necessitating a binary indication of 'yes' or 'no' to ascertain their COVID-19 vaccination status.

COVID-19 Infection History. Participants had to address a query concerning any recent COVID-19 infection, selecting from 'yes,' 'no,' or 'do not know' to signify if they had contracted the virus within the preceding month. Subsequently, for the purpose of facilitating comprehensive analyses, the 'no' and 'do not know' response categories were combined.

Assessment Regulatory mode questionnaire. The Italian adaptation of the Regulatory Mode Questionnaire, originally developed by (Kruglanski et al., 2000) comprises 24 self-report items designed to measure individual differences in locomotion and assessment orientation. In the present study, the interest was focused on assessment regulatory mode (e.g., "I like evaluating other people's plans"). Responses were measured using a six-point Likert-type scale, ranging from 'strongly disagree' (assigned a value of 1) to 'strongly agree' (assigned a value of 6). Prior to analysis, scores from negatively worded items were reversed. An aggregate score was computed as the mean of all responses. For the present sample, the assessment dimension exhibited a Cronbach's alpha of .74, with a mean score of 3.45 and a standard deviation of .74.

Sense of agency. The Sense of Agency Scale (Tapal et al., 2017) consists of 13 items crafted to evaluate the degree of an individual's agency. The scale distinguishes between a sense of positive and negative agency. In our work, although we were mainly interested in sense of negative agency (SoNA), both aspects were measured. Specifically, SoNA was measured via 7 items (e.g., "My actions just happen without my intention"), whereas Sense of Positive Agency (SoPA) was assessed the remaining 6 items. Participants appraised their agreement with each of the 13 propositions via a 7-point Likert metric, which spanned from 1 (indicative of strong dissent) to 7 (indicative of strong assent). Within the sampled population, the reliability coefficients (Cronbach's alpha) were .77 for the sense of negative (M = 2.25, SD = .87) and .79 for the sense positive agency (M = 5.06, SD = 1.07).

COVID-19 traumatic stress symptoms. A specific scale (Taylor et al., 2020) has been developed to assess COVID-19 distress. Specifically, the author's project was related to an assessment of several areas of interest. In the present work, we adopted the traumatic stress symptoms about COVID-19 subscale, which is composed of 6 items (e.g., "I had trouble concentrating because I kept thinking about the virus"). This scale has been designed to measure individuals' propensity to experience, for instance, nightmares or intrusive thoughts related to the virus. Participants were required to evaluate the degree to which each item corresponded with their conduct over the preceding fortnight. Responses were quantified utilizing a 5-point Likert scale, which was anchored at 0 (never) and extended to 4 (almost always). The composite score was computed by calculating the mean of all the responses provided (M =.23, SD = .46). In this sample, Cronbach's α was .89.

Results

Correlations between variables are presented in Table 1. As hypothesized, a positive and significant correlation emerged between assessment and COVID-19 stress. Furthermore, assessment was positively correlated with sense of negative agency, which, in turn, was positively correlated with COVID-19 traumatic stress symptoms. Additionally, age was negatively related with both sense of negative agency and COVID-19 stress, indicating that younger experienced higher sense of negative agency and increased COVID-19 traumatic stress symptoms. Lastly, gender was negatively related with COVID-19 traumatic stress symptoms, whereas it was positively related with sense of negative agency, showing that males exhibited higher levels of COVID-19 stress symptoms and lower sense of negative agency in comparison to females.

In order to investigate the hypotheses that the sense of negative agency serves as a mediator in the association between assessment regulatory modes and the manifestation of COVID-19 stress symptoms, we employed the PROCESS macro Model 4 developed by (Hayes, 2013). This model leverages the bootstrapping technique to obtain estimates of the direct and indirect effects. In accordance with the guidance provided by (Aiken et al., 1991), predictor variables were

Tab. 1. Correlations among variables

|	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1. Gender	(-)							
2. Age	.04							
3. Education	-.12*	.19**						
4. COVID-19 Infection	-.09	.02	.08					
5. COVID-19 Vaccination	.05	-.10	-.04	-.13*				
6. Assessment	.03	-.11	-.05	.01	.09			
7. SONA	.12*	-.16**	-.11	.01	.07	.36**		
8. COVID-19 TSS	-.13*	-.12*	.004	.06	.08	.16**	.17**	(-)

Note: *N* = 297; *p< .05; **p< .01.

Tab. 2. Summary of the regression models

	SONA			COVID-19 TSS		
	B	SE	p	B	SE	p
Gender	.25	.12	.036	-.16	.06	.014
Age	-.01	.004	.032	-.003	.002	.179
Education	-.08	.07	.268	.01	.04	.720
COVID-19 Infection	.14	.28	.614	.15	.15	.333
COVID-19 Vaccination	.07	.20	.741	.13	.11	.259
Assessment	.40	.06	.000	.06	.04	.101
SONA				.07	.03	.024
R²		.16			.08	

subjected to centering. Control variables, including gender (represented as a dichotomous variable with "Male" assigned a code of 0 and "Female" assigned a code of 1), age, level of education, COVID-19 vaccination status (encoded as a binary variable with No coded as 0 and Yes coded as 1), and COVID-19 infection status (encoded as a binary variable with No and Do not Know coded as 0 and Yes coded as 1), were included in the analysis. A summary of the outcomes of these analyses is presented in Table 2.

The results demonstrated that assessment had a positive and statistically significant impact on sense of negative agency ($B = .40$, $SE = .06$, $p < .001$). Subsequently, this sense of negative agency had a significant and positive influence on COVID-19 traumatic stress symptoms ($B = .07$, $SE = .03$, $p = .024$). The positive link between assessment and COVID-19 traumatic stress symptoms became non-significant after controlling for sense of negative agency, revealing that such relationship was fully mediated (Figure 1). The total effect of assessment on COVID-19 traumatic stress symptoms was positive and significant ($B = .09$, $SE = .04$, $p = .011$). Furthermore, the mediation analysis revealed that the assessment's impact on traumatic stress symptoms through the sense of negative agency was statistically significant ($B = .03$, $BootSE = .02$; bootstrapping CI = [.01, .06]).

Fig. 1. Model of mediation
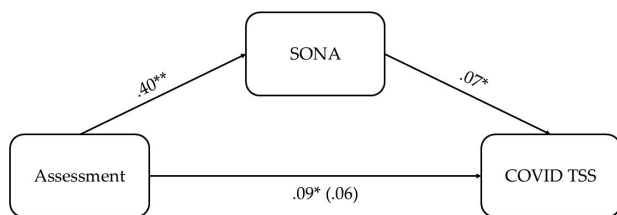
Note: *$p < .05$; **$p < .01$. Unstandardized coefficients are provided. Enclosed within parentheses is presented the regression coefficient when the mediator was integrated into the model

Discussion

The global mental health landscape has been substantially influenced by the COVID-19 pandemic. According to the World Health Organization, during the initial year of the pandemic, there was a 25% rise in the worldwide incidence of anxiety and depression (WHO, 2022, s.d.). A plethora of studies (Kindred & Bates, 2023; Lo Destro & Gasparini, 2021; Singh et al., 2020; Turna et al., 2021) have examined the determinants that are most likely to predispose individuals to be more vulnerable to heightened states of anxiety and stress during the pandemic. Nevertheless, there remains a dearth of research that has delved into the role of regulatory modes.

The aim of our research was to investigate the potential role of two specific predictors of COVID-19 stress symptoms. In more detail, we hypothesized that higher levels of individual assessment would be positively associated with a negative sense

of agency, and this negative sense of agency, in turn, would be positively related with COVID-19- stress. Consistent with these hypotheses, the findings indicated that individuals exhibiting elevated levels of assessment tended to display correspondingly higher levels of both negative sense of agency and symptoms related to COVID-19 stress. Furthermore, the association between assessment and COVID-19 stress symptoms was found to be significantly mediated by the presence of a negative sense of agency.

The sense of negative agency is related to individuals' perception of an inability to control the external environment, particularly when it is aversive. In this vein, assessors' overthinking processes may be implicated in action impediment and can foster the sense of negative agency. In particular, the internal conflict experienced by assessors, which is heightened by the fear of not having control as identified in the sense of negative agency, could lead to an intensified sense of paralysis when attempting to make decisions. This, in turn, can lead to increased stress and potentially traumatic symptoms, especially if individuals perceive their actions as ineffective in controlling the situation. In line with these assumptions, a recent work (Jansen et al., 2022) underscored the adverse consequences associated with vulnerabilities of assessors' responding to the COVID-19 outbreak. More precisely, such vulnerabilities have been observed to be indirectly associated with increased stress, as evidenced by fear of missing out, difficulties in participating in activities, and engagement in maladaptive behaviors.

The findings of the present research afford a distinctive comprehension of the fundamental functioning of assessment, elucidating its impact on COVID-19 stress. Particularly, the present study centers on assessors' proclivity for experiencing paralysis, thereby contributing to increased feeling of sense of negative agency, consequently intensifying their perception of COVID-19 stress. In this context, the distinctive characteristics of assessment orientation emphasize the necessity of focusing on such elements to relieve the adverse repercussions of the pandemic. As assessment can be situationally induced (Mauro et al., 2009), it may be feasible to design health campaigns aimed at diminishing assessment orientation. Embracing this approach could potentially enhance individuals' health outcomes even in challenging circumstances, fostering improved well-being and a heightened sense of agency across diverse populations.

It should be noted that the generalizability of these findings is constrained by several factors. Notably, the first limitation pertains to the cross-sectional design of the research, as it only permits the examination of associations between variables at a single point in time. Additionally, it is important to acknowledge the utilization of a convenience sample, as well as the sample's gender imbalance (79.5% female). Another limitation is associated with the reliance on self-report instruments. Therefore, it would be beneficial to complement self-report data with objective physiological measures of stress.

Furthermore, it is essential to acknowledge that the dataset is confined to responses obtained from participants residing in Italy during a particular stage of the pandemic. It should be noted that, by that moment, numerous aspects underwent significant transformations throughout the pandemic. Consequently, we cannot conclusively assert that the patterns

observed in our results would remain consistent during the different phases of the pandemic.

To mitigate these limitations, future research endeavors should focus on replicating the study's findings across diverse settings and among a broader spectrum of participants, encompassing various demographics and cultural backgrounds. Additionally, gaining insights into how assessment affects the sense of negative agency and stress across time is crucial, as it provides the chance to discern possible recurring themes, trajectories, and causal linkages. Moreover, extended temporal studies of this nature can provide valuable insights into essential elements that could influence or alter the nexus between assessment and individual well-being. For instance, coping strategies individuals employ during stressful situations might mediate the relationship.

Conclusions

In conclusion, the present study has elucidated the intricate interplay between assessment regulatory mode, sense of negative agency, and COVID-19-induced stress. Specifically, the findings revealed that a sense of negative agency, fostered by a chronic contemplative and evaluative mindset, may impede decisive action, exacerbating stress and contributing to a vicious cycle of inaction and distress. Further research is warranted to explore the causal dynamics of these relationships and to establish effective strategies for psychological resilience and well-being during and beyond the pandemic era.

Notes

[1] When controlling the regression analysis for Sense of Positive Agency the results did not change significantly.

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