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Illness Stigma and Shame in People With Chronic Illnesses vs. SARS-CoV-2 Survivors: Associations With Psychological Distress Through Psychological Flexibility and Self-Compassion

Saga Berglund[1] | Anna Danielsson[1] | Siri Jakobsson Støre[1] | Diogo Carreiras[2] | Sérgio A. Carvalho[3] | Michaela Blomqvist-Storm[4] | Helena Pinto[2] | Lara Palmeira[5] | Marco Pereira[3] | Inês A. Trindade[1,3]

[1]EMBRACE Lab, Center for Health and Medical Psychology (CHAMP), University of Örebro, Örebro, Sweden | [2]Lusófona University, Porto, Portugal | [3]Center for Research in Neuropsychology and Cognitive Behavioral Intervention (CINEICC), Faculty of Psychology and Educational Sciences, University of Coimbra, Coimbra, Portugal | [4]Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden | [5]Portucalense Psychology Institute (I2P), Department of Psychology and Education, Universidade Portucalense, Porto, Portugal

Correspondence: Inês A. Trindade (ines.trindade@oru.se)

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ABSTRACT

Individuals with chronic illnesses and those infected with SARS-CoV-2 often face stigma, shame, and psychological distress related to their conditions. Higher psychological flexibility and self-compassion are often associated with less stigma and shame. Examining and comparing these experiences between people with chronic illness and people who have recovered from SARS-CoV-2 can provide valuable insights into the shared and unique challenges they encounter. This study aimed to compare these two groups, and used structural equation modelling to investigate the links between stigma, shame, and psychological distress, with a focus on the mediating roles of psychological flexibility and self-compassion in these associations. The study included 270 Portuguese participants (chronic illness: $n = 104$; SARS-CoV-2: $n = 166$), with an average age of 36.73 years and 86.6% of the sample being women. Results showed that the chronic illness subgroup reported higher levels of illness stigma, anxiety, and depression, compared to the SARS-CoV-2 subgroup. Findings from the mediation analysis, revealed that the model fit exceptionally well, accounting for 48% of the variance in anxiety and 45% in depression symptoms across the entire sample. Most parameters were consistent between the two subgroups, except for the association between self-compassion and depression symptoms, which was only statistically significant in the chronic illness subgroup. In this group, both psychological flexibility and self-compassion mediated the association between stigma and shame with symptoms of anxiety and depression. In the SARS-CoV-2 subgroup, these processes mediated the association with anxiety, whereas psychological flexibility only mediated depression symptoms. The findings from this study provide directions for future research on the possible development or refinement of personalized psychological interventions targeting emotional distress in adults with chronic illnesses and viral disease recovery cohorts.

Saga Berglund, Anna Danielsson and Siri Jakobsson Støre share co-first authorship.

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Summary

- The chronic illness subgroup reported significantly higher levels of illness stigma, anxiety, and depression, compared to the SARS-CoV-2 subgroup
- Both psychological flexibility and self- compassion may work as protective factors against anxiety and depression in adults with chronic illnesses
- In the SARS-CoV-2 subgroup, both psychological flexibility and self-compassion may work protectively against anxiety symptoms, with psychological flexibility seeming slightly more important when it comes to symptoms of depression.

1 | Introduction

Stigmatization is a social process where an individual or group is singled out and associated with negative stereotypes and negative judgement (Dudley 2000). Internalized stigma, where an individual identifies with a stigmatized group (such as a chronic illness population), is associated with feeling shame regarding one's stigmatized condition (Akbari, Mohammadi, and Hosseini 2023; Earnshaw et al. 2022; Luoma et al. 2008; The Public Health Agency of Sweden 2024). Social rejection, poor healthcare, harassment and workplace termination due to one's illness are examples of consequences described by people with chronic illnesses (Earnshaw and Quinn 2012; West, Dye, and McMahon 2006). Moreover, experiencing chronic illness-related stigma is associated with higher levels of depression and anxiety and even post-traumatic stress symptoms (Eccles et al. 2023; Liu and Zhang 2021; Warren et al. 2022).

Stigma can trigger several emotional responses, including shame. Shame is a self-conscious emotional experience that arises from feelings of being inadequate, different, flawed or inferior, which functions to avoid social exclusion by the desire to hide, conceal or escape (Gilbert and Andrews 1998). Stigma and shame are therefore related concepts but with distinct differences. Whereas stigma originates from external sources, such as societal attitudes, cultural norms or specific groups, shame originates internally from one's own feelings of inadequacy, failure or unworthiness. Previous studies have identified a positive correlation between chronic illness and internal shame (Matos-Pina, Trindade, and Ferreira 2022) and a negative correlation between shame and mental health in chronic illness samples (Trindade et al. 2018; Trindade, Ferreira, and Pinto-Gouveia 2020; Carvalho et al. 2021).

People with chronic illnesses and those who have recovered from a severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection share common experiences, such as a worsened physical condition (Lange-Maia et al. 2020), an altered self-concept (O'Donnell and Habenicht 2022), as well as psychological distress, stigmatization and shame associated with their condition (Afrashtehfar et al. 2023). Psychological distress is a broad term that encompasses emotional suffering typically characterized by symptoms of anxiety and depression (Kessler et al. 2002). It reflects a general state of mental discomfort, which may arise due to stress, adverse life circumstances or underlying psychological conditions. In clinical and research contexts, psychological distress is often operationalized through the assessment of anxiety and depression, as these two constructs are strongly correlated and tend to co-occur (Kessler et al. 2002). The coronavirus disease 2019 (COVID-19) pandemic was an extreme and novel event with large uncertainty regarding the consequences of a SARS-CoV-2 infection (Ammar et al. 2020; Tallon, Gomes, and Bacelar-Nicolau 2020). This context was particularly concerning for people with chronic illnesses due to the higher risks of more severe symptoms and deadly cases in vulnerable populations, perhaps due to the clustering of several diseases (Saqib, Qureshi, and Butt 2023). To the best of our knowledge, there are no previous studies comparing the similarities and differences between these somatic conditions regarding levels of psychological distress, illness-related stigma and shame and whether certain psychological processes protect against developing symptoms of anxiety and depression.

A systematic review conducted early during the COVID-19 pandemic found that people who had previously been infected with the SARS-CoV-2 virus had significantly higher levels of depression symptoms compared to those who had never been infected (Vindegaard and Benros 2020). Another study found that the hazard ratios for developing a mood or anxiety disorder in a COVID-19 recovery sample compared to people who had been infected with influenza were 1.47, $p < 0.001$ (1.79 for first-time mood diagnosis) and 1.45, $p < 0.001$ (1.78 for first-time anxiety diagnosis), respectively (Taquet et al. 2021). Globally, there was an increase of 25% in the prevalence of depression and anxiety symptoms during the first year of the pandemic, with the highest increases seen in areas highly affected by COVID-19 (WHO 2023)—a pattern also observed in Portugal (Faustino et al. 2022; Machado et al. 2023; Martins et al. 2022; Santos and Rachadell 2022). Among the identified risk factors for developing symptoms of depression and anxiety during the COVID-19 pandemic were being of younger age, being female and having a chronic illness (Ribeiro et al. 2021; Xiong et al. 2020). Moreover, being infected with the SARS-CoV-2 virus was associated with an increased risk of developing severe complications within many different types of chronic illnesses (OECD 2021), exacerbating the total symptom burden in a synergistic rather than just an additive way (Saqib, Qureshi, and Butt 2023). During the COVID-19 pandemic, individuals with various chronic illnesses reported higher mean values of depression and anxiety compared to healthy individuals (Hao et al. 2020; Ozamiz-Etxebarria et al. 2020). Having a chronic illness is in itself a risk factor for developing mood and anxiety disorders, perhaps because it can restrict lifestyle and function (National Institute of Mental Health 2021; Naylor et al. 2012; Verhaak et al. 2005), low-grade inflammation (Berk et al. 2013) and potentially other factors that we focus on in our study, namely illness-related stigma and shame.

Psychological flexibility is a psychological process that has been found to be negatively associated with shame and stigma, as well as with psychological distress (Krafft et al. 2018; Yao et al. 2024). Psychological flexibility is defined as behaving in accordance with one's chosen values and focusing on the present moment even when unpleasant sensations, thoughts and

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feelings occur (Hayes, Strosahl, and Wilson 1999). A systematic review of the associations between psychological *inflexibility* and stigma found a statistically significant positive moderate association between these two variables (Krafft et al. 2018). Psychological flexibility is the core process targeted by acceptance and commitment therapy (ACT). ACT is a contextual-behavioural approach that views psychological suffering as a result from language-related phenomena and aims to promote psychological flexibility through increasing present moment awareness, acceptance of internal experiences and commitment with valued activities. A few pilot studies have been conducted on ACT aiming to increase psychological flexibility and reduce internalized stigma, with beneficial results in somatic samples including conditions such as cancer, obesity and human immunodeficiency virus (HIV) (Fishbein et al. 2022; Griffiths et al. 2018; Kaplan et al. 2022; Skinta et al. 2015). A recent meta-analysis exploring the associations between psychological flexibility and mental health problems during the pandemic reported moderate negative associations between psychological flexibility and both depression and anxiety symptoms (Yao et al. 2024), indicating that people with low levels of psychological flexibility were more likely to report more severe symptoms of psychological distress during the COVID-19 pandemic.

Another psychological process that has previously been found to be negatively associated with both shame (Zhang et al. 2018) and internalized stigma (Mackali, Çetinkaya, and Ay 2023) is self-compassion. Self-compassion is defined as treating oneself with understanding and warmth during moments of suffering, failure or perceived inadequacy. According to Neff (2003a), the construct of self-compassion consists of three interrelated components: *self-kindness*, which involves being gentle and supportive toward oneself rather than critical; *mindfulness*, which allows one to acknowledge painful thoughts and feelings without over-identifying with them; and *common humanity*, which emphasizes recognizing that suffering is a universal human experience rather than a source of isolation (Neff 2003a). These components collectively help individuals foster a balanced perspective on their struggles, reducing the likelihood of experiencing overwhelming negative emotions such as shame. For instance, mindfulness allows individuals to approach their emotional pain without becoming consumed by it, whereas self-kindness encourages a nurturing attitude rather than harsh self-judgement, both of which can mitigate the intensity of shame and internalized stigma. Self-compassion has previously been found to be negatively associated with both depression and anxiety in community samples, chronic illness samples and SARS-CoV-2 recovery samples (e.g., Bag et al. 2022; Hughes et al. 2021; Matos et al. 2022).

Compared to the knowledge about stigma and shame in people with chronic illnesses, less is known about these matters in SARS-CoV-2 recovery cohorts. A study conducted during the COVID-19 pandemic reported experiences of stigma in those previously infected by the virus in terms of ostracism (e.g., being excluded from social events) and that people in their lives feared being contaminated long after the participants had recovered from the infection (Dopelt et al. 2023). In a systematic review of the prevalence of stigma in infectious diseases, the authors found a pooled prevalence of 35% for COVID-19-related stigma across 29 studies (Yuan et al. 2022). These numbers are similar to the estimated prevalence of stigma for other infectious diseases such as Ebola (James et al. 2020), which suggests that there are similarities in the prevalence of stigma across different viral infectious diseases. Regarding shame, high levels of shame have been reported during previous viral pandemics and epidemics in those infected with the viruses, such as HIV and Ebola (Cavalera 2020). The role of shame in SARS-CoV-2 recovery cohorts is, however, relatively unexplored. Qualitative studies have reported experiences of shame among people whom have recovered from an infection, including disclosures about wanting to keep the infection a secret, having thoughts about being a 'bad person' for having contracted the virus and isolating oneself due to the fear of infecting others, or of being ostracized (Dopelt et al. 2023; Sahoo et al. 2020). Furthermore, Shigemura and Kurosawa (2020) deduced that people experienced shame during the COVID-19 pandemic as a result of experiencing SARS-CoV-2-infection-related stigma.

The first aim of this exploratory study was to investigate the associations of illness-related stigma and illness-related shame with anxiety and depression symptoms while exploring the mediating roles of psychological flexibility and self-compassion. The study was conducted during the COVID-19 pandemic and includes two samples: a chronic illness sample and a sample of people who had recovered from a SARS-CoV-2 infection. The second aim of the study was to investigate whether the two samples differed in their levels of illness-related stigma and shame, symptoms of anxiety and depression, psychological flexibility and self-compassion, as well as the associations between these study variables.

2 | Method

2.1 | Procedures

This study is part of the 'Mental health after infection' project, funded by the la Caixa Foundation. The project was approved by the regional ethics committee of the Faculty of Psychology and Educational Sciences of the University of Coimbra, Portugal (15 September 2020). All data collection was carried out in accordance with the ethical principles of the World Medical Association (WMA) Declaration of Helsinki (2013). Informed consent was obtained from participants before data collection. This study includes the first wave of data collection, which occurred between January and February 2021 in Portugal through online self-report questionnaires created on online survey tool (LimeSurvey) hosted in the website of the host institution. During this time, Portugal had enforced its third national lockdown due to a rapid increase in SARS-CoV-2 cases. The sample was recruited through online advertisements on the project's social media pages on Facebook and Instagram. The inclusion criteria for the study were (1) to be above 18 years old, (2) living in Portugal and (3) being able to answer the research protocol in Portuguese. There was no monetary payment for participating in the study. However, those who filled out the questionnaires were added to a raft where 60 vouchers (groceries, clothing and electronics) of 50 euros each were raffled off. To be able to compare people with a chronic illness versus people having recovered from a SARS-CoV-2 infection, participants who reported having experienced both were excluded.

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2.2 | Sample

The total sample consisted of adults living in Portugal ($N = 270$) who either had a chronic illness ($n = 104$) or who had previously been infected with the SARS-CoV-2 virus ($n = 166$). The following demographic variables were collected: age, gender identity, marital status and employment status. The demographic information can be found in Table 1. Participants were asked whether they had any physical health problems and, if so, to report which illness (es) they suffered from. All reported physical illnesses were then examined manually to ensure that the illnesses could be classified as chronic based on the criteria from Centers for Disease Control and Prevention (CDC). The most common chronic illnesses in this subsample were asthma (31.73%), hypertension (16.35%), gastrointestinal disorders (13.46%), diabetes (6.73%) and thyroid dysfunction (5.77%). Of the participants in the chronic illness subsample, 84 (82.4%) reported having one physical health problem, whereas 18 (17.6%) reported having two or more.

Participants were asked if they had tested positive for the SARS-CoV-2 virus and whether they were free from the SARS-CoV-2 virus at the time of data collection. In this subsample, 149 (89.8%) people reported having experienced SARS-CoV-2-related symptoms, whereas 17 (10.2%) had been asymptomatic. Six participants (3.6%) had been infected during the first phase of the pandemic, 65 (39.2%) during the second phase, and 95 (57.2%) during the third phase. Lastly, 134 (80.7%) participants had been formally discharged as free from SARS-CoV-2 at the time of data collection.

2.3 | Measures

2.3.1 | Illness-Related Shame

Illness-related shame was assessed with the *Chronic Illness-related Shame Scale* (Trindade, Ferreira, and Pinto 2017), a one-factor scale consisting of seven items, measured on a 5-point response scale with a total score range of 0–28. Higher scores indicated increased illness-related shame. The scale was developed and evaluated in a Portuguese sample of adults with chronic illnesses (Trindade, Ferreira, and Pinto 2017). For the current study, the internal consistency of the measure was excellent in the total sample (Cronbach's $\alpha = 0.91$), as well as in the chronic illness (Cronbach's $\alpha = 0.96$) and the SARS-CoV-2 (Cronbach's $\alpha = 0.85$) subsamples.

2.3.2 | Illness-Related Stigma

Stigma was measured with the *Stigma Scale for Chronic Illnesses* (Molina et al. 2013). The scale consists of eight items measured on a 5-point Likert scale with a total score range of

TABLE 1 | Demographic characteristics of the total sample, the chronic illness subsample and the SARS-CoV-2 subsample, respectively.

	Total sample	Chronic illness subsample	SARS-CoV-2 subsample
Demographic characteristic	***n* (%)**	***n* (%)**	***n* (%)**
Age (years)			
18–24	41 (15.2)	18 (17.3)	23 (13.9)
25–34	93 (34.4)	23 (22.1)	70 (42.2)
35–44	69 (25.6)	29 (27.9)	40 (24.1)
45–54	41 (15.2)	18 (17.3)	23 (13.9)
55–65	26 (9.6)	16 (15.4)	10 (6.0)
Gender			
Men	37 (13.7)	16 (15.4)	21 (12.7)
Women	233 (86.3)	88 (84.6)	145 (87.3)
Marital status			
Single	125 (46.3)	49 (47.1)	76 (45.8)
Married/cohabiting	125 (46.3)	42 (40.4)	83 (50.0)
Divorced	17 (6.3)	11 (10.6)	6 (3.6)
Widowed	3 (1.1)	2 (1.9)	1 (0.6)
Employment			
Employed	188 (69.6)	56 (53.8)	132 (79.5)
Unemployed	43 (15.9)	27 (26)	16 (9.6)
Retired	5 (1.9)	4 (3.8)	1 (0.6)
Student	31 (11.5)	15 (14.4)	16 (9.6)
Student and employed	3 (1.1)	2 (1.9)	1 (0.6)

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8–40. Higher scores denote higher illness-related stigma. The internal consistency of the scale was good in the total sample (Cronbach's $\alpha = 0.88$) and in the SARS-CoV-2 subsample (Cronbach's $\alpha = 0.83$) and excellent in the chronic illness subsample (Cronbach's $\alpha = 0.92$).

2.3.3 | Psychological Flexibility

Psychological flexibility was measured with the *Comprehensive Assessment of ACT Processes* (CompACT) (Francis, Dawson, and Golijani-Moghaddam 2016). A Portuguese version of the scale has been developed and validated (Trindade et al. 2021; Trindade et al. 2022). The scale consists of 18 items on a 7-point Likert scale, with a total scale range of 0–108. Higher scores indicate greater psychological flexibility. The internal consistency of the CompACT scale was good in the total sample (Cronbach's $\alpha = 0.83$), as well as in the chronic illness subsample (Cronbach's $\alpha = 0.88$), and acceptable in the SARS-CoV-2 subsample (Cronbach's $\alpha = 0.79$).

2.3.4 | Self-Compassion

The *Self-Compassion Scale* (SCS) was used to measure self-compassion (Neff 2003b). The scale consists of 26 items measured on a 5-point Likert scale with a total score range of 26–130. Higher scores denote more self-compassion. The scale has been validated with both general and mental illness samples in Portugal (Castilho, Pinto, and Duarte 2015). The internal consistency of the measure in the current study was excellent in the total sample (Cronbach's $\alpha = 0.94$), as well as in the chronic illness (Cronbach's $\alpha = 0.95$), and the SARS-CoV-2 (Cronbach's $\alpha = 0.93$) subsamples.

2.3.5 | Psychological Distress

The *Hospital Anxiety and Depression Scale* (HADS) was used to measure psychological distress (Snaith and Zigmond 1994). The scale consists of 14 items measured on a 4-point Likert scale, divided into two subscales (anxiety/depression) with seven items in each subscale. The cut-offs used for clinical levels of symptoms in the current study were 11 for both subscales, in line with previous studies (Brehaut et al. 2020; Stern 2014). The scale has been validated in a Portuguese chronic illness sample (Pais-Ribeiro et al. 2007). The internal consistency of the HADS was good in the total sample regarding both anxiety (Cronbach's $\alpha = 0.87$) and depression (Cronbach's $\alpha = 0.85$). The same was true for the chronic illness (Cronbach's α anxiety = 0.88; depression = 0.85) and the SARS-CoV-2 (Cronbach's α anxiety = 0.86; depression = 0.85) subsamples.

2.4 | Data Analysis

IBM Statistical Package of Social Science (SPSS) Statistics Version 29 was used for the initial statistical analyses, including deriving descriptive statistics of the sample, checking for missing data, normality tests and examining potential outliers. Student's *t*-test for independent samples was performed to examine the mean differences in the individual study variables between the chronic illness and the SARS-CoV-2 groups. A Pearson correlation analysis was conducted to determine whether there were significant associations between the study variables as well as to explore possible control variables to be included in the main analysis.

SPSS AMOS Version 26 was used to conduct a path analysis through structural equation modelling (SEM), testing psychological flexibility and self-compassion as mediators in the associations of illness-related stigma and shame with anxiety and depression symptoms. Bentler and Chou (1987) have suggested between 5 and 10 observations per estimated parameter, which this study fulfilled with 270 participants for 28 parameters in the fully saturated model. The requirements were also met by both the SARS-CoV-2 ($n = 166$) and the chronic illness ($n = 104$) subsamples in the final model (which included 21 parameters). Stigma was placed before shame in the path model. Gender was included as a control variable due to statistically significant correlations with several study variables. Using SEM allows for examining both the direct and indirect paths within the model, as well as the structural relationships within the full model (Byrne 2010). Several goodness-of-fit measures were used to determine the overall model fit. Bootstrap procedure (5000 resamples) with a 95% bias-corrected confidence interval (CI) was used to analyse the indirect effects within the model. To examine each individual mediation path within the model, user-defined estimands asking for the specific indirect effects by multiplying each unique mediation path were added to the analysis. User-defined estimands were also used to test the total effects by summing the total indirect effects with the total direct effects for each outcome variable.

Lastly, a comparison between the subsamples was conducted through multi-group analysis to determine whether there was invariance in the model structure. The invariance was tested through a chi-square difference test. The direct and indirect effects were also examined within both samples individually in order to explore whether there were differences in the significance of the direct paths or the mediation effects, or the size of these effects, between the two subsamples.

3 | Results

3.1 | Comparison Between People With Chronic Illness and SARS-CoV-2

The results of the independent samples *t*-test (reported in Table 2) showed that there were statistically significant differences between the groups regarding illness-related stigma and psychological distress (anxiety/depression), with the chronic illness subsample reporting slightly more severe levels of all three variables compared to the SARS-CoV-2 subsample. There were no statistically significant differences between the two subsamples regarding illness-related shame, psychological flexibility or self-compassion.

3.2 | Associations Between Study Variables

The result of the Pearson correlation analysis, describing the associations between the study variables and possible covariates

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TABLE 2 | Descriptive statistics of means and standard deviations for the study variables and independent samples *t*-test comparing the chronic illness and the SARS-CoV-2 subsamples.

	Total sample		Chronic illness subsample		SARS-CoV-2 subsample				
Variable	***M***	***SD***	***M***	***SD***	***M***	***SD***	***t***	***p***	**Cohen's *d***
Anxiety symptoms	8.88	4.57	9.60	4.83	8.43	4.36	2.05	0.047	0.25
Depression symptoms	6.23	4.17	6.96	4.27	5.78	4.05	2.29	0.025	0.28
Psychological flexibility	61.46	14.74	59.93	16.56	62.41	13.43	−1.28	0.201	0.17
Self-compassion	79.53	18.02	77.16	19.30	81.01	17.06	−1.69	0.092	0.20
Illness-related stigma	13.56	5.30	14.52	6.40	12.96	4.39	2.18	0.031	0.28
Illness-related shame	6.29	7.04	6.89	8.44	5.92	6.01	1.02	0.309	0.12

in the total sample, and for each of the subsamples separately is reported in Table 3. The correlations for the two subsamples were similar to each other, although the magnitudes of the associations generally were stronger in the chronic illness subsample compared to the SARS-CoV-2 subsample.

3.3 | Mediating Roles of Self-Compassion and Psychological Flexibility in the Relationship Between Illness-Related Stigma, Shame and Psychological Distress

A path analysis model was tested to examine the association of illness-related stigma and shame with psychological distress, along with the mediating roles of self-compassion and psychological flexibility for the total sample. First, the fully saturated model included all possible paths and had 28 parameters. Then, the non-significant paths were removed to increase the model's fit to the data (see Appendix A for a list of all paths in the saturated and the final model). The final model (see Figure 1) had 21 parameters and explained 45% of the variance in depression symptoms and 48% of the variance in anxiety symptoms. The model presented an excellent fit to the data with a non-significant chi-square test, $X^2_{(7)} = 5.85$, $p = 0.557$, and the following model-fit indices: CFI = 1.00; TLI = 1.00; RMSEA < 0.001, 90% CI [0.00; 0.07], $p = 0.86$; SRMR = 0.03.

In the path model for the total sample, illness-related stigma was directly linked to shame with a large effect of 0.79. Illness-related stigma was also directly associated with depression symptoms with an effect of 0.15. Illness-related shame, in turn, had a direct association with anxiety of 0.18. There were also negative direct effects of illness-related shame on psychological flexibility and self-compassion of −0.34 and −0.38, respectively. Psychological flexibility had a negative association with both depression ($b = -0.41$) and anxiety ($b = -0.34$). Self-compassion also had a direct negative association with both depression ($b = -0.25$) and anxiety ($b = -0.30$). The control variable gender was only directly associated with anxiety and depression symptoms, with a direct effect of 0.14 and 0.10, respectively. There was a covariance of 0.49 between the outcome variables anxiety and depression symptoms. There was also a covariance between psychological flexibility and self-compassion of 0.62. The covariance between gender and illness-related stigma was not statistically significant.

Indirect effects were found within the model. Illness-related stigma presented a total indirect effect of 0.32 on anxiety and 0.18 on depression. Specifically, through examining user-defined estimands of individual mediation paths (see Table 4), illness-related shame was found to fully mediate the association between illness-related stigma and anxiety, with an indirect effect of 0.14. Illness-related stigma was associated with shame, which in turn was associated with higher levels of anxiety. The association between illness-related shame and anxiety was partially mediated by psychological flexibility and self-compassion, both with an indirect effect of 0.11. More illness-related shame was associated with less self-compassion and less psychological flexibility, which were associated with higher levels of anxiety symptoms. Self-compassion had an indirect effect of 0.09, and psychological flexibility had an indirect effect of 0.14 on the association between illness-related shame and symptoms of depression. Both psychological flexibility and self-compassion fully mediated the association between shame and depression. In other words, being psychologically flexible and more self-compassionate was associated with less illness-related shame. Shame was a full mediator of the associations between stigma and psychological flexibility, −0.26 ($b = -0.74$, 95% CI [−0.99; −0.48], $p < 0.001$), and self-compassion, −0.30 ($b = -1.01$, 95% CI [−0.1.31; −0.72], $p < 0.001$). Thus, stigma was associated with shame, which was negatively associated with both self-compassion and psychological flexibility.

Moreover, serial indirect effects were found within the path model. Illness-related shame and psychological flexibility together mediated the association between illness-related stigma and anxiety, with an indirect effect of 0.09. Further, illness-related shame and self-compassion together mediated this association with an effect of 0.09. The total effect, via both the direct and indirect effects, of illness-related stigma on anxiety was 0.32. Illness-related stigma presented a serial indirect effect on symptoms of depression through illness-related shame and self-compassion combined, which partially mediated the association with an effect of 0.07. Lastly, illness-related shame and psychological flexibility partially mediated this association, with an effect of 0.11. The total effect of illness-related stigma on symptoms of depression through both the direct and indirect effects was 0.33.

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TABLE 3 | Standardized Pearson correlations between the study variables and possible covariates within the total sample, the chronic illness subsample and the SARS-CoV-2 subsample, respectively.

Variable	1	2	3	4	5	6	7
Total sample							
1. Age	—						
2. Gender (1 = men, 2 = women)	−0.18**	—					
3. Anxiety symptoms	0.01	0.23**	—				
4. Depression symptoms	0	0.18**	0.73***	—			
5. Psychological flexibility	0.02	−0.10	−0.61***	−0.62***	—		
6. Self-compassion	0.10	−0.11	−0.60***	−0.56***	0.67***	—	
7. Illness-related shame	0	0.13*	0.42***	0.37***	−0.34***	−0.38***	—
8. Illness-related stigma	0.09	0.09	0.35***	0.35***	−0.29***	−0.28***	0.79***
Chronic illness subsample							
1. Age	—						
2. Gender (1 = men, 2 = women)	−0.28*	—					
3. Anxiety symptoms	−0.03	0.29**	—				
4. Depression symptoms	0.02	0.29**	0.75***	—			
5. Psychological flexibility	0.05	−0.28**	−0.68***	−0.67***	—		
6. Self-compassion	0.17	−0.23*	−0.70***	−0.69***	0.73***	—	
7. Illness-related shame	−0.08	0.19*	0.45***	0.44***	−0.43***	−0.41***	—
8. Illness-related stigma	0.06	0.15	0.39***	0.40***	−0.35***	−0.32***	0.83***
SARS-CoV-2 subsample							
1. Age	—						
2. Gender (1 = men, 2 = women)	−0.09	—					
3. Anxiety symptoms	0.03	0.21**	—				
4. Depression symptoms	−0.06	0.12	0.70***	—			
5. Psychological flexibility	0.03	0.04	−0.54***	−0.58***	—		
6. Self-compassion	0.08	−0.03	−0.51***	−0.46***	0.62***	—	
7. Illness-related shame	0.06	0.07	0.40***	0.31***	−0.23**	−0.35***	—
8. Illness-related stigma	0.08	0.05	0.29***	0.28***	−0.20**	−0.23**	0.75***

*$p < 0.05$, **$p < 0.01$, and ***$p < 0.001$.

3.4 | (In)variance Between Groups

In order to examine whether there were significant differences between the chronic illness and the SARS-CoV-2 subsamples within the model, a multi-group analysis was conducted. The tested model was found to have an excellent fit, $\chi2_{(14)} = 12.16$, $p = 0.593$; CFI = 1.00; TLI = 1.00; RMSEA < 0.001, 90% CI [0.00; 0.05], $p = 0.94$; SRMR = 0.02, for the total sample. By comparing the results of the chi-square difference test between the unconstrained ($\chi2_{(14)} = 12.16$, $p = 0.593$) and the constrained ($\chi2_{(25)} = 25.63$, $p = 0.428$) model, it was found that the two groups were invariant ($\chi2dif_{(11)} = 13.46$, $p = 0.264$) within the full path model. This indicated that, within the full model structure, both the chronic illness and the SARS-CoV-2 subsamples were similar regarding the interactions between variables, as the model fit did not significantly worsen when adding constraints. Within the chronic illness subsample, the model explained 56% of the variance in depression and 56% of the variance in anxiety symptoms. For the SARS-CoV-2 subsample, the model explained 39% of the variance in depression and 43% of the variance in anxiety symptoms (Figures B1 and C1) (see Appendix B and Appendix C for the full path model for each subsample).

To examine if there were differences between the two samples on any individual parameter estimates, critical ratio values were calculated for all paths (see Table 5). There was one path where a statistically significant difference was found, namely, the path between self-compassion and depression symptoms, with a critical ratio value of −2.115. The path was statistically significant in the chronic illness subsample with an effect size of −0.41 ($b = -0.09$;

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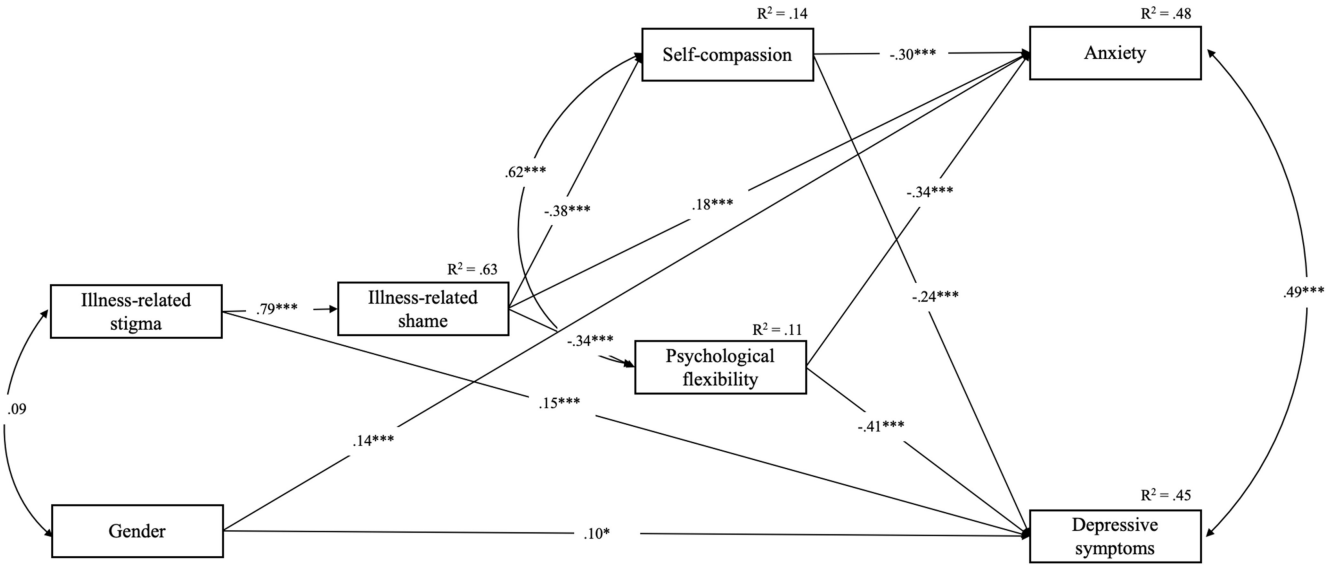


FIGURE 1 | Path analysis model with parameter estimates for the total sample ($N = 270$). *Note:* Values presented are standardized path coefficients (β) and squared multiple correlations (R^2). $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

TABLE 4 | Individual and serial indirect effects in the total sample ($N = 270$) on symptoms of anxiety and depression.

Independent variable	Mediator(s)	Anxiety symptoms					Depression symptoms				
				95% CI					95% CI		
		B	*β*	Lower	Upper	*p*	*B*	*β*	Lower	Upper	*p*
Shame	Self-compassion	0.07	0.11	0.04	0.11	0.001	0.05	0.09	0.02	0.09	0.003
	Psychological flexibility	0.07	0.11	0.04	0.12	< 0.001	0.08	0.14	0.05	0.13	< 0.001
Stigma	Shame	0.12	0.14	0.05	0.18	0.001	—	—	—	—	—
	Shame → Self-compassion	0.08	0.09	0.04	0.12	0.001	0.06	0.07	0.02	0.10	0.003
	Shame → Psychological flexibility	0.08	0.09	0.05	0.13	< 0.001	0.09	0.11	0.05	0.13	< 0.001

Note: Illness-related shame and stigma are shortened to shame and stigma, respectively. *B* is the unstandardized effect size.
Abbreviation: 95% CI = confidence interval with bootstrap procedure (5000 resamples).

SE = 0.02; CR = −4.30; $p < 0.001$) but not in the SARS-CoV-2 subsample: −0.13 ($b = -0.03$; SE = 0.02; CR = −1.63; $p = 0.103$). This also infers that there could be no mediation effect through self-compassion on depression symptoms for the SARS-CoV-2 subsample as this direct path was not statistically significant. This was further explored through examining the indirect effects. In the remaining paths, the associations between the study variables were invariant between the two subsamples with the exceptions of the paths from gender to anxiety and depression symptoms, as well as the path from shame to anxiety symptoms, which were statistically significant in the SARS-CoV-2 subsample but not in the chronic illness subsample (see Appendix B and Appendix C).

Due to finding differences in one of the regression paths, the indirect paths were also examined for each sample in order to compare differences in mediation within the path model (see Table 6). Illness-related stigma presented a total indirect effect of 0.27 on anxiety and 0.11 on depression symptoms in the SARS-CoV-2 subsample and a total indirect effect of 0.36 on anxiety and 0.25 on depression symptoms in the chronic illness sample. Illness-related shame fully mediated the association between illness-related stigma and anxiety in the SARS-CoV-2 subsample but did not present this indirect effect on anxiety in the chronic illness subsample. Thus, stigma was associated with feelings of shame only in the SARS-CoV-2 subsample, which in turn was associated with increased symptoms of anxiety. Illness-related shame, instead, presented an indirect effect on depression symptoms through self-compassion only in the chronic illness sample, which fully mediated the association. In other words, feelings of shame were associated with lower self-compassion, which was associated with depression symptoms. Moreover, illness-related stigma presented an indirect effect on depression symptoms through illness-related shame and self-compassion only in the chronic illness sample, where they partially and serially mediated the association. This indicated that, in the chronic illness subsample, stigma was associated with feeling shame, which in turn was associated with having less self-compassion, which was associated with higher levels of depression symptoms. The remaining indirect effects were statistically significant in both subsamples and therefore invariant

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between the groups. For the chronic illness subsample, the total (both direct and indirect) effect of illness-related stigma on anxiety symptoms was 0.36, whereas the total effect on depression symptoms was 0.39. For the SARS-CoV-2 subsample, the total effect of illness-related stigma on anxiety symptoms was 0.27, and the total effect on depression symptoms was 0.26.

TABLE 5 | Critical ratio values for each regression path (SARS-CoV-2 subsample as default model).

Regression path	Critical ratio value
Illness-related stigma to illness-related shame	0.660
Illness-related stigma to depression	−0.682
Gender to anxiety	−1.283
Gender to depression	−0.518
Illness-related shame to self-compassion	0.273
Illness-related shame to psychological flexibility	−1.406
Illness-related shame to anxiety	−1.356
Self-compassion to anxiety	−1.806
Self-compassion to depression	**−2.115**
Psychological flexibility to anxiety	1.047
Psychological flexibility to depression	1.855

Note: Critical ratio values outside of ±1.96 are considered to significantly differ at $p < 0.05$ (in bold).

4 | Discussion

The first aim of this study was to explore the associations between illness-related stigma and shame with psychological distress and the mediating roles of self-compassion and psychological flexibility in this association within the total sample. The second aim was to compare the mediation models and the mean levels of the study variables of the chronic illness and the SARS-CoV-2 subsamples. Regarding the first aim, the associations found among the study variables were in line with—and further strengthened—findings by previous research on the negative association between stigma, shame and psychological distress on the one side and psychological flexibility and self-compassion on the other side (e.g., Hughes et al. 2021; Krafft et al. 2018; Matos et al. 2022; Yao et al. 2024; Zhang et al. 2018). Regarding people recovered from a SARS-CoV-2 infection, the findings on self-compassion and psychological flexibility in the current study entail new knowledge that may support future research on this and similar populations.

Stigma had a large direct effect on shame in the path model, which is in line with previous research where illness-related stigma was found to lead to shame (Akbari, Mohammadi, and Hosseini 2023). The results also revealed that illness-related shame fully mediated the relationship between stigma and anxiety symptoms. However, there was no statistically significant direct effect of illness-related shame on depression symptoms. This was unexpected, in light of previous research showing a positive direct effect of shame on symptoms of depression (Matos-Pina, Trindade, and Ferreira 2022; Trindade, Ferreira, and Pinto 2017). In the current model, the lack of a significant direct association between these two variables indicates that this relationship is fully mediated by self-compassion and psychological flexibility. It is also possible that the association between shame and depression is mediated by

TABLE 6 | Individual and serial indirect effects within the chronic illness subsample ($N = 104$) and the SARS-CoV-2 subsample ($N = 166$) on symptoms of anxiety and depression.

		Anxiety symptoms					Depression symptoms				
				95% CI					95% CI		
Independent variable	Mediator(s)	*B*	*β*	Lower	Upper	*p*	*B*	*β*	Lower	Upper	*p*
Chronic illness subsample											
Shame	Self-compassion	0.10	0.17	0.05	0.17	< 0.001	0.08	0.16	0.04	0.14	< 0.001
	Psychological flexibility	0.07	0.13	0.02	0.14	0.008	0.07	0.13	0.03	0.12	0.001
Stigma	Shame	0.08	0.11	−0.03	0.17	0.109	—	—	—	—	—
	Shame → Self-compassion	0.10	0.14	0.05	0.19	< 0.001	0.09	0.14	0.04	0.16	< 0.001
	Shame → Psychological flexibility	0.08	0.10	0.02	0.15	0.007	0.07	0.11	0.03	0.14	0.001
SARS-CoV-2 subsample											
Shame	Self-compassion	0.05	0.07	0.00	0.11	0.038	0.03	0.05	−0.02	0.07	0.181
	Psychological flexibility	0.06	0.11	0.02	0.13	0.007	0.07	0.09	0.02	0.14	0.007
Stigma	Shame	0.16	0.16	0.08	0.25	< 0.001	—	—	—	—	—
	Shame → Self-compassion	0.05	0.05	0.00	0.11	0.037	0.03	0.03	−0.01	0.009	0.173
	Shame → Psychological flexibility	0.06	0.06	0.02	0.13	0.006	0.07	0.08	0.02	0.14	0.007

Note: Illness-related shame and stigma are shortened to shame and stigma, respectively. *B* is the unstandardized effect size.
Abbreviation: 95% CI = confidence interval with bootstrap procedure (5000 resamples).

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other psychological factors, such as self-esteem (Porter et al. 2019) or social support (Coady, Godard, and Holtzman 2024), which were not directly measured in this study. Shame did, however, serially mediate the association between stigma and depression symptoms together with both self-compassion and psychological flexibility, perhaps explaining the lack of a direct association between shame and depression symptoms.

Regarding anxiety symptoms, the associations were the opposite. Illness-related shame had a statistically significant direct effect on anxiety, whereas stigma did not. This finding aligns with previous relevant studies (Hennion et al. 2019). On the contrary, illness-related stigma was in previous studies directly linked to anxiety (Eccles et al. 2023), which differs from our results. Stigma did not have any direct effect on psychological flexibility or self-compassion either; shame fully mediated the association with both processes. Regarding the link of stigma with both anxiety and depression symptoms, illness-related shame, psychological flexibility and self-compassion mediated the association. This could indicate that, in chronic illness and SARS-CoV-2 groups, stigma experiences are highly associated with illness-related shame, but the effects that stigma and shame have on psychological well-being are affected by the person's abilities to engage in psychological flexibility or self-compassion regarding their experiences. Those highly engaged in self-compassion or psychological flexibility may be more resilient against the negative effects of stigma and shame. Meanwhile, those who have low psychological flexibility and little ability to be self-compassionate may conversely be more affected and more likely to also experience anxiety or depression symptoms. This suggests that interventions for individuals with chronic illnesses or for those who have recovered from viral infections perhaps should focus on those with especially prominent experiences of illness-related stigma and shame and with relatively low levels of psychological flexibility and self-compassion. To the best of our knowledge, this is the first study to include both illness-related stigma and shame as independent variables while examining both psychological processes concurrently, with a SARS-CoV-2 recovery cohort—meaning that most of the current results can be considered novel and in need of replication before clear conclusions can be drawn about these associations.

Results from Student's *t*-test for independent samples indicated that the chronic illness subsample reported higher levels of symptoms of anxiety, depression and illness-related stigma than the SARS-CoV-2 subsample, albeit not clinically relevant differences. A potential explanation could be that all participants in the former subsample had a chronic illness at the time of data collection but most individuals in the SARS-CoV-2 subsample were declared free from the virus infection, perhaps making them less susceptible to current illness-related stigma (Earnshaw et al. 2022). However, it was unexpected that there was no statistically significant difference regarding illness-related shame between the groups because shame is a part of internalized stigma (Akbari, Mohammadi, and Hosseini 2023) and because stigma and shame are highly correlated. One possible explanation for this is that the groups may have had similar experiences of illness-related shame, despite differing in other variables, such as illness duration or severity. Illness-related shame can be influenced by a range of personal and contextual factors such as coping strategies, social support and cultural attitudes (e.g., Collardeau, Dupuis, and Woodin 2023) that may have been similar across the groups in this study. The variability within groups could also have played a role, with individual differences in psychological resilience, self-compassion or stigma internalization contributing to a more complex pattern of results than anticipated. The levels of anxiety and depression symptoms being higher in the chronic illness subsample are findings that are in line with the *stage model of self-stigma* (Corrigan and Rao 2012), which states that the development from stigma to harm (in the form of psychological distress) takes time and develops through several stages. Thus, the longer the duration of a chronic illness, the higher the risk of concurrent anxiety or depression.

At this point in time, the COVID-19 pandemic could be considered to have passed its peak, although many new infected cases are still identified on a daily basis (Worldometer 2024), and viral epidemics and pandemics are a recurring occurrence that is becoming more frequent (Bedford et al. 2019). As there are similarities between this latest pandemic and previous pandemics regarding factors such as the occurrence of experienced stigma, there may be important lessons to learn from the COVID-19 pandemic for the future (Büttiker et al. 2022; Yuan et al. 2022).

The first limitation of this study is the cross-sectional design, which hinders inferences about causality—something that can be especially problematic with mediation analyses as mediation is thought of as a process occurring over time (O'Laughlin, Martin, and Ferrer 2018). A second limitation was the rather small sample size, which could increase the likelihood of Type II errors (i.e., failing to obtain an effect when there is one) and hence affect the external validity of the study (Christensen, Johnson, and Turner 2014). Moreover, the power problem limited the number of parameters that could be estimated within the model because it had to fulfil the criteria of at least five observations per path (Bentler and Chou 1987), and it also hindered differentiation between different types of chronic illnesses—an important area to explore in future studies.

Using self-report for data collection is a third limitation because it is associated with a risk of certain biases, for example, the social desirability bias, resulting in inaccurate answers (Christensen, Johnson, and Turner 2014). The self-reporting of previous SARS-CoV-2 infections was especially problematic. Six participants in the SARS-CoV-2 subsample (3.6%) had been infected during the first phase of the pandemic, 65 (39.2%) during the second phase and 95 (57.2%) during the third phase. About 90% reported having experienced actual symptoms of the virus, whereas 10% had been asymptomatic. No analyses were conducted on differences between the different phases of the pandemic (e.g., more stigmatizing to be infected in the first phase compared to the third when more people had already been infected and there was more knowledge about the virus) or between the symptomatic and asymptomatic subgroups (perhaps more stigmatizing with obvious symptoms, or more/less shame when being able to hide one's infection from others). With the inclusion of asymptomatic cases, there is also a risk that some participants in the chronic illness group had been infected with the virus.

One of the main strengths of this study is that a chronic illness subsample and a SARS-CoV-2 subsample were compared within the same analysis, regarding both the direct associations between

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illness-related stigma and shame with psychological distress and the indirect effects of self-compassion and psychological flexibility. By comparing the groups within the same analysis, conclusions could be drawn on how and with which magnitude the samples differed from each other. Beginning with a fully saturated model allowed for exploring many possible associations between the study variables. The same goes for illness-related stigma and shame within the same analysis, allowing for an examination of how the constructs are associated with each other as well as their unique contributions. Furthermore, including both psychological flexibility and self-compassion in the same analysis allowed for the comparison of these processes while controlling for potential overlapping effects of shared features (e.g., in terms of present-moment awareness and acceptance) (Vowles, Sowden, and Ashworth 2014), informing the focus of future research. Last but not least, an important strength of the study is that there were no missing data that could potentially skew the results.

5 | Conclusions

The findings in this study indicate that even though there were differences in the mean levels of psychological distress and illness-related stigma between the chronic illness and SARS-CoV-2 subsamples, the structure of the associations between the study variables was similar in both groups. Only the path between self-compassion and symptoms of depression differed between the samples (only statistically significant in the chronic illness subsample). The model did, however, explain a higher variance in psychological distress in the chronic illness sample. The results of this study suggest that both psychological flexibility and self-compassion may work as protective factors against anxiety and depression in adults with chronic illnesses. Regarding those who have recovered from SARS-CoV-2, both psychological flexibility and self-compassion may work protectively against anxiety symptoms, with psychological flexibility seeming slightly more important when it comes to symptoms of depression in this group. The findings from this study provide directions for future research on the possible development or refinement of personalized psychological interventions targeting emotional distress in adults with chronic illnesses and viral disease recovery cohorts.

Ethics Statement

The study was approved by the Ethics Committee of the Faculty of Psychology and Education Sciences of the University of Coimbra, and was performed in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments.

Consent

Informed consent was obtained from all participants prior to participation in the study.

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Appendix A

All model parameters estimated in the saturated, as well as the final path model, for the total sample, with unstandardized (B) and standardized (β) path coefficients.

Model parameter	*B*	β	SE	CR	*p*
Paths included in the final model					
Gender → Anxiety symptoms	1.92	0.15	0.58	3.31	< 0.001
Gender → Depression symptoms	1.24	0.10	0.55	2.26	0.024
Stigma → Shame	1.05	0.79	0.05	21.16	< 0.001
Stigma → Depression symptoms	0.12	0.15	0.04	3.31	< 0.001
Shame → Psychological flexibility	−0.70	−0.34	0.12	−5.84	< 0.001
Shame → Self-compassion	−0.96	−0.38	0.14	−6.68	< 0.001
Shame → Anxiety symptoms	0.11	0.18	0.03	3.89	< 0.001
Psychological flexibility → Anxiety symptoms	−0.10	−0.34	0.02	−6.72	< 0.001
Psychological flexibility → Depression symptoms	−0.12	−0.41	0.02	−5.68	< 0.001
Self-compassion → Anxiety symptoms	−0.07	−0.30	0.02	−4.85	< 0.001
Self-compassion → Depression symptoms	−0.06	−0.24	0.01	−3.86	< 0.001
Removed (non-significant) paths					
Gender → Shame	0.00	0.01	0.01	0.18	0.860
Gender → Self-compassion	−3.09	−0.06	2.97	−1.04	0.298
Gender → Psychological flexibility	−2.62	−0.06	2.47	−1.06	0.289
Stigma → Self-compassion	0.044	0.013	0.323	0.146	0.884
Stigma → Psychological flexibility	−0.234	−0.084	0.255	−0.917	0.359
Stigma → Anxiety symptoms	0.052	0.060	0.060	0.857	0.391
Shame → Depression symptoms	−0.004	−0.006	0.045	−0.079	0.937

Appendix B

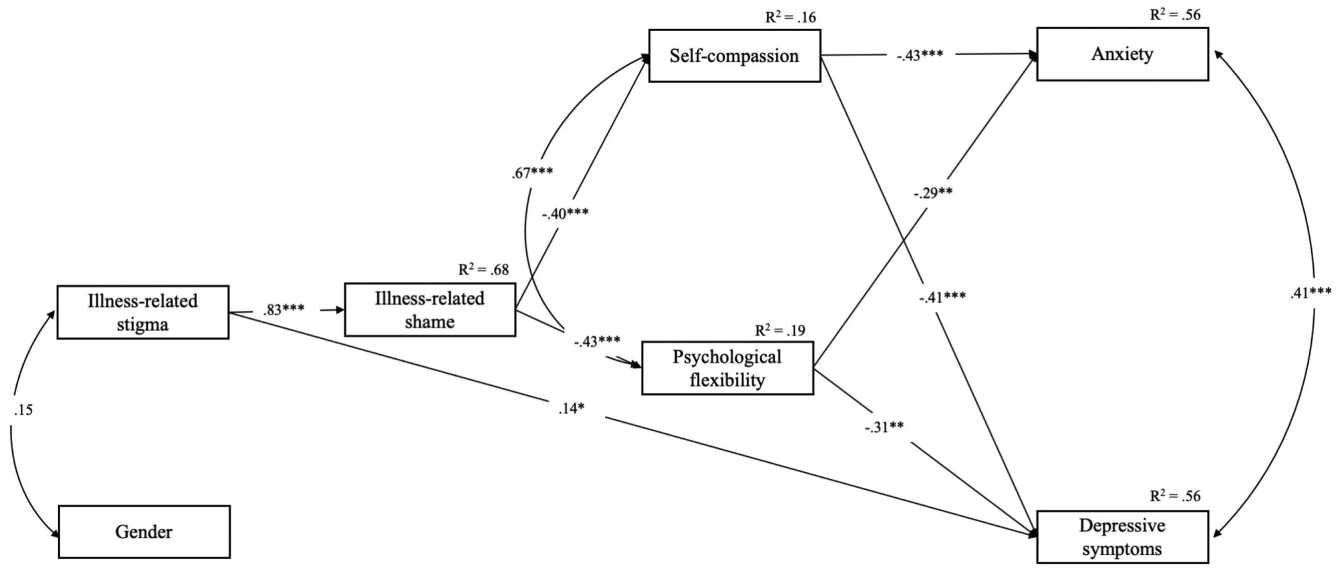


FIGURE B1 | Final path model with parameter estimates for the chronic illness subsample ($N = 104$). *Note:* Values presented are standardized path coefficients (β) and squared multiple correlations (R^2). *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

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Appendix C

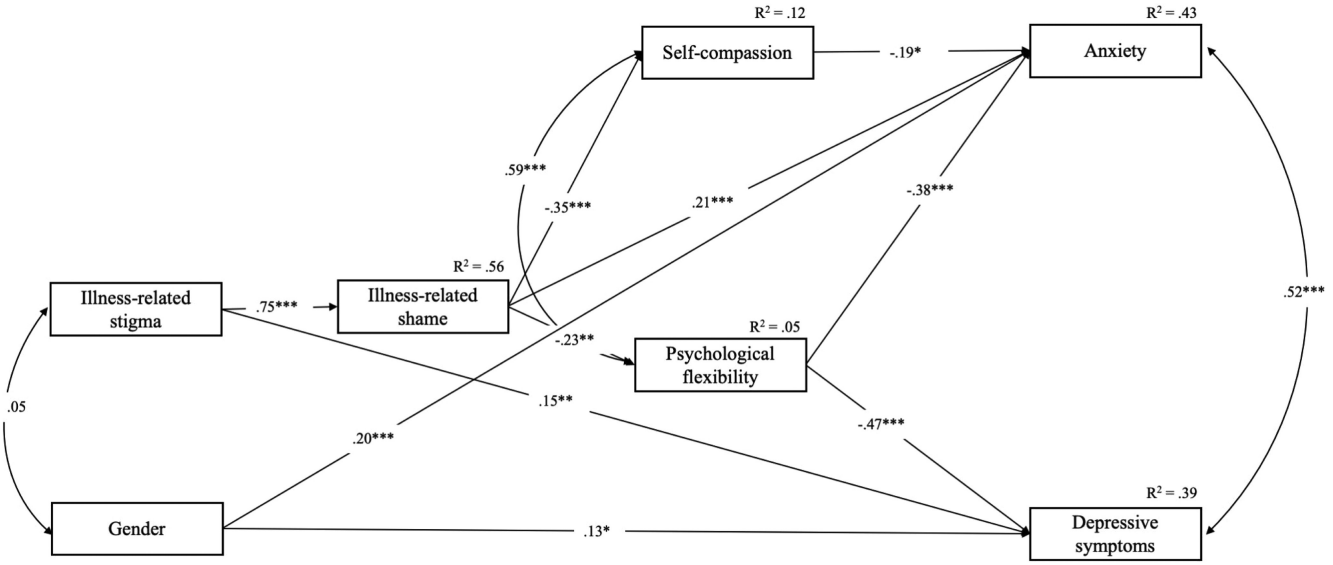


FIGURE C1 | Final path model with parameter estimates for the SARS-CoV-2 survivors' subsample ($N = 166$). *Note:* Values presented are standardized path coefficients (β) and squared multiple correlations (R^2). $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

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