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Being a Parent during COVID-19: Risk for Psychological Distress in the United States and Italy

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Abstract: The COVID-19 pandemic has had significant effects on people worldwide, yet the psychological impact of collective traumas may differ at the individual and societal level. Parents may be exposed to greater pandemic-related stressors, yet also are more likely than non-parents to have social interactions during social distancing mandates. Furthermore, varying degrees of pandemic severity in countries may alter the adverse outcomes of pandemic stressors on psychopathology across nations. The purpose of this investigation was to cross-nationally explore how COVID-19 stress exposure relates to psychological distress and whether the association differed by parental status and nationality. Individuals from the United States (n = 2449) and Italy (n = 579) completed assessments measuring traumatic stress, depressive symptoms, and COVID-19-related stressors. COVID-19-related stressors were positively associated with traumatic stress and depressive symptoms. The association between COVID-19-related stressors and psychological distress did not differ by parental status or nationality. We also found that being a young adult, having a lower educational status, not being a parent, and being Italian were related to exposure to COVID-19-related stressors. We discuss these findings and their implications for our understanding of unique contexts that may pose as risk or resiliency factors during a global collective trauma, particularly on parental psychological distress as a way of promoting whole-family wellness.

Keywords: parenting; COVID-19; psychological distress; cross-national

1. Introduction

Exposure to traumatic events—both personal as well as collective, nationwide events—has significant relevance for psychological distress, physical health, and even onset of suicidal ideation (Scott et al. 2013; Stein et al. 2010). Large-scale collective traumas such as mass shootings, acts of terror, socio-political unrest, and pandemics are linked with traumatic stress and psychopathology (Bor et al. 2018; Jalloh et al. 2018; Silver et al. 2002, 2021). Because exposure to trauma, as well as what is considered or experienced as traumatic, can vary across contexts (Benjet et al. 2016), the adverse psychological effects may be more prevalent in certain populations. In the case of the SARS-CoV-2 (COVID-19) pandemic, increases in a wide range of psychological symptoms were expected to result and have been found to occur from the long-term lockdowns across nations (Holman et al. 2020; Le et al. 2020; Mamun et al. 2021; Wang et al. 2020). In addition to having important implications for the well-being of in-school sub-populations, such as college students (Cao et al. 2020; Son et al. 2020), the relevance of potential stressors that result

from the pandemic may also have important implications for working sub-populations, as well as the sub-population of parents. Because the pandemic may have varying degrees of severity in different countries as a function of country-specific characteristics (e.g., access to healthcare services, government response), the potential stress and adverse outcomes of it on psychological distress may also differ across nations.

The purpose of this study was to examine how exposure to COVID-19-related stressors is associated with psychological distress in two developed countries that experienced a huge wave of infection rates early in 2020—the United States and Italy—and specifically how the association between exposure to COVID-19 stressors and symptoms of psychopathology may differ among individuals who are parents and those who are not parents.

1.1. Variation in Exposure to and Experience of Traumatic Events

The prevalence of experiencing as well as individuals' responses to trauma can differ depending on context. The experience of trauma may differ at the individual, family, and community level in that collectivistic societies may theoretically be impacted by collective traumas more than individualistic societies (Somasundaram 2014). Marriage and family can be buffering factors in exposure to trauma, as familial support is linked to greater resilience after experience of a traumatic event (Bate et al. 2021; Benjet et al. 2016; Figley 1983; Somasundaram 2014). Married couples may have additional support and financial resources to deal with traumatic events. Thus, both societal- and individual-level differences are important to consider when examining exposure to trauma and the psychological effects of trauma.

In the context of trauma from illness-based epidemics or pandemics, prior research has suggested that proximal exposure has implications for psychological well-being. For example, a study examining the negative impact of the 2003 severe acute respiratory syndrome (SARS) outbreak in Taiwan found that individuals who were exposed to the disease reported greater feelings of depression and economic strain compared to those who were not exposed (Ko et al. 2006). These negative outcomes extend not only to individuals who were directly exposed to the infectious disease, but also to those who worked in healthcare settings as well as individuals in the community (Maunder et al. 2003; Nickell et al. 2004; Sim et al. 2010). Overall, illness-based collective traumas are associated with potential risk for worsened mental health through proximal exposure.

1.2. COVID-19 Pandemic as a Collective Trauma

COVID-19 was announced as a pandemic at the start of 2020 (WHO 2021a). As of late 2021, there have been over two hundred million confirmed cases and over four million reported deaths worldwide (WHO 2021b). The COVID-19 pandemic has caused profound, global-wide concerns regarding the state of individual psychological well-being (Holmes et al. 2020). However, it is not a novel case in history; previous outbreaks, such as SARS and Ebola, have brought similar concerns, including psychological distress, social isolation, and anxiety surrounding potential infection of oneself or of loved ones (Maunder 2009; Thompson et al. 2017). With respect to the psychological implications of the COVID-19 pandemic (Holmes et al. 2020), recent findings parallel the existing literature on the effects of previous illness-based collective traumas (Holman et al. 2020). For example, consistent with findings during the SARS epidemic (Ko et al. 2006), individuals who were diagnosed with or had a close contact who was diagnosed with COVID-19 reported greater levels of anxiety and depression than those who did not have COVID-19 or did not know anyone who had COVID-19 (Lei et al. 2020). These findings suggest that the COVID-19 pandemic may have differing implications on psychological distress depending on the variation in societal- or individual-level factors as well as proximal exposure to the virus.

1.2.1. COVID-19 Pandemic and Parental Status

Like other previous pandemic-related collective traumas, exposure and impact of the COVID-19 pandemic may differ across lifespan and region (Kowal et al. 2020). In the

context of families, young adults living independently may have different experiences with the pandemic than those who are married and have children. Although previous literature suggests that younger adults and those that are in school are less likely to be exposed to collective traumas (Benjet et al. 2016), the COVID-19 pandemic has had widespread impact on social interactions and school systems via enforcing social distancing, areas that are profound in the experience of young adults. Indeed, findings suggest that being a younger adult is a factor in experiencing higher pandemic stress (Kowal et al. 2020); adolescents and young adults report increased feelings of anxiety and depression during the pandemic (Hawes et al. 2021). Individuals in the early stages of adulthood are often transitioning to independent living, solidifying their social networks, and establishing their careers as well as sources of income (Schwartz et al. 2013; Wood et al. 2018). Uncertainty regarding their education and future careers alongside disruptions in their social circles are all factors relating to worsened well-being during the pandemic (Cao et al. 2020; Hawes et al. 2021; Son et al. 2020).

Parenthood, on the other hand, is often considered a period later in life that is associated with meaning-making and the formation of tighter familial and social bonds (Nelson et al. 2014). Alternatively, parenthood is also associated with different economic and life stressors, as couples are often exposed to strains in their relationships as they transition to parenthood (McLanahan and Adams 1987; Nelson et al. 2014; Ross et al. 1990; Stanca 2012). Prior research suggests that being married is associated with less exposure to traumatic events and less pandemic stress (Benjet et al. 2016; Bonichini and Tremolada 2021; Kowal et al. 2020); however, being a parent or having children in the home during the pandemic was associated with greater pandemic stress and worse emotional well-being (Bate et al. 2021; Kowal et al. 2020). In the midst of a global pandemic, while experiencing similar stressors as adults without children (i.e., uncertainty about the future, loved ones being diagnosed with COVID-19, economic strain), parents also needed to provide additional care for their children as school and child services were limited due to social distancing (Patrick et al. 2020). A longitudinal study following mothers revealed increases in depression and anxiety from before to during the pandemic, increases that were related to disruptions in the home as a result of the pandemic (Racine et al. 2021). However, it is likely that most people, including parents and adults without children, experienced increased stress and worse well-being during the pandemic (Bate et al. 2021; Hawes et al. 2021; Kowal et al. 2020; Patrick et al. 2020; Racine et al. 2021). What remains unknown is how psychological distress differed across different groups of people (e.g., parents compared to adults without children) during the pandemic.

Little is known about whether the COVID-19 pandemic impacted parents more compared to adults without children, and whether greater exposure to COVID-19-related stressors in parents has implications for their psychological well-being. On one hand, parental status may have buffered the impact of the pandemic on well-being as they have a closer support system; alternatively, recent literature suggests that the pandemic has had adverse effects on parent well-being. However, the pandemic may have had negative impacts on the psychological distress of all groups of people and the negative impacts on parents may have been less extreme. Thus, additional research may help to clarify whether parental status may be a protective or risk factor for the impact of the pandemic on psychological distress.

1.2.2. COVID-19 Pandemic and Geographic Location

Variation in responses to the pandemic at the national level as well as differing sentiments regarding the severity of the pandemic between countries may disproportionately affect families and individuals. Indeed, the severity of—as well as government response towards—the COVID-19 pandemic varied greatly across countries (Anderson et al. 2020). Two countries that were unprepared and faced a startling rise in COVID-19 cases at the beginning of 2020 were the United States and Italy (Boccia et al. 2020; Remuzzi and Remuzzi 2020; Schuchat and CDC COVID-19 Response Team 2020). Aside from evidence

of psychological disturbance (Di Giuseppe et al. 2020; Holman et al. 2020), the pandemic has largely disrupted daily life—previous routines and daily rhythms—and upended job prospects and the economy (Giuntella et al. 2021; Kochhar 2020; Lopez et al. 2020; Parker et al. 2020a, 2020b). Despite existing data indicating the adverse economic and psychological effects of the COVID-19 pandemic across nations, there is limited literature investigating the potential national differences in psychological distress resulting from the COVID-19 pandemic.

Nations differ in their access to healthcare services, response to disasters, and sociopolitical values that may relate to how the pandemic impacted people of that country. For example, across the United States, states differed in their COVID-19 responses and restrictions, with some states having a stricter lockdown whereas other states did not, potentially reflecting a lack of concern or anxiety surrounding the pandemic. Countries with a more consistent and strict lockdown policy may instill greater concern in their citizens. Furthermore, the wealth and access to safety-net resources (e.g., governmental aid, family leave, childcare) across nations may also play a role in how citizens felt regarding the pandemic and its severity on their well-being. Finally, the nature of the media coverage of the pandemic, in the context of other national news, may make people more prone to distress. Individuals living in the United States overall may be less susceptible to worsened well-being as a result of the pandemic because of inconsistent news regarding the severity of the pandemic and potential access to additional resources. Thus, the current study aims to examine how national and political–economic differences between the United States and Italy may have shaped their citizens' psychological distress to the pandemic.

1.3. Current Investigation

This investigation aims to explore how exposure to COVID-19 stressors relate to psychological distress across nations and whether parental status moderates the link between COVID-19-related stress and psychological distress. The existing literature suggests that the COVID-19 pandemic might have various negative psychological effects, yet published data often solely include non-specific measures of exposure to COVID-19-related stressors (e.g., Perceived Stress Scale; Kowal et al. 2020). Common stressors may include exposure to or diagnosis of COVID-19 in oneself or within close social circles, working as a frontline worker, and adjustment to one's livelihood or daily life. Our study aims to contribute to the literature by examining the accumulation of exposure to COVID-19-related stressors and how they relate to experiences of psychological distress among parents in the context of two nations that experienced high rates of COVID-19 cases and deaths at the start of the pandemic. Indeed, the United States and Italy are considered two industrial nations that shared high rates of cases and deaths during the months of March and April of 2020, making their situations relatively parallel at the early stages of the pandemic (WHO 2021b). Thus, we focus our investigation on these two countries. Our study aims to examine (1) whether increased exposure to COVID-19 stressors is associated with greater experience of psychological distress, (2) whether parental status plays a protective role in the association between exposure to COVID-19 stressors and symptoms of psychopathology, and (3) whether individuals in the United States were less susceptible to the impact of the pandemic on psychopathology compared to individuals in Italy.

2. Materials and Methods

Adults from the United States (87% female) and Italy (67% female) were recruited to participate in separate online survey studies (via the Qualtrics platform) examining symptoms of psychopathology and experiences during the start of the COVID-19 pandemic (data were collected at the end of March through early May 2020 within both countries). To ensure there was no overlap in participants, we used IP addresses to determine any duplicate responses and removed $n = 3$ participants. The total sample was $N = 3050$ (United States $n = 2453$ and Italy $n = 579$). *t*-tests using Satterthwaite approximation to account for unequal variances indicated that participants in the United States sample were

significantly older (t(550.18) = 15.77, $p < 0.001$, $d = 0.69$) and had a higher educational status (X^2(6) = 1156.38, $p < 0.001$, Cramer's V = 0.62) than participants in the Italian sample. Table 1 provides the sex, age, education, race/ethnicity, parental status distribution of both samples.

This investigation combines data derived from three larger studies (Bate et al. 2021; Prout et al. 2020) conducted to examine psychological distress during the pandemic in the United States and in Italy. Two of the studies collected data in the U.S., one focusing on recruiting parents and the other on individuals more broadly. The third dataset consisted of both parents and non-parents from Italy. For the purposes of this current study, we only focus on describing procedures and measures relevant to our research questions. Participants were eligible to participate if they were a United States or Italy resident, 18 years or older, and were English/Italian fluent. The study was advertised through social media as well as parent networks and neighboring communities in regions based on the research team's affiliated institutions. Facebook advertisements were conducted to recruit a nation-wide sample of adults including parents and their school-age children. The studies were approved by two separate review boards—the WCG Institutional Review Board for Yeshiva University and Nanyang Technological University. Participants provided informed consent. Data were de-identified prior to analyses to maintain anonymity and were stored in the co-authors' institutional database.

Table 1. Demographic distribution of the United States and Italy samples.

	Age	Education	Race/Ethnicity	Parental Status and Number of Children
United States Northeast (40%) Midwest (16%) South (26%) West (18%)	7% 18–24 24% 25–34 26% 35–44 16% 45–54 26% 55 and older	<1% less than high school diploma 6% high school graduate 16% some college experience 7% 2- or 3-year degree 27% 4-year/master's degree 30% professional degree 14% doctorate	83% Non-Hispanic White 6% Latinx 5% Asian 3% Black 1% Middle-East 3% Other	61% parents (90% mothers) 40% no children 15% 1 child 26% 2 children 11% 3 children 8% 4 or more
Italy	23% 18–24 33% 25–34 25% 35–44 19% 45–54	5% less than high school diploma 49% high school graduate 15% some college experience 22% 2- or 3-year degree 2% 4-year/master's degree 2% professional degree 5% doctorate	79% Non-Hispanic White 6% Latinx <1% Black <1% Asian <1% Middle-East 14% Other	13% parents (72% mothers) 82% no children 12% 1 child 6% 2 children >1% 3 or more

2.1. Measures

2.1.1. Demographics

Participants were asked to report their age, education background, race/ethnicity, and parental status. Parental status was determined with a binary question indicating if they had children (1 = yes; 0 = no). U.S. participants also provided regional data, so we were able to determine which states our participants resided in. We clustered them by U.S. regions (Northeast, Midwest, South, West) and have provided the breakdown in Table 1.

2.1.2. Time

The pandemic unfolded over the course of 2020, and thus we wanted to consider whether time would be a factor relevant to the development and experience of psychological distress. At the start of the pandemic and stay-at-home orders, it was unclear how long the change to livelihood would last. We were concerned if individuals who completed the assessment closer to the start of the pandemic may differ in their traumatic stress and depression severity than those who completed the assessment a few months later into the pandemic, potentially feeling more or less adjusted depending on the severity of infection rates and cases in their community. Thus, to account for change over time, we measured

time in the frame of weeks since the start of the study (March through May), measured by the date in which participants completed the study and converted into weeks.

2.1.3. COVID-19 Stress Impact

To assess stress impact from quarantine and social distancing, we listed thirty-four varying stressful situations individuals may be experiencing due to the pandemic. These included relational/interpersonal, health, and socioeconomic stressors (i.e., diagnosis of COVID-19 within the family, loss of a loved one due to COVID-19, working as a frontline worker, changes to employment status/job loss). If a situation applied to a participant, they indicated with a "yes" ("no" if the situation did not apply). The items were agreed upon by our team, which comprised researchers from both the U.S. and Italy. This ensured that the scaling and comparability of the items were relevant across cultures. To examine severity of stress impact, four raters evaluated each of the items on a 5-point scale, with 1 signifying the least severe and 5 signifying the most severe (1 = knowing an acquaintance [dentist] was diagnosed with COVID-19; 3 = knowing a colleague had passed due to COVID-19; 5 = both partners lose their job). The raters achieved a high level of inter-rater reliability, $\alpha = 0.93$. We created a mean score for each item based on the 4 raters' scores, indicating the weight of that item on stress impact. These weighted scores for each item were then summed for each participant, producing a total stress impact (for the list of items selected for this measure and their coded severity, see Appendix A). Possible scores ranged from 0 to 170, with 0–5 indicating not-at-all severe, >5–15 somewhat severe, >15–25 severe, and >25 extremely severe COVID-19 impact, respectively, using guidelines from the Holmes–Rahe Stress Inventory (Noone 2017). The measure has shown validity based on a previous study using a similar approach (Bate et al. 2021). Furthermore, the items included in our scale have overlap with existing studies that have developed a similar scale and found associations between pandemic-related stressors and psychological distress (Lotzin et al. 2021; Park et al. 2021; Tambling et al. 2021). For details of all the items and COVID-19 stressors, see Appendix A.

2.1.4. Traumatic Stress

Traumatic stress was measured using the Impact of Events Scale—Revised (IES-R; Weiss 2007). The scale is a 22-item revised version of the original 15-item IES (Horowitz et al. 1979) that measures self-reported physical and psychological distress from traumatic events, with the additional seven items included to assess symptoms of hyperarousal. Individuals report on several items relating to experiencing difficulties and distress over the past seven days towards a particularly stressful life event (e.g., "Pictures about it popped into my mind", "I was jumpy and easily startled"). Items are rated on a 5-point scale (0 = not at all; 4 = extremely). The IES-R can be measured as a total or alternatively as three subscales—intrusion, avoidance, and hyperarousal; it has shown sufficient validity and consistency across the literature ($a = 0.95$–0.96; Beck et al. 2008; Creamer et al. 2003). Furthermore, the IES-R has been found to have the same factor structure in Italian samples ($a = 0.72$–0.83; Craparo et al. 2013; Pietrantonio et al. 2003). For this study, a total score was calculated for each individual ($a = 0.94$).

2.1.5. Depression Severity

Depression severity was measured using the Patient Health Questionnaire-9 (PHQ-9; Kroenke et al. 2001), a brief 9-item, diagnostic tool commonly-used among researchers to assess depression. The PHQ-9 is part of the PHQ (Spitzer et al. 1999) that measures a variety of aspects related to health. Participants are asked to rate the frequency with which they experienced varying symptoms related to depression in the past two weeks (e.g., "feeling down, depressed, or hopeless", "feeling tired or having little energy") on a 4-point scale (0 = not at all; 3 = nearly every day). Scores are based on a total, with cut-off scores for mild, moderate, to severe depression being 5, 10, and 15. The PHQ-9 is considered a well-validated and reliable measure across populations ($a = 0.86$–0.89; Gilbody et al. 2007;

Kroenke et al. 2010; Martin et al. 2006). The measure has also been used in work with Italian samples (Picardi et al. 2005) and has been shown to have measurement invariance across other European samples (Shevlin et al. 2022). For this study, a total score was calculated for each individual ($a = 0.90$).

2.2. Data Analytic Plan

We used SPSS software (IBM 2020) for all main analyses. Outcome variables of interest were first examined for normality, outliers, and homogeneity of variance. COVID-19 stress impact, traumatic stress, and depression severity skewness and kurtosis ranged between 0.41 to 0.73 and -0.41 to 0.48. Visual examination of the data reflected relatively normal distributions. We then conducted independent means t-tests to broadly assess differences in COVID-19 stress impact and symptoms of psychopathology across nations and parental status. Non-parametric tests were used if variables did not meet the Levene's Test for homogeneity of variance. Due to the secondary nature of this data analysis, we conducted a post hoc power analysis to determine whether we were sufficiently powered to detect an effect. Using G*Power (Faul et al. 2009), we had sufficient power (<0.80) to detect small to medium effect sizes of 0.002–0.30 with a sample of $N = 3028$ and an alpha of 0.05.

To examine our first research question of interest, we conducted hierarchical linear regressions with 5000 bootstrap resampling to assess whether COVID-19-related stress impact could explain a significant proportion of variation in symptom severity of psychopathology, after accounting for age, education, sex, parental status, nationality, and time. We then tested interaction effects using PROCESS Macro (Hayes 2017) on SPSS to assess whether the association between COVID-19-related stress impact and symptoms of psychopathology differed between the United States and Italian samples. We conducted an additional interaction to assess whether parental status moderated the association between COVID-19-related stress impact and symptoms of psychopathology. If participants did not complete an assessment (e.g., missing data), we used listwise deletion.

3. Results

We conducted a preliminary analysis to examine whether there were regional differences in COVID-19 stress impact across the U.S. (i.e., ANOVA) and found no difference ($p > 0.05$). A total of 10% of participants ($n = 292$) reported losing a job and 12% ($n = 379$) reported having reduced hours. A total of 17% ($n = 502$) of participants reported impact on their income. When comparing across countries, the Italian sample reported greater COVID-19 stress impact ($t(907.18) = -15.05, p < 0.001, g = 0.69$), traumatic stress ($t(1017.02) = -22.99, p < 0.001, g = 1.00$), and depression severity ($t(1806.73) = -25.10, p < 0.001, g = 0.83$) than the U.S. sample. When comparing across parental status, parents reported greater COVID-19 stress impact ($t(2794.35) = -3.93, p < 0.001, g = 0.15$) than adults without children. However, adults without children reported greater traumatic stress ($t(2556.65) = 10.62, p < 0.001, g = 0.42$) and depression severity ($t(2688.73) = 10.44, p < 0.001, g = 0.40$) than parents. See Table 2 for descriptive statistics by parental status and nationality.

Table 2. Measure descriptive statistics by parental status and nationality.

	United States Sample (*N* = 2032) M(SD) Cronbach's *a*	Italy Sample (*N* = 558) M(SD) Cronbach's *a*	Parent (*N* = 1258) M(SD) Cronbach's *a*	Non-Parent (*N* = 1294) M(SD) Cronbach's *a*	Range
IES-R (Traumatic stress)	26.71 (16.74) *a* = 0.93	42.99 (14.25) *a* = 0.94	26.74 (16.83) *a* = 0.95	33.94 (17.50) *a* = 0.94	0–4
PHQ-9 (Depressive Symptoms)	8.42 (6.42) *a* = 0.90	13.33 (3.33) *a* = 0.78	8.26 (6.32) *a* = 0.88	10.72 (5.91) *a* = 0.90	0–3
COVID Impact	8.57 (6.65)	13.14 (6.66)	10.45 (7.29)	9.47 (6.08)	0–133

Note. M = mean; SD = standard deviation.

3.1. COVID-19 Stress Impact Predicts Psychological Distress

Using a hierarchical linear regression analysis with age, educational status, time, sex, nationality, and parent status included at the first step (adj. $R^2 = 0.17$, $F(6, 2274) = 80.87$, $p < 0.001$) and COVID-19 stress impact included at the second step of the regression (adj. $R^2 = 0.19$, $F(7, 2273) = 75.77$, $p < 0.001$), we found that COVID-19 stress impact positively predicted traumatic stress ($b = 0.33$, 95%CI$_{boot}$[0.22, 0.44], $p < 0.001$). COVID-19 stress impact explained a significant proportion of variation in traumatic stress above and beyond that of predictors included in step 1 ($\Delta R^2 = 0.01$, $p < 0.001$). Among the included covariates, younger age, lower educational status, females, and being Italian were associated with greater traumatic stress (see Table 3). Parental status was also significantly associated with traumatic stress, such that being an adult without children was associated with greater traumatic stress ($b = -1.99$, 95%CI$_{boot}$[−3.50, −0.48], $p = 0.01$).

Table 3. Second step of the hierarchical linear regression of COVID-19 stress impact on traumatic stress.

	b 95%CI$_{boot}$ [Lower CI, Upper CI]	*SE*	*b**	*t*
Intercept	20.37 [15.25, 25.53]	2.60		8.06 ***
Age	−1.46 [−1.98, −0.95]	0.27	−0.13	−5.64 ***
Education	−1.59 [−2.04, −1.13]	0.23	−0.15	−6.88 ***
Sex	8.09 [6.26, 9.82]	0.92	0.17	8.52 ***
Time	−0.12 [−0.80, 0.57]	0.35	−0.01	−0.35
Parental Status	−1.99 [−3.50, −0.48]	0.78	−0.06	−2.57 *
Nationality	10.70 [8.54, 12.95]	1.12	0.22	9.15 ***
COVID-19 Stress Impact	0.33 [0.22, 0.44]	0.06	0.13	6.12 ***

Note. $N = 2280$; * $p < 0.05$; *** $p < 0.001$. b = unstandardized regression coefficient with 95% bootstrapped confidence intervals; SE = Standard Error; $b*$ = standardized regression coefficient; t = t-score; adj. $R^2 = 0.19$, $F(7, 2273) = 75.77$, $p < 0.001$; $\Delta R^2 = 0.01$, $p < 0.001$.

Similarly, after accounting for age, educational status, time, sex, nationality, and parent status at the first step (adj. $R^2 = 0.14$, $F(6, 2406) = 66.67$, $p < 0.001$) and COVID-19 stress impact at the second step of the regression (adj. $R^2 = 0.16$, $F(7, 2405) = 64.05$, $p < 0.001$), we found that COVID-19 stress impact positively predicted depression severity ($b = 0.13$, 95%CI$_{boot}$[0.09, 0.16], $p < 0.001$). COVID-19 stress impact explained a significant proportion of variation in depression severity above and beyond that of predictors included in steps 1 ($\Delta R^2 = 0.02$, $p < 0.001$). Consistent with previous findings with traumatic stress, younger age, lower educational status, females, and being Italian were associated with greater depression severity (see Table 4). In addition, parental status was significantly associated with depression severity, such that being an adult without children (non-parents) was associated with greater depression severity ($b = -1.02$, 95%CI$_{boot}$[−1.59, −0.46], $p = 0.001$).

To account for confounding factors not included in our models and check whether our findings would remain robust, we ran sensitivity analyses using the sensemakr tool available on RStudio (Cinelli and Hazlett 2020; Cinelli et al. 2020). The package essentially allowed us to determine the percentage of residual variance necessary to be explained by an unobserved confounder for our findings to no longer be robust (i.e., no longer significant) compared to a "benchmark" covariate we included. We used *sample* (geographic location) to run the sensitivity analysis for traumatic stress and depression severity as our main variable of interest was COVID-19 stress impact. We used parental status as the "benchmark" covariate for COVID-19 stress impact as our main variable of interest was this sample.

The suggested interpretation of the analyses (Cinelli and Hazlett 2020; Cinelli et al. 2020) informs us that any or all unobserved confounders would need to explain a minimum of 12% of the residual variation in COVID-19 stress impact to explain away the effect of COVID-19 stress impact on traumatic stress and depression severity, or that any or all unobserved confounders must explain more than 8% of the residual variance for our

findings to be considered non-statistically significant. For COVID-19 stress impact, any or all unobserved confounders would need a minimum of 23% of the residual variance in parental status to explain away the effect, to explain more than 20% of the residual variance for our findings to be considered non-statistically significant.

Table 4. Second step of the hierarchical linear regression of COVID-19 stress impact on depressive symptoms.

	b 95%CI$_{boot}$ [Lower CI, Upper CI]	*SE*	*b**	*t*
Intercept	9.11 [7.29, 10.89]	0.91		9.97 ***
Age	−0.43 [−0.62, −0.24]	0.10	−0.10	−4.59 ***
Education	−0.83 [−1.00, −0.65]	0.09	−0.21	−9.92 ***
Sex	2.00 [1.33, 2.64]	0.33	0.11	5.83 ***
Time	0.24 [−0.01, 0.49]	0.13	0.04	1.92
Parental Status	−1.02 [−1.59, −0.46]	0.29	−0.08	−3.62 ***
Nationality	2.10 [1.41, 2.80]	0.36	0.11	4.93 ***
COVID-19 Stress Impact	0.13 [0.09, 0.16]	0.02	0.13	6.45 ***

Note. $N = 2412$; *** $p < 0.001$. b = unstandardized regression coefficient with 95% bootstrapped confidence intervals; *SE* = Standard Error; $b*$ = standardized regression coefficient; t = t-score; adj. $R^2 = 0.16$, $F(7, 2405) = 64.05$, $p < 0.001$; $\Delta R^2 = 0.02$, $p < 0.001$.

3.2. Parent Status and Geographic Location Were Not Moderators of COVID-19 Stressors and Psychological Distress

Parental status did not moderate the association of COVID-19 stress impact with traumatic stress ($b = -0.13$, 95%CI$_{boot}$[−0.33, 0.08], $p = 0.24$) or depressive symptoms ($b = -0.04$, 95%CI$_{boot}$[−0.12, 0.03], $p = 0.27$; see Figure 1). Although geographic location was a significant predictor of traumatic stress, the association between COVID-19 stress impact and traumatic stress did not vary as a function of geographic location ($b = -0.14$, 95%CI$_{boot}$[−0.42, 0.15], $p = 0.35$; see Figure 2). Additionally, moderation analyses revealed that the association between COVID-19 stress impact and depression severity did not vary as a function of geographic location ($b = -0.07$, 95%CI$_{boot}$[−0.18, 0.03], $p = 0.17$; see Figure 2).
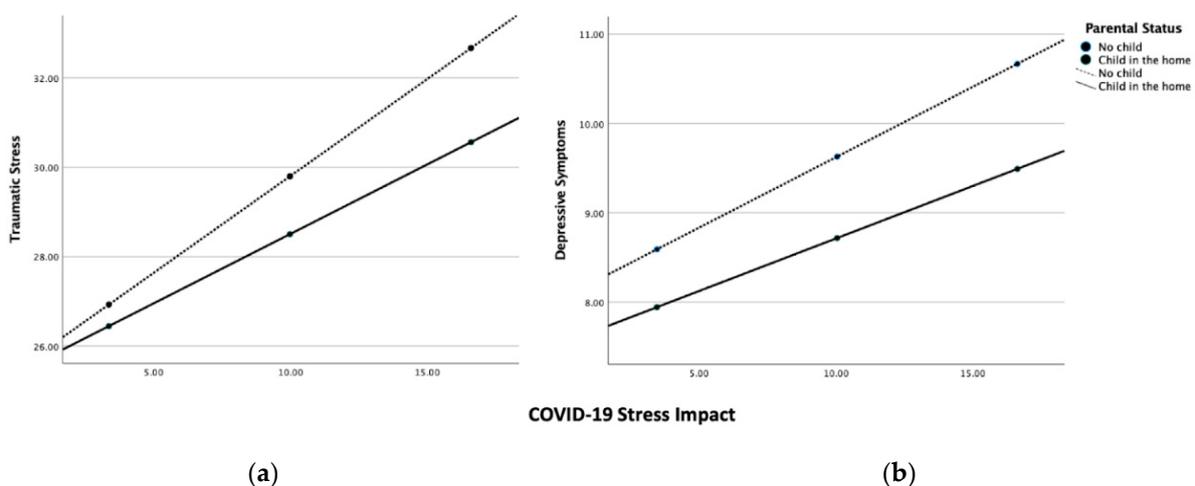

Figure 1. COVID-19 stress impact predicting traumatic stress and depressive symptoms by parental status. (**a**) First figure to the left showcases the association between COVID-19 stress impact with traumatic stress by parental status; (**b**) the second figure to the right showcases the association between COVID-19 stress impact with traumatic stress by parental status.
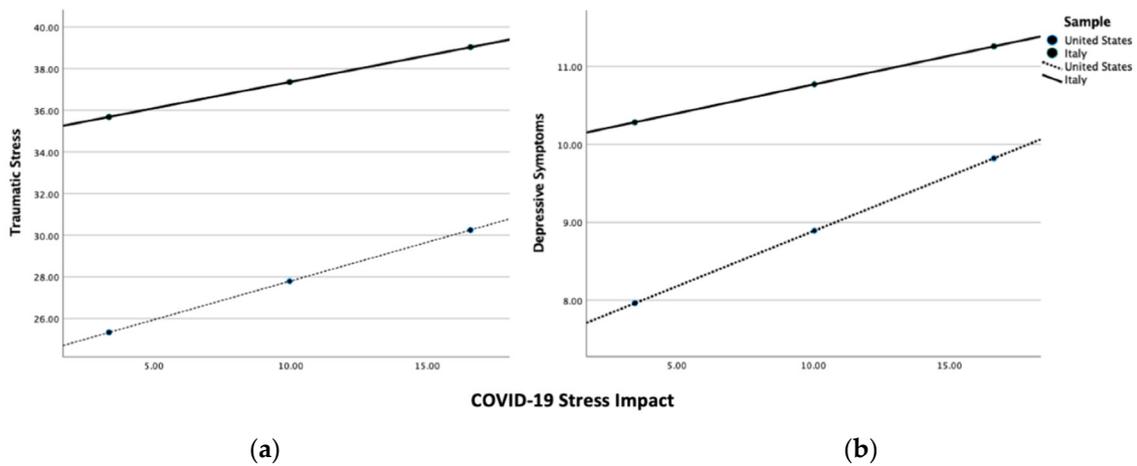
Figure 2. COVID-19 stress impact predicting traumatic stress and depressive symptoms by nationality. (**a**) First figure to the left showcases the association between COVID-19 stress impact with traumatic stress by nationality; (**b**) the second figure to the right showcases the association between COVID-19 stress impact with traumatic stress by nationality.

3.3. Exploratory Analysis of Parent Status and Its Association with COVID-19 Stressors

Because COVID-19 stress impact predicted traumatic stress and depressive symptoms, we were interested in factors that were associated with experience of COVID-19 stress impact, such as parental status. We conducted an additional hierarchical linear regression with age, educational status, sex, time, and nationality at the first step (adj. $R^2 = 0.09$, $F(5, 2544) = 49.75$, $p < 0.001$) and parental status at the second step of the regression (adj. $R^2 = 0.16$, $F(6, 2543) = 79.23$, $p < 0.001$). Parental status was positively associated with COVID-19 stress impact ($b = 4.01$, 95%CI_{boot}[3.46, 4.57], $p < 0.001$). Parental status explained a significant proportion of variation in COVID-19 stress impact above and beyond that of predictors included in step 1 ($\Delta R^2 = 0.07$, $p < 0.001$). In addition, younger age, higher educational status, females, and Italian residency were associated with perceiving greater impact from COVID-19-related stressors (see Table 5).

Table 5. Second step of the hierarchical linear regression of parental status on COVID-19 stress impact.

	b 95%CI_{boot} [Lower CI, Upper CI]	SE	b^*	t
Intercept	2.27 [0.43, 4.13]	0.93		2.41 *
Age	−1.23 [−1.41, −1.06]	0.09	−0.28	−13.17 ***
Education	0.40 [0.23, 0.57]	0.09	0.10	4.70 ***
Sex	0.83 [0.12, 1.52]	0.35	0.04	2.32 *
Time	0.16 [−0.09, 0.42]	0.13	0.03	1.29
Nationality	5.63 [4.76, 6.52]	0.45	0.28	13.12 ***
Parental Status	4.01 [3.46, 4.57]	0.28	0.30	14.37 ***

Note. $N = 2549$; * $p < 0.05$; *** $p < 0.001$. b = unstandardized regression coefficient with 95% bootstrapped confidence intervals; SE = Standard Error; b^* = standardized regression coefficient; t = t-score; adj. $R^2 = 0.16$, $F(6, 2543) = 79.23$, $p < 0.001$; $\Delta R^2 = 0.07$, $p < 0.001$.

As an additional exploratory analysis, we examined whether COVID-19-related stressors by parental status also differed by nationality. However, because the number of parents in our Italian sample was small ($N = 79$) compared to our US sample ($N = 1371$), the result from this subsequent analysis remains exploratory. A categorical-by-categorical interaction analysis revealed that the association between parental status and COVID-19 stress impact varied as a function of geographic location ($b = 4.11$, 95% CI_{boot}[2.41, 5.82], $p < 0.001$),

wherein the positive association between parental status and COVID-19 stress impact had a steeper slope in the Italian sample ($b = 7.72$, 95%CI$_{boot}$[6.09, 9.36], $p < 0.001$) than the United States sample ($b = 3.61$, 95% CI$_{boot}$[3.04, 4.18], $p < 0.001$). In other words, Italian parents were more likely to report experiencing, on average, higher COVID-19 stress than their non-parent counterparts. This pattern was shared in U.S. parents, but the difference between parents and non-parents was more pronounced in Italian parents.

4. Discussion

The COVID-19 pandemic has had important implications for the mental health of people across the world. Our study aimed to contribute to the understanding of how individual and societal-level differences may predict variation in the association between COVID-19-related stressors and psychological distress. In particular, we were interested in understanding how parental status across two nations—both of which experienced a rapid spike in cases and deaths during the initial stages of the pandemic (WHO 2021b)—may relate to differences in the association between pandemic-related stressors and psychological distress.

Our study supports previous findings regarding the negative mental health ramifications of contexts that arise during the pandemic, including work and financial strain (Di Giuseppe et al. 2020; Hertz-Palmor et al. 2021; Holman et al. 2020; Le et al. 2020; Mamun et al. 2021; Nelson et al. 2020; Son et al. 2020; Wang et al. 2020). On average, our participants scored 10.5 on our measure of COVID-19-related stressors, which according to our benchmark, indicated that adults across nations and parental status experienced somewhat severe COVID-19-related stress. Furthermore, exposure to more COVID-19-specific stressors predicted greater traumatic stress and depressive symptoms, even after taking into account time of the pandemic as well as other potential socio-demographic risks relevant to psychopathology (i.e., age, educational background, and nationality). The prior literature suggests that certain individuals may be more likely to be exposed to collective traumas. In light of the COVID-19 pandemic, our findings are consistent with the existing literature (Benjet et al. 2016; Kowal et al. 2020; Park et al. 2020; Prout et al. 2020), such that younger adults and individuals with a lower educational background reported higher traumatic stress and depressive symptoms during the pandemic.

Young, emerging adults are continuing to establish their social capital and careers (Schwartz et al. 2013; Wood et al. 2018), and thus are potentially exposed to greater financial strain and feelings of loneliness during the pandemic (Lisitsa et al. 2020; Parker et al. 2020a, 2020b; Refaeli and Achdut 2021). Financial strain during the pandemic is linked to greater feelings of depression (Ettman et al. 2020; Hertz-Palmor et al. 2021; Nelson et al. 2020), higher levels of stress (Park et al. 2020), and increased emotional distress among young adults (Shanahan et al. 2020). Young adults as well as individuals with lower education backgrounds not only may be at greater risk for exposure to pandemic stressors, but also have less access to resources that may buffer the psychological impact of such stressors. While loneliness for young adults during the pandemic has been a large concern, some findings, however, suggested that loneliness may not have increased during the pandemic for those who were able maintain close connections with family and friends (Luchetti et al. 2020). Additional research is necessary to examine protective factors that may have buffered the negative psychological outcomes of the pandemic.

We then examined whether parental status was a protective factor that buffered the association between experience of COVID-19-related stressors and psychological distress. We found that having children did not alter the association between pandemic-related stressors on psychological distress. Adults without children had greater depressive symptoms but not traumatic stress than parents, even after accounting for COVID-19-related stressors. However, parents were more likely to report exposure to pandemic-related stressors but not greater depressive symptoms or traumatic stress than adults without children. Earlier research has suggested that parenting stressors and worsened well-being may be exacerbated during the pandemic (Bate et al. 2021; Kowal et al. 2020; Patrick et al.

2020; Racine et al. 2021) and further amplify the adverse effects of parent behaviors on child outcomes (Chung et al. 2020; Patrick et al. 2020; Prime et al. 2020). On the other hand, there are potential resilience factors that may support parents, such as access to emotional and social support from other family members (Brown et al. 2020; Prime et al. 2020). Indeed, parental support or perceiving parenting-related support from others was negatively correlated with perceived stress and exposure to pandemic-related stressors (Brown et al. 2020). Although social distancing made it challenging for individuals to stay connected, it may have brought families together to support one another.

Parenthood may also be a protective factor due to the fact that there are likely more individuals in the household, which could facilitate greater social support during the pandemic. In fact, distraction, active coping, and seeking emotional social support were among the most common coping strategies used among adults (Park et al. 2020). While homeschooling children may increase stress for parents (i.e., adding more workload to parents' plates), interacting with and becoming more involved in children's education might serve as healthy distractions for parents (i.e., provide them with less time to worry about COVID exposure). Although much of the empirical and popular literature has focused on increased parental stress as a result of the pandemic, parents also report positive outcomes including gratitude, more time spent with family, and observed resiliency and meaning-making in their own children (Chu et al. 2021). Compared to adults without children or individuals living alone, parents might be more likely to receive emotional social support from their partners as well as their children while being quarantined in the same house. In addition, as compared to non-parents, parents may be less likely to experience loneliness during the pandemic, which may also have downstream negative consequences on mental health. Furthermore, nuclear families may have benefited during the pandemic in having grandparents and other close family members move in together during shelter-in-place as a way to maintain support, social interaction, and buffer other financial and parenting stressors. These considerations, however, have not yet been fully examined to determine how family dynamics may have led to resilience in mitigating the psychological implications of the pandemic.

We did not find nationality to be a moderating factor between experience of COVID-19-related stressors and psychopathology. Individuals in the United States experiencing pandemic-related stressors were as susceptible to worsened mental health compared to individuals in Italy experiencing pandemic-related stressors. Our findings suggest that individuals who are exposed to collective traumas in general may experience worsened psychological well-being (Silver et al. 2021). However, when examining the main effects of national differences, Italian residents reported more traumatic stress, depressive symptoms, and experience of pandemic-related stressors than United States residents. While other studies have offered evidence that adults living in Italy and the United States both reported high levels of traumatic stress during the pandemic (Davico et al. 2021; Di Giuseppe et al. 2020; Holman et al. 2020), our study is the first to consider how these may differ across nations.

Potential contributors to Italian residents reporting more stress and symptoms may be that individuals living in the United States have more access to wealth and resources than individuals living in Italy. In addition, states within the United States were not consistent in their messaging regarding the pandemic or social distance mandates (New York Times 2021; Zhao et al. 2020), potentially leading to variation in how severe the United States residents perceived the pandemic situation to be or their intentions to get vaccinated (Anderson et al. 2020; Loomba et al. 2021). For instance, residents of states where social distancing was not mandated might have perceived lower pandemic-related stressors, and in turn, experienced less traumatic stress and depressive symptoms. In Italy, however, the government worked collaboratively with large social media platforms to provide consistent information regarding the pandemic (Lovari 2020). The consistent distribution of information from the government about safety procedures may have caused Italian residents to be more concerned. Additionally, Italian residents reported greater losses of working hours due to

the COVID-19 pandemic than the United States residents (International Labor Organization 2020). This might have put additional financial constraints on Italian residents, potentially adding to the greater levels of pandemic stressors that Italian citizens experienced compared to the United States citizens.

We did not find regional differences in COVID-19 stress impact in the U.S.; however, a limitation is that we have regional data but no other data on political affiliation or other factors that might contribute to people's beliefs about the impact of the COVID-19 pandemic. The items we included were generally both health and financial stressors, which may have impacted most individuals regardless of region. Future studies may consider how there may be differences across regions of the U.S.

Across both the United States and Italy, parents were more likely to report experiences of stressors relating to the pandemic. Exploratory analyses revealed that this varied by nationality, where the difference in reporting experience of COVID-19 stressors between Italian parents and adults without children was greater than the difference between the United States parents and adults without children. While residents in both nations might experience similar economic constraints and concerns regarding food security due to the pandemic (Adams et al. 2020; Dondi et al. 2021), Italian parents might have experienced disproportionate parenting-related stress. Because our analyses were exploratory, additional studies may use a larger longitudinal sample of parents across nations to understand how parents may have had unique challenges during the COVID-19 pandemic.

A potential next step for future studies is to examine whether mothers or fathers experienced pandemic-related stress and psychological distress differently from one another. Italian mothers (who constitute 72% of the parents in our Italian sample) receive less support from fathers in relation to the average European mothers (Craig and Mullan 2011). In addition, Italian gender inequality in childcare persists even in highly educated families (Dotti Sani and Quaranta 2017). Such inequality might put more strain on Italian mothers (67% of our Italian sample) during a period of heightened stress such as the COVID-19 pandemic (Del Boca et al. 2020). Indeed, the burden of childcare in the U.S. during the COVID-19 pandemic has increased among women and remained higher than that for men (Kochhar 2020). Meanwhile, research using a U.S. sample has also found the sharing of household chores between men and women to increase during the lockdown (Biroli et al. 2021; Carlson et al. 2020). Therefore, future studies may consider how parental roles and equity in childcare responsibilities relate to parent stress during the pandemic. In summary, this study offers insight into risk factors relating to increased psychological distress or experience of pandemic-related stressors. Future studies may consider existing evidence-based training or non-clinical interventions (e.g., educational workshops) designed to sustain resiliency during difficult times. Such interventions may be particularly important during collective traumas.

This study had several limitations. First, we derived our samples from three larger studies conducted online. Because individuals could opt in or volunteer to participate, there are limitations in the interpretation of our findings given the sampling bias (i.e., self-selection). As noted, we also had a small number of parents participate in our Italian sample. Although we compare pandemic-related stressors and psychological distress in the U.S. and Italy, we did not examine or include any cultural measures as potential factors contributing to differences in pandemic experiences. Future studies may also include culture-specific measures to assess cultural beliefs or values that may explain differences in the experience of COVID-19-related stressors, as well as its association with psychopathology.

One other limitation of the current study is that we did not examine marital status. It is possible that our sample of adults without children included mostly single individuals, who not only did not receive support from their children, but also did not receive support from partners. Indeed, some findings in the literature suggest that living with a romantic partner supported quality of life (Bonichini and Tremolada 2021) and increased feelings of connectedness during the pandemic (Okabe-Miyamoto et al. 2021). Future studies may

examine relationship status and consider the number of individuals in a household that may help buffer heightened loneliness and depressive symptoms during the pandemic.

Our study offers insights into individual-level and societal-level factors relating to experiences of psychological distress and experience of pandemic-related stressors. However, an important limitation is that our study did not examine confounding factors or other factors that may explain the associations found in our study. Therefore, oversimplified causal interpretations should not be made based on the results of this study. Lastly, previous studies suggest that pandemic-related trauma may have long-term effects (Brooks et al. 2020; Mak et al. 2009) or that those who experienced a positive case were likely to experience prolonged adverse mental health outcomes (Lee et al. 2007). Our study was cross-sectional, and data were collected within the first 2 months of the pandemic (1–7 weeks). We were unable to examine any lagged or long-term effects, or how economic trajectories or employment status over the course of the pandemic played a role in psychological distress. More longitudinal approaches may help to consider actual impact and causal implications of exposure to pandemic related trauma.

5. Conclusions

This study examined how individual- and societal-level differences may play a role in the relationship between experience of COVID-19-related stressors and psychological distress. More specifically, we investigated how parental status in two countries (i.e., United States and Italy) might be a risk or resilience factor, or in other words, how individuals in the United States, may be more or less susceptible to worsened mental health outcomes in part due to the pandemic. Our findings support the existing literature in that the COVID-19 pandemic is a collective trauma with psychological implications, like in previous outbreaks. Furthermore, we found that younger adults, having a lower educational status, being a parent, and individuals living in Italy were related to perceived stress impact from COVID-19. The study contributes to further contextualizing experiences during the pandemic and exploring the potential psychological effects of the pandemic on adults across nations.

Appendix A

Table A1. List of COVID-19 related stressors.

	Items	Weight
1.	Self was diagnosed with COVID-19	3.25
2.	Partner was diagnosed with COVID-19	3.5
3.	Child was diagnosed with COVID-19	3.75
4.	Parent was diagnosed with COVID-19	4.25
5.	Grandparent was diagnosed with COVID-19	4.5
6.	Friend was diagnosed with COVID-19	2.25
7.	Colleague was diagnosed with COVID-19	2
8.	Acquaintance was diagnosed with COVID-19	1.5
9.	Other known individual was diagnosed with COVID-19	1.25
10.	Partner died of COVID-19	5
11.	Child died of COVID-19	5
12.	Parent died of COVID-19	5
13.	Grandparent died of COVID-19	5
14.	Friend died of COVID-19	4
15.	Colleague died of COVID-19	3
16.	Acquaintance died of COVID-19	2.25
17.	Other known individual died of COVID-19	2.25
18.	Working in healthcare	4
19.	Working in a high-risk job (exposure to COVID-19)	4
20.	Regular contact with COVID-19 patients through work	4.25
21.	Lost job	4.75
22.	Hours reduced	4
23.	Loss of childcare or impact to caregiving	3.75

Table A1. *Cont.*

	Items	Weight
24.	Working remote by choice	1.75
25.	Working remote by force	2.25
26.	Partner lost job	4.25
27.	Partner's hours were reduced	3.5
28.	Partner has financial impact due to lost of childcare or impact to caregiving	3
29.	Partner working remotely by choice	1.75
30.	Partner working remotely by force	1.75
31.	Became a 2 earner to 1 earner household	4
32.	Became a 2 earner to 0 earner household	5
33.	Became a 1 earner to 0 earner household	4.75
34.	Had some form of income impact overall	4.25

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