Flourishing During the COVID-19 Pandemic: A Longitudinal Study in South Africa

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Abstract

In this longitudinal study, we examine changes in psychological distress and multidimensional well-being from before to during the COVID-19 pandemic among South African adults. As a secondary purpose, we explore whether pre-pandemic flourishing is protective against subsequent psychological distress during the public health crisis. The analytic sample (n = 293; M_{age} = 44.27, SD = 14.28; female = 65.19%) completed measures

of anxiety symptoms, depression symptoms, and well-being shortly before the stringent

nationwide lockdown started in South Africa (T_1). A follow-up assessment was completed

approximately six months later (T_2). Paired samples *t*-tests supported very small

improvements in anxiety ($d = -0.09$) and depression symptoms ($d = -0.13$). For domains of

well-being, small increases were found in close social relationships ($d = 0.25$) and financial

& material stability ($d = 0.19$). Positive changes in the domains of character & virtue ($d =$

0.10) and meaning & purpose ($d = 0.07$) were very small. Changes in physical & mental

health ($d = -0.03$) and life satisfaction & happiness ($d = 0.02$) were more negligible. Results

from the generalized linear models indicated that continuous scores of secure flourishing

assessed before the COVID-19 pandemic were associated with lower subsequent

psychological distress (particularly depression symptoms) during the public health crisis. We

discuss the implications of the findings for the development and delivery of interventions to

promote and sustain human flourishing during public health crises, especially in contexts of

social-structural vulnerability.

Keywords: COVID-19, Anxiety, Depression, Flourishing, Health, Quality of Life

Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) emerged in December 2019 and rapidly became a global public health concern. Several countries instituted public health measures to limit or control community transmission of SARS-CoV-2 (Counted et al., 2021; Shiba et al., 2022a). Shortly after the World Health Organization declared coronavirus disease 2019 (COVID-19) a global pandemic, the South African government implemented one of the most stringent national lockdowns in the world (Counted et al., 2022; Govender et al., 2020). By the end of March 2020, businesses were forced to close or shift their operations online, academic programming at educational institutions was suspended, transportation and travel were severely restricted, and all social gatherings were banned as part of the public health measures that were implemented. Some measures were lifted after ten weeks, but many stringent measures remained in effect until October 2020. Although the stringent national lockdown drastically altered the public and private lives of South Africans (Govender et al., 2020), few rigorous studies have investigated the impacts of the COVID-19 lockdown on different facets of well-being among the local population. In the present study, we use prospective data from a sample of South African adults to examine (1) changes in psychological distress and multidimensional well-being from before to during the COVID-19 pandemic, and (2) the role of pre-pandemic flourishing in protecting against psychological distress during the public health crisis.

Well-being During the COVID-19 Pandemic

The COVID-19 pandemic upended many aspects of people's lives (e.g., work, social engagement, public religious/spiritual participation), leading to unprecedented resource loss that had the potential to disrupt different facets of well-being. Not surprisingly, existing research—most of which has been conducted in the North America, Europe, and Asia— suggests that the toll of the COVID-19 pandemic has resulted in psychological distress (e.g.,

elevated anxiety symptoms), lower psychological well-being (e.g., loss of meaning in life),

worse physical health (e.g., lower sleep quality), financial/material instability, social isolation

and disconnectedness, and disruptions in religious/spiritual life (Cowden et al., 2021; Daly et

al., 2020; De Kock et al., 2022; Griffiths et al., 2021; Jacobi et al., 2022; Philpot et al., 2021;

Shiba et al., 2022a; VanderWeele et al., 2021; Xiong et al., 2020). However, not all evidence

corresponds with this picture of pandemic-related declines in well-being. For example, one

cross-sectional study of Australian adults found that most participants reported being able to

maintain overall well-being during the COVID-19 pandemic (up to August/September 2020,

when the study was conducted), although there was variability in the percentage of

participants who reported sustained well-being in different domains (Saikia et al., 2021).

Similarly, a recent analysis of Gallup World Poll data indicated that reported life evaluation

and happiness in 2020 were largely comparable to the pooled average of three years (2017 to

2019) that preceded the COVID-19 pandemic (Helliwell et al., 2021).

Other studies have reported evidence suggesting facets of well-being may have

improved relative to before the public health crisis. One cross-sectional study with a sample

of MTurk workers reported evidence of an increase in sense of relatedness (i.e., feeling

connected to significant others) during the early part of the COVID-19 pandemic, and that

enhanced indirect communication with family members and friends through online

technology was positively related to mental well-being (Cantarero et al., 2021). A

longitudinal study in the U.K. reported an increase in mental well-being between March/April

2020 (O'Connor et al., 2021), when COVID-19 was declared a global pandemic. Relatedly,

Recchi et al.'s (2020) longitudinal study of French residents found evidence of an increase in

general health and subjective well-being from before to during the COVID-19 pandemic,

which the authors referred to as the 'eye of the hurricane' paradox (i.e., those not directly

affected by SARS-CoV-2 may have viewed their physical health and subjective well-being in a more positive light than they typically would).

Although there may be numerous reasons for the variation in findings across studies (e.g., differences in sample characteristics, government interventions, public health measures implemented, or local burden of COVID-19), one potentially important distinction between many studies is the timing of assessments. After a period of disruption that accompanied the acute and rapidly evolving initial phase of the COVID-19 pandemic, with time people may have been able to adjust to their circumstances and show improvements in their well-being. This theorizing resonates with conservation of resources (COR) theory, which suggests that people are likely to gain resources over time after experiencing resource loss (Hobfoll et al., 2018). The same principle can be applied to the COVID-19 pandemic, such that those whom the public health crisis has impacted might be able to regain or acquire, over time, the resources and skills needed to manage the resource loss they have encountered (Cornell et al., 2021; Counted et al., 2021). Some studies have provided evidence of this, with initial declines in indicators of well-being (e.g., negative affect, anxiety symptoms) during the early part of the COVID-19 pandemic gradually returning to pre-pandemic levels (Fancourt et al., 2021; Foa et al., 2022). Considering these findings, studies that employ longer lags between assessments of well-being from before to during the COVID-19 pandemic may find that changes in well-being are smaller compared to studies that use shorter lags because people would have had more time to adjust to pandemic-related conditions. In such instances, scores on assessments from before and during the public health crisis may be more similar.

Well-being in South Africa During the COVID-19 Pandemic

Unlike people in more developed contexts who generally had greater access to social-structural resources (e.g., high-quality health systems, economic impact payments) to support them during the COVID-19 pandemic, those in fragile social-structural contexts (e.g., South

Africa) may not have been able to rely as heavily on resources from their government to support their well-being as they navigated the public health crisis (Counted et al., 2022; Govender et al., 2020). Moreover, different countries were at various stages of the COVID-19 pandemic, and contextual conditions are likely to influence region-specific well-being outcomes. Therefore, context-specific evidence is needed to understand the unique impacts of the COVID-19 pandemic on the well-being of people living in different parts of the world, particularly in South Africa, where the COVID-19 pandemic has the potential to magnify pervasive social-structural vulnerabilities (e.g., high unemployment, economic inequality) that existed before its onset (Govender et al., 2020).

Several studies have reported on the implications of the COVID-19 pandemic on the well-being of South Africans. Some studies have focused on indicators of material/financial well-being. For example, research has shown that employment in the country declined by almost 20% between February and April 2020 (Casale & Posel, 2020). There was a similar decrease in the percentage of adults who earned an income during the stringent period of lockdown compared to before the COVID-19 pandemic (Statistics South Africa, 2020). Along similar lines, Turok and Visagie (2021) used nationally representative data to show that approximately 24% of peri-urban and township dwellers lost paid employment in April 2020 (see also Daniels & Casale, 2022). Other studies have addressed mental health or indicators of psychological well-being. For instance, one cross-sectional study of young adults revealed that 72% of participants across all South African provinces met the criteria for depression during the COVID-19 lockdown, which was significantly higher (12% in 2017) compared to before the public health crisis (Mudiriza & De Lannoy, 2020). Another cross-sectional study of South African university employees found that almost 28% of participants reported mild to severe psychological distress, with nearly 40% at risk of developing mental health problems (van Niekerk & van Gent, 2021). Extending beyond self-report survey data,

one study of real-time Twitter data gathered during the first half of 2020 showed a negative

association between the overall stringency of COVID-19 lockdown regulations and happiness

in South Africa (Greyling et al., 2021).

Taken together, the abovementioned findings demonstrate the impact that the

COVID-19 pandemic has had on the well-being of South Africans, but some important gaps

remain. First, a majority of studies have explored well-being at a single time point during the

COVID-19 pandemic (Mudiriza & De Lannoy, 2020). Such cross-sectional studies are

generally unable to discern the temporal relation between the COVID-19 pandemic as a risk

factor and well-being. Second, prior studies have typically focused on one or a few facets of

well-being (e.g., financial/material security, anxiety symptoms), and a wider range of well-

being outcomes is needed to paint a more complete picture of how the COVID-19 pandemic

may have impacted individual well-being. In one study, O'Connor et al. (2021) reported an

increase in mental well-being, relative stability in depression symptoms, and greater suicidal

ideation, suggesting that the impacts of the public health crisis may vary by facet of well-

being. Therefore, if we are to build a more holistic and robust understanding of how the

COVID-19 pandemic has affected the well-being of South Africans, longitudinal studies that

track various indicators of well-being over time are needed.

Can Flourishing Protect Against Psychological Distress During the COVID-19 Pandemic?

Although there is little research concerning the impact of self-reported flourishing on

psychological distress amid the COVID-19 pandemic, evidence from related literature (e.g.,

resilience) suggests that people with higher levels of flourishing might experience lower

levels of psychological distress despite facing lockdown restrictions (Cowden et al., 2022).

Similar to the role that protective resources can play in promoting positive adjustment

following exposure to adversity (Davis et al., 2021; Höltge et al., 2021; Wilson & Somhlaba,

2016), research involving some indicators of flourishing suggests it could serve as a resource

that enables people to effectively cope with the stressors arising from the COVID-19 pandemic. For example, one cross-sectional study of Austrian adults found that those who experienced social connectedness in the last week of a six-week lockdown reported lower levels of perceived stress, generalized anxiety, and COVID-19-specific concerns (Nitschke et al., 2021). In another longitudinal study involving South African adults, participants who retained their jobs (a proxy for financial/material security) had lower depression than those who lost employment during the COVID-19 pandemic (Posel et al., 2021). These findings highlight the potential for indicators of flourishing (e.g., social relationships) to serve as resources that can mitigate psychological distress. Therefore, it is reasonable to assume that people who reported higher levels of well-being across a range of domains before the COVID-19 pandemic might experience lower psychological distress during the public health crisis.

The Present Study

In the present study, we use prospective data from a sample of South African adults to strengthen existing knowledge about the context-specific impacts of the COVID-19 pandemic on human well-being and illuminate potential opportunities to promote post-pandemic flourishing in contexts of social-structural vulnerability. Building on prior (predominantly cross-sectional) pandemic-related research that has explored the implications of the COVID-19 pandemic for the well-being (mostly mental health and financial/material security) of South Africans, this is one of the first longitudinal studies to estimate changes in psychological distress and multidimensional well-being over six months from before to during the public health crisis among South Africans. We expected to find some evidence of elevated psychological distress and a decline in well-being compared to before the COVID-19 pandemic, although some variability was anticipated across the outcomes. As a secondary objective, we explore the potential for pre-pandemic

flourishing to protect against subsequent anxiety and depression symptoms during the
COVID-19 pandemic. We expected that higher levels of secure flourishing before the
public health crisis would be associated with lower subsequent psychological distress
approximately six months later.

Method

Study Sample

This study used two waves of data from a longitudinal research project on
forgiveness, religion/spirituality, and well-being in South Africa (https://osf.io/r86ac/).
Consumer databases were used to recruit South African citizens through email and instant
messaging. Individuals who responded to an initial request for participation were directed to a
secure web-based platform and presented with further details about the research. After
providing electronic informed consent, participants completed an online baseline survey at
Time 1 (T_1) that lasted approximately 45 minutes. Six months later, all participants who
completed T_1 were re-contacted to request their participation in an online follow-up survey at
Time 2 (T_2). All participants completed both surveys in English. Institutional ethical approval
to conduct this study was granted by the University of the Free State (UFS-
HSD2019/2259/0212) and the University of Pretoria (T070/19).

Data collection at T_1 followed a staggered enrolment process from December 5, 2019
to May 26, 2020, during which 590 participants completed the survey. Approximately two
months of the T_1 data collection period overlapped with the strict national lockdown
instituted in South Africa on March 27, 2020. This meant that a portion of the participants (n
= 78) did not complete T_1 before the nationwide level five lockdown began. Given the severe
and stringent nature of the initial lockdown period in South Africa (Counted et al., 2022;
Govender et al., 2020), we attempted to minimize the potential confound of the T_1
participation date by making an a priori decision to exclude from the current study those

participants ($n = 78$) who completed T₁ after March 26, 2020. Therefore, the sample in this study was restricted to $n = 512$ participants who completed T₁ between December 5, 2019 and March 26, 2020.

Of the 512 participants who completed T₁ before March 27, 2020, $n = 219$ (42.77%) were lost to follow-up. We used independent samples *t*-tests and Chi-square tests of independence to compare the baseline characteristics of participants who remained in the cohort to those who were lost to follow-up (see Supplemental Table S1). Participants who were older, identified racially as White, and resided within the province of Gauteng had a higher likelihood of being retained over time (ps ≤ .021). No other statistically significant differences were identified (ps > .05). Participants in the analytic sample completed the T₂ survey between May 27, 2020 and October 8, 2020, which was an average of 6.00 months ($SD = 0.68$) after T₁.

Sociodemographic characteristics of the analytic sample ($n = 293$) are reported in Table 1. Participants included males (34.81%) and females (65.19%) ranging from 18 to 77 years of age ($M_{age} = 44.27$, $SD = 14.28$). Most participants resided in the province of Gauteng (71.33%). A majority of the sample was White (55.29%), married (53.92%), and had completed a bachelor's degree or higher (59.73%). Almost all participants self-identified as Christian (93.86%).

Measures

Brief Symptom Inventory 18 (Derogatis, 2001). The BSI 18 was used to measure psychological distress. The 18-item instrument contains two subscales that assess self-reported symptoms of anxiety (e.g., "Feeling tense or keyed up") and depression (e.g., "Feeling hopeless about the future") experienced during the past seven days. A five-point response scale (0 = *Not at all*; 4 = *Extremely*) is used to rate each item. In this study, participants completed all six items that form part of the depression subscale and five of the

six items that correspond with the anxiety subscale.[1] We calculated anxiety and depression

symptom scores by averaging responses to the items on the respective subscales.[2]

      Secure Flourishing Index (VanderWeele, 2017). The SFI contains 12 items and

questions that collectively provide a comprehensive measure of well-being (e.g., "In general,

how happy or unhappy do you usually feel?"). The first ten items are evenly distributed

across five underlying domains of flourishing (i.e., life satisfaction & happiness, physical &

mental health, meaning & purpose, character & virtue, close social relationships). The final

two items address the domain of financial & material stability, which is considered necessary

for sustaining well-being over time (Höltge et al., 2022; Lee et al., 2022). Items are rated on

an 11-point response scale from 0 to 10, with orienting labels presented alongside anchor

points at each end of the scale. Scores for each of the six domains were calculated by

averaging responses to each of the respective two items. A secure flourishing score was

obtained by averaging responses to all 12 SFI items.

Statistical Analysis

      Changes in Psychological Distress and Well-being. Paired samples *t*-tests were

performed to assess changes in anxiety symptoms, depression symptoms, and domains of

well-being from before the nationwide COVID-19 pandemic lockdown in South Africa to six

months later. Although reporting practices and recommendations for interpreting effect sizes

vary considerably, we report Cohen's *d* and describe changes over time using Funder and

Ozer's (2019) benchmarks of very small (0.10), small (0.20), medium (0.41), large (0.63),

and very large (0.87). We supplemented the analyses involving domains of well-being with

descriptive statistics for the 12 individual items and a secure flourishing score.

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[1]Due to a clerical error, the fourth anxiety item (i.e., "Feeling so restless you couldn't sit still") was not administered to participants.
[2]One participant had a missing response to a single depression item at T_1. The T_1 depression symptoms score for this participant was based on the average of their responses to the other five items.

In sensitivity analyses, we replicated both sets of the above analyses with the subsample of participants who completed T_1 before the South African government declared COVID-19 a national disaster on March 15, 2020. We also used generalized linear modeling to test for mean differences in anxiety symptoms, depression symptoms, and domains of well-being among the full analytic sample from T_1 to T_2, after adjusting for sociodemographic characteristics of age (continuous), gender (female, male), racial status (White, Black, other race), marital status (single, married or in a committed relationship), religious status (not religious, religious), education level (high school or less, postsecondary school education), and geographic location (Gauteng province, other province) assessed at T_1, and then replicated the model with additional adjustment for T_2 date of participation.

Associations of Secure Flourishing with Subsequent Psychological Distress. Two generalized linear models were used to estimate the effects of secure flourishing assessed before the nationwide level five lockdown on subsequent anxiety and depression symptoms assessed during the COVID-19 pandemic (one outcome at a time). In the first model, the exposure was a continuous score of secure flourishing based on the average of all 12 flourishing items assessed at T_1. The exposure for the second model was a count variable of secure flourishing that reflected the number of well-being domains (from 0 to 6) on which participants scored above the 50th percentile at T_1. Both models adjusted for age, gender, racial status, marital status, religious status, education level, geographic location, and prior values of both anxiety and depression symptoms assessed at T_1.

We performed a sensitivity analysis that involved replicating both multilevel models among participants who completed T_1 before the South African government declared COVID-19 a national disaster on March 15, 2020. We also computed E-values to assess the robustness of the associations between secure flourishing and subsequent anxiety and depression symptoms in the full analytic sample to potential unmeasured confounding

(VanderWeele & Ding, 2017). *E*-values estimate the minimum strength of association that an unmeasured confounder would need to have (on the risk ratio scale) with both the exposure and the outcome to explain away the exposure-outcome association. The lowest possible *E*-value is one, in which case no unmeasured confounding would be needed to explain away the effect estimate.

Results

Changes in Psychological Distress and Well-being

For the primary analysis, descriptive statistics for anxiety symptoms, depression symptoms, and domains of well-being assessed before the nationwide level five lockdown and during the COVID-19 pandemic are reported in Table 2. We found very small declines in symptoms of anxiety (d = -0.09, 95% CI: -0.20, 0.01) and depression (d = -0.13, 95% CI: -0.24, -0.02). Evaluating changes in domains of well-being, small increases were found in close social relationships (d = 0.25, 95% CI: 0.14, 0.36) and financial & material stability (d = 0.19, 95% CI: 0.10, 0.29). Positive changes in character & virtue (d = 0.10, 95% CI: -0.01, 0.21) and meaning & purpose (d = 0.07, 95% CI: -0.02, 0.16) were very small. Changes in physical & mental health (d = -0.03, 95% CI: -0.12, 0.06) and life satisfaction & happiness (d = 0.02, 95% CI: -0.09, 0.12) were more negligible. Changes in individual components of well-being over time were comparable to those found for the domains (see Table 3), with the largest (though small) effects found for the items in the close social relationships domain.

The sensitivity analyses indicated that the changes observed for anxiety symptoms, depression symptoms, and each domain of well-being in the full analytic sample were similar after adjusting for sociodemographic characteristics and additionally for T_2 date of participation (Table S2). When we focused on the subset of participants who completed T_1 before the South African government declared COVID-19 a national disaster on March 15, 2020, changes in anxiety symptoms, depression symptoms, and both the domains (Table S3)

and components of well-being (Table S4) were consistent with those found in the full analytic

sample.

Associations of Secure Flourishing with Subsequent Psychological Distress

Estimated effects of secure flourishing assessed before the nationwide level five

lockdown on anxiety and depression symptoms assessed during the COVID-19 pandemic are

presented in Table 4. Continuous scores of secure flourishing were associated with lower

subsequent depression symptoms (β = -.17, 95% CI: -.28, -.06), corresponding with a

medium effect. A slightly smaller effect size was found for the association between

continuous scores of secure flourishing and lower subsequent anxiety symptoms (β = -.09,

95% CI: -.20, .02). Effect sizes for both anxiety (β = -.13, 95% CI: -.23, -.02) and depression

symptoms (β = -.18, 95% CI: -.29, -.08) strengthened marginally when secure flourishing was

modeled as a continuous index representing the number of well-being domains on which

participants scored above the 50th percentile.

The E-values for each regression model indicated that the estimated effects of secure

flourishing on subsequent anxiety and depression symptoms were modestly robust to

potential unmeasured confounding (Table 4). For example, an unmeasured confounder would

need to be associated with both secure flourishing (modeled as a continuous score reflecting

the average of all 12 items) and depression symptoms by risk ratios of 1.60, above and

beyond all the adjusted covariates, to explain away the observed association. Similarly, an

unmeasured confounder would need to be associated with both secure flourishing (modeled

as a continuous score reflecting the average of all 12 items) and depression symptoms by risk

ratios of 1.29 to shift the confidence interval to include the null, but weaker confounding

could not. E-value estimates were generally smaller for anxiety symptoms than for depression

symptoms.

In the sensitivity analysis that focused on the subset of participants who completed T_1 before the South African government declared COVID-19 a national disaster on March 15, 2020, negative associations of secure flourishing (both as a continuous score and a continuous index representing the number of domains on which participants scored above the 50th percentile) with subsequent anxiety and depression symptoms were somewhat larger compared to those found in the full analytic sample (Table S5).

Discussion

This two-wave longitudinal study examined psychological distress and multidimensional well-being among a sample of South African adults over six months from before to during the COVID-19 pandemic. We observed two key findings. First, we found evidence of improvements in some of the psychological distress and well-being outcomes from before the stringent nationwide level five COVID-19 pandemic lockdown was implemented to during the public health crisis. Second, secure flourishing reported prior to the national lockdown was associated with a decline in subsequent depression symptoms (and to a lesser extent anxiety symptoms) during the COVID-19 pandemic.

Our findings supported modest improvements in anxiety symptoms, depression symptoms, and several domains of well-being compared to before the public health crisis, with the largest (though small) changes found for the well-being domains of close social relationships and financial & material stability. Although a number of previous studies have reported evidence of greater psychological distress (e.g., Xiong et al., 2020) and lower well-being during the COVID-19 pandemic (e.g., VanderWeele et al., 2021), one potential explanation for our findings is the timing of the follow-up assessments. Specifically, participants in our analytic sample completed the T_2 survey between the end of May and early October 2020 (between two and seven months after the start of the level five nationwide COVID-19 lockdown in South Africa). By this stage of the public health crisis, many

individuals might have managed to adjust psychologically to pandemic-related conditions and demonstrate evidence of recovery in well-being (Shiba et al., 2022b). Indeed, prior research has documented evidence suggesting that people were generally able to adapt to pandemic-related circumstances over a relatively short period of time (Fancourt et al., 2021; Foa et al., 2022).

However, evidence of improvements in psychological distress and some domains of well-being from before the COVID-19 pandemic indicates the picture may be more complex than a mere return to homeostasis over time. According to the COR theory (Hobfoll, 2010; Holmgreen et al., 2017), people are motivated to foster the acquisition of resources (e.g., housing, employment, social support). When the nationwide level five lockdown was first instituted in South Africa, people encountered different forms of resource loss (e.g., reduction in income) or were restricted from accessing valued resources (e.g., places of significance) in broader environment (Counted et al., 2021; Cowden et al., 2022). Hence, many individuals were forced to acquire and draw on alternative resources to support their well-being. During the period of T_2 data collection in this study, the South African government incrementally adjusted the national lockdown from level five (in place until April 30, 2020) down to level one (beginning on September 21, 2020), enabling people to regain valued resources that they were restricted from accessing after the stringent level five lockdown was implemented. As a result, people may have benefitted both from pre-pandemic resources that became more readily available again once the lockdown had eased and newly acquired resources that materialized in the process of adapting to pandemic-related conditions (Cowden et al., in press).

The pattern of findings observed in this study may also reflect the socioeconomic standing of the participants in our study. Although the COVID-19 pandemic significantly disrupted the lives of South Africans as a whole, research suggests that individuals with

lower levels education were at increased risk of becoming unemployed during the public health crisis because they were less likely to be employed in jobs that could be performed remotely once the nationwide lockdown was instituted in South Africa (Daniels & Casale, 2022; Turok & Visagie, 2021). Almost 60% of the participants in our analytic sample had completed a university degree, which is significantly higher than the average education level of the broader population of adults in South Africa (Ranchhod & Daniels, 2021). Therefore, it is possible that participants in our sample were more likely than the average South African to be employed in roles that could readily be performed remotely after the COVID-19 lockdown came into effect. Although the depth of our interpretation is limited by the data that were collected in this study, we speculate that working from home may have presented many participants with novel opportunities to strengthen facets of well-being during the public health crisis (e.g., being able to spend more quality time with significant others). For some individuals, the benefits of being able to work remotely during the COVID-19 pandemic (e.g., greater job security, lower risk of SARS-CoV-2 infection) hypothetically could have precipitated more favorable self-evaluations relative to others who weren't teleworking, which may have contributed to improvements in psychological distress and some domains of well-being compared to before the public health crisis (Maier et al., 2022). However, this theorizing requires further research.

In our secondary analysis that estimated the effects of pre-pandemic flourishing on anxiety and depression symptoms during the COVID-19 pandemic, we found that higher secure flourishing before the nationwide lockdown in South Africa was associated with a moderate decline in subsequent depression symptoms and a small decline in subsequent anxiety symptoms during the public health crisis. This pattern of findings points to the protective capacity of flourishing as a stress-buffering mechanism that may reduce the impact of the COVID-19 pandemic on psychological distress. Our findings align with the broader

pandemic-related literature on resilience-promoting protective factors (e.g., close significant others, spirituality, meaning) that have been found to support positive adjustment during the COVID-19 pandemic (Blanc et al., 2021; Giordano et al., 2022). By illuminating the protective potential of secure flourishing against subsequent psychological distress during this public health disaster, the findings of our study introduce the possibility that interventions aimed at promoting flourishing before disasters could support post-disaster adjustment after they have occurred. Further research is needed to identify the protective capacity of pre-disaster flourishing in other populations and contexts, both during this public health crisis and future disasters.

Practical Implications

Although this study's findings were generally consistent with improvements in psychological distress and well-being over time, we found some evidence of variation in the extent of change across the domains of well-being. For example, there was a small increase in close social relationships but a negligible change in life satisfaction & happiness. Our findings suggest that the impacts of the COVID-19 pandemic on domains of well-being may have been somewhat heterogenous, highlighting the importance of assessing and tracking multidimensional well-being during a public health crisis (and other disasters). Monitoring multiple domains of well-being over time could be of considerable value to healthcare professionals who provide services to support individual well-being and policymakers who seek to make informed decisions about strategies that could effectively promote population well-being. South Africa's post-pandemic recovery journey will likely benefit from ongoing research that tracks multidimensional well-being at the national level.

The current study also found evidence of pre-pandemic flourishing serving as a buffer against the negative effects of the COVID-19 pandemic on psychological distress (particularly depression symptoms), suggesting that pre-disaster flourishing may play a

protective role in reducing psychological distress during disasters. Therefore, it may be

important for policies and public health initiatives in South Africa (and other contexts of

social-structural vulnerability) to address well-being more holistically by focusing on the

promotion of 'complete' well-being. If resources are more limited (as is often the case in

developing countries), decisions will need to be made about which domains of well-being

ought to be given top priority. A systems perspective of flourishing could provide a useful

lens for guiding such decisions, which considers the dynamic interplay between the

components that comprise flourishing. For example, evidence from a recent cross-cultural

network analysis of flourishing (Höltge et al., 2022) suggests that when intervention

opportunities are limited by resource constraints, attempts to promote flourishing ought to

focus on the domain/s of well-being that have the most and strongest positive relations with

other domains. According to Höltge et al. (2022), one domain of well-being that evidenced

more consistent and stronger associations with other domains across many countries was

meaning & purpose, indicating that this domain may be a suitable target for promoting

flourishing in resource-limited settings. However, interrelations between domains of well-

being varied to some extent by country. Therefore, any efforts to cultivate flourishing in

South Africa must be sensitive to contextual particularities (e.g., culture, structural issues)

that might influence pathways to flourishing and could impact the effectiveness of

interventions and other initiatives aimed at supporting the well-being of the local population.

Limitations

Although this study makes a useful contribution to the existing body of empirical

literature on the implications of the COVID-19 pandemic for people living in contexts of

social-structural vulnerability, there are several limitations. First, the rate of attrition was

more than 40%, which can introduce selection bias if retained participants differ

systematically from those who did not complete both T_1 and T_2 surveys. Descriptive analyses

revealed some differences (e.g., age, racial status) between the characteristics of individuals who participated in both waves and those who dropped out, pointing to the possibility that measured (or unmeasured) factors could have biased the results. Second, our analytic sample was not representative of the South African population, as a majority of the participants were White, middle-aged, and college educated. Therefore, caution should be applied in generalizing our findings to the broader adult population of South Africans, and additional research is needed to explore whether this study's findings are transportable to other populations and contexts in Africa. Third, our findings are based on self-report measures, which may be subject to measurement error. Fourth, although *E*-values suggested that the associations we observed for our secondary analysis were at least moderately robust to unmeasured confounding, we cannot completely rule out the possibility that the associations of pre-pandemic flourishing with subsequent anxiety and depression symptoms may be biased due to potential unmeasured confounders (e.g., personality traits, physical activity).

Conclusion

The present study used two waves of longitudinal data from a sample of South African adults to examine changes in psychological distress and multidimensional well-being from before to during the COVID-19 pandemic, as well as to estimate the effect of pre-pandemic flourishing on reducing subsequent psychological distress during the public health crisis. The findings provided evidence supporting modest improvements in psychological distress and some domains of well-being from before to during the COVID-19 pandemic, with larger (though small) improvements found for the well-being domains of financial & material stability and close social relationships. We also found that higher levels of pre-pandemic flourishing were associated with moderately lower subsequent depression symptoms (and to a lesser extent anxiety symptoms) during the COVID-19 pandemic. Overall, our findings extend the existing empirical literature on the implications of the

COVID-19 pandemic for individual well-being among non-Western populations living in contexts of social-structural vulnerability, and highlight the potential for flourishing to serve as a resource that can protect against psychological stress during disasters.

Declaration of Conflicting Interests

The authors declare that there is no conflict of interest.

Data Availability
Data is available upon reasonable request.

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Table 1

Baseline Sociodemographic Characteristics of Participants in the Analytic Sample (n = 293)

Characteristic	
Age (years), $M \pm SD$ (range)	44.27 ± 14.28 (18 to 77)
Gender, *n* (%)	
Female	191 (65.19)
Male	102 (34.81)
Racial status[a], *n* (%)	
Asian	1 (0.34)
Black	99 (33.79)
Coloured	21 (7.17)
Indian	8 (2.73)
White	162 (55.29)
Other	2 (0.68)
Education level, *n* (%)	
Less than high school	5 (1.71)
Completed high school	58 (19.80)
Postsecondary school certificate	11 (3.75)
Diploma or technical degree	44 (15.02)
Bachelor's degree	71 (24.23)
Postgraduate degree (e.g., Hons., M.A., M.D., Ph.D.)	104 (35.50)
Marital status, *n* (%)	
Married	158 (53.92)
Cohabiting	9 (3.07)
In a committed relationship	16 (5.46)
Single	75 (25.60)
Divorced	23 (7.85)
Separated	6 (2.05)
Widowed	6 (2.05)
Religious status, *n* (%)	
Christian	275 (93.86)
Buddhist	1 (0.34)
Ancestral, tribal, animist, or other traditional African religion	1 (0.34)
Hindu	1 (0.34)
Jewish	1 (0.34)
Atheist	1 (0.34)
Agnostic	4 (1.37)
Nothing in particular	3 (1.02)
Do not know	1 (0.34)
Prefer not to answer	5 (1.71)
Geographic location (province), *n* (%)	
Eastern Cape	7 (2.39)
Free State	7 (2.39)
Gauteng	209 (71.33)
KwaZulu-Natal	40 (13.65)
Limpopo	5 (1.71)
Mpumalanga	1 (0.34)
North West	3 (1.02)
Western Cape	21 (7.17)

Note. M = mean, SD = standard deviation. Sociodemographic characteristics and subcategories that do not contain summary statistics were not assessed. [a]Race categories were adopted from Statistics South Africa (2016) to maintain consistency with general reporting practices on race in South Africa.

Table 2

Changes in Indices of Psychological Distress and Domains of Well-being from Before the National Level Five Lockdown on March 27, 2020 (T₁) to During the COVID-19 Pandemic (T₂)

Variable	Before COVID-19		During COVID-19		Cohen's *d* [95% CI]
	M (*SD*)	α	*M* (*SD*)	α	
Psychological distress					
Anxiety symptoms	0.97 (1.01)	.88	0.88 (0.94)	.87	-0.09 [-0.20, 0.01]
Depression symptoms	1.04 (0.98)	.87	0.92 (0.92)	.87	-0.13 [-0.24, -0.02]*
Well-being					
Life satisfaction & happiness	6.77 (1.99)	.87	6.80 (1.85)	.85	0.02 [-0.09, 0.12]
Physical & mental health	7.27 (1.81)	.75	7.22 (1.73)	.63	-0.03 [-0.12, 0.06]
Meaning & purpose	7.48 (2.23)	.84	7.62 (1.89)	.80	0.07 [-0.02, 0.16]
Character & virtue	7.71 (1.61)	.72	7.86 (1.42)	.60	0.10 [-0.01, 0.21]
Close social relationships	6.85 (2.25)	.92	7.37 (1.92)	.90	0.25 [0.14, 0.36]***
Financial & material stability	5.54 (2.70)	.80	6.06 (2.65)	.82	0.19 [0.10, 0.29]***

Note. T₁ = Time 1, T₂ = Time 2, CI = confidence interval, *M* = mean, *SD* = standard deviation, α = alpha estimates of internal consistency. *n* = 293 for all analyses. **p* < .05 before but not after Bonferroni correction, ****p* < .05 after Bonferroni correction (the *p*-value cutoff for Bonferroni correction was .05/8 = .0063 for each outcome).

Table 3

Changes in Components of Well-being (and Secure Flourishing) from Before the National Level Five Lockdown on March 27, 2020 (T_1) to During the COVID-19 Pandemic (T_2)

Variable	Before COVID-19 M (SD)	During COVID-19 M (SD)	Cohen's d [95% CI]
Secure flourishing[a][b]	6.94 (1.58)	7.16 (1.39)	0.15 [0.06, 0.24]
1. Overall, how satisfied are you with life as a whole these days?	6.73 (2.24)	6.72 (2.12)	-0.00 [-0.11, 0.10]
2. In general, how happy or unhappy do you usually feel?	6.80 (1.97)	6.87 (1.84)	0.04 [-0.07, 0.15]
3. In general, how would you rate your physical health?	7.07 (2.00)	7.02 (2.05)	-0.02 [-0.12, 0.07]
4. How would you rate your overall mental health?	7.47 (2.11)	7.42 (2.00)	-0.02 [-0.12, 0.07]
5. Overall, to what extent do you feel the things you do in your life are worthwhile?	7.45 (2.27)	7.57 (1.94)	0.06 [-0.05, 0.16]
6. I understand my purpose in life.	7.51 (2.45)	7.68 (2.20)	0.07 [-0.01, 0.16]
7. I always act to promote good in all circumstances, even in difficult and challenging situations.	8.02 (1.68)	8.11 (1.49)	0.06 [-0.05, 0.17]
8. I am always able to give up some happiness now for greater happiness later.	7.41 (1.96)	7.61 (1.86)	0.10 [-0.01, 0.22]
9. I am content with my friendships and relationships.	7.14 (2.23)	7.63 (1.86)	0.24 [0.12, 0.35]
10. My relationships are as satisfying as I would want them to be.	6.56 (2.43)	7.11 (2.15)	0.24 [0.13, 0.35]
11. How often do you worry about being able to meet normal monthly living expenses?	5.25 (3.04)	5.73 (3.00)	0.16 [0.06, 0.26]
12. How often do you worry about safety, food, or housing?	5.84 (2.86)	6.39 (2.75)	0.20 [0.09, 0.30]

Note. T_1 = Time 1, T_2 = Time 2, CI = confidence interval, *M* = mean, *SD* = standard deviation. *n* = 293 for all analyses. [a]Secure flourishing scores are an average of the responses from item 1 through item 12. [b]Estimated internal consistency of scores on the secure flourishing index was α = .90 at T_1 and α = .87 at T_2.

Table 4

Associations of Secure Flourishing Assessed Before the National Level Five Lockdown on March 27, 2020 (T₁) with Anxiety and Depression Symptoms Assessed During the COVID-19 Pandemic (T₂)

Exposure	Anxiety symptoms			Depression symptoms		
	β [95% CI]	*E*-values[a]		β [95% CI]	*E*-values[a]	
		Effect estimate[b]	CI limit[c]		Effect estimate[b]	CI limit[c]
Continuous score of secure flourishing	-.09 [-.20, .02]	1.40	1.00	-.17 [-.28, -.06]***	1.60	1.29
Number of secure flourishing domains above 50th percentile	-.13 [-.23, -.02]***	1.48	1.14	-.18 [-.29, -.08]***	1.64	1.36

Note. T₁ = Time 1, T₂ = Time 2, β = standardized effect size, CI = confidence interval. Generalized linear models were used to estimate effects of secure flourishing on the mean change in anxiety and depression symptoms. Exposure and outcome variables were standardized ($M = 0$, $SD = 1$) to facilitate interpretation. $n = 293$ for all analyses. Models adjusted for age, gender, racial status, marital status, religious status, education level, and geographic location assessed at T₁. All models included prior values of both outcomes assessed at T₁. *$p < .05$ before but not after Bonferroni correction, ***$p < .05$ after Bonferroni correction (the p-value cutoff for Bonferroni correction was $.05/2 = .025$ for each outcome). [a]The formula for calculating *E*-values can be found in VanderWeele and Ding (2017). [b]*E*-values for effect estimates are the minimum strength of association that an unmeasured confounder would need to have with both the exposure and the outcome variable to fully explain away the observed effect, after accounting for the measured covariates. [c]*E*-values for the limit of the 95% CI closest to the null denote the minimum strength of association that an unmeasured confounder would need to have with both the exposure and the outcome variable to shift the confidence interval to include the null value, after accounting for the measured covariates.