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Mental health inequalities increase as a function of COVID-19 pandemic severity levels

Joseph Maffly-Kipp a, 1, Nikolett Eisenbeck ** , b , 1 , David F. Carreno c , Joshua Hicks a, * 

a Department of Psychological and Brain Sciences, Texas A&M University, United states
b Department of Psychology, Universidad de Sevilla, Calle San Fernando, 4, 41004 Sevilla, Spain
c Department of Psychology, Universidad de Almería, Almería, Spain

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ABSTRACT

Rationale: Current evidence suggests that mental health across the globe has suffered significantly during the COVID-19 global pandemic, and that disadvantaged communities are suffering these impacts more acutely. Lower income, female gender, and younger age have all been associated with worse psychopathology during COVID-19.

Objective and methods: The goal of this study was to determine whether these disparities are more pronounced in places where the pandemic is more severe. We analyzed self-report data and objective metrics from a large global sample (N = 11,227) in order to test the hypothesis that country-level severity of COVID-19 moderates the relationship between the target demographic variables (Subjective SES, gender and age) and psychopathology indicators.

Results: Severity of the pandemic emerged as a significant moderator of the relationship between these demographic variables and mental health outcomes. This pattern was extremely consistent for Subjective SES and gender, but slightly more nuanced for age.

Conclusion: Overall, we interpreted our data as suggesting that mental health disparities are greater in countries with more severe COVID-19 outbreaks. These findings are critical for understanding the ways that the ongoing pandemic is affecting global mental health, and contribute to the broader literature surrounding collective trauma.

1. Introduction

The COVID-19 global pandemic has brought the world to a halt in unprecedented fashion. Since the initial outbreak in Wuhan, China, in December 2019 (Chen et al., 2020), the virus has wreaked havoc across the world. International unemployment levels have risen dramatically (Kawohl and Nordt, 2020), civil unrest has spread across the globe (Galea and Abdalla, 2020), and strict quarantine laws and policies have been enacted in numerous countries in an effort to slow the spread of SARS-CoV-2, the deadly disease that causes COVID-19 (Nussbaumer-Streit et al., 2020). There have also been psychological impacts—recent research has suggested that stress, anxiety, and depression all over the world have risen significantly since the pandemic began (Salari et al., 2020). Broadly speaking, the negative impacts of COVID-19 have been disproportionately felt in lower-income and minority communities (e.g., Elgar et al., 2020; Shadmi et al., 2020; Tai et al., ), and emerging research suggests that the same is true for mental health (e.g., Flentje et al., 2020). In the present work, we investigate the relationship between three demographic variables—subjective socioeconomic status (SES), gender and age—and the mental health consequences of COVID-19 in a global sample. Importantly, our study is the first to examine if the severity of outbreak may exacerbate these relationships.

2. Mental health during COVID-19

The global pandemic has resulted in social isolation, chronic threat, economic uncertainty, and disruption of daily routines (Salari et al., 2020), all of which can be expected to exacerbate existing psychological...
COVID-19 has not been evenly distributed, but it remains an open question how these disparities change as the severity of the pandemic increases.

3. The role of demographic factors

Despite the large amount of research on general demographic factors that influence psychological responses to COVID-19, comparatively less research has focused on the specific impact of socio-economic status. A justifiably thorough emphasis has been placed on the role of unemployment (see Blustein et al., 2020), and numerous studies have highlighted the general health disparities related to income levels (e.g., Oronce et al., 2020; Raifman and Raifman, 2020). Past collective traumas and public health emergencies have provided evidence that socially disadvantaged groups (e.g. low-income populations, racial minorities) experience worse psychological outcomes than their socially advantaged counterparts (Purtle, 2012). Evidence from this event is still emerging, but a recent meta-analysis involving eight countries found that female gender, younger age group (<40 years), presence of chronic/psychiatric illnesses, unemployment, student status, and frequent exposure to social media/news concerning COVID-19 were all risk factors for increased mental distress (Xiong et al., 2020a). Further investigations have found higher levels of depressive symptomatology in socially vulnerable groups (racial minorities, women, unemployed; Flentje et al., 2020), and highlighted a much greater rise in depression and anxiety among sexual and gender minority groups compared to the general population since the pandemic began (Flentje et al., 2020). Clearly the mental health burden of COVID-19 has not been evenly distributed, but it remains an open question how these disparities change as the severity of the pandemic increases.

4. The current research

Understanding how large-scale traumatic events impact mental health is a matter of global importance that can potentially inform future responses to such catastrophes. Previous research into collective trauma has largely been limited in that it has necessarily focused on the ways that single events impact people in a specific area (e.g., Krieg, 2009; Maffly-Kipp et al., 2020; Updegraff, Silver & Holleman, 2008). Thus, our understanding of the ways in which people across groups and cultures respond to traumatic events is often limited by the nature of a specific disaster. The COVID-19 pandemic, however, has had an unprecedented global impact, creating the opportunity to empirically investigate how responses to a single source of trauma vary based on a number of variables in different cultures around the world. Given the established detrimental impact that the pandemic has had on mental health, (e.g., Rajkumar, 2020), we sought to use this opportunity to examine how three demographic factors—subjective SES, gender and age—impact mental health outcomes across the world in the context of a single collective trauma. We chose to investigate these relationships in regards to relative pandemic severity in order to gauge the extent to which the pandemic was responsible for increasing mental health disparities.

In order to explore the relationship between the above demographic variables, mental health outcomes, and pandemic severity, we administered a self-report survey to a large international sample. Based on the existing evidence, we predicted that there would be greater mental health disparities between high and low SES individuals, and between women and men, in countries where COVID-19 is more severe. In other words, we expected that self-reported socioeconomic status would moderate the relationship between objective country-level severity of
COVID-19 and mental health outcomes. Due to the potential competing predictions for how age would factor into this relationship, we treated age as exploratory and refrained from making specific predictions.

5. Methods

5.1. Participants

A total of 11,227 people from 30 countries participated in the study as part of a broader research project (see Eisenbeck et al., under review). Participant’s age ranged between 18 and 85 (M = 35.36, SD = 13.26) and a majority of the sample was female (69.9 %). The majority of participants were also categorized as “middle income” (66.3 %). However, given our robust sample size, we were still able to recruit over 1300 participants for each level of Socioeconomic SES (n = 2,179, for low SES; n = 7,739, for middle SES; n = 1,309, for high SES).

5.2. Materials and procedure

This data was part of a larger international project assessing the psychological impacts of the COVID-19 pandemic between March and June 2020. We recruited investigators through ResearchGate announcements, and selected those who were willing to adapt our surveys into the local languages and recruit at least 250 participants from their country. Adaptations of materials followed currently recommended best practices (see Beaton et al., 2020). Investigators then recruited participants through email invitations and social media announcements (Facebook and Instagram). Though overall data collection occurred during a four-month period (March–June of 2020), each country completed their data collection within a three-week window. All participation was voluntary and anonymous.

5.2.1. Demographic data

General demographic data was collected via self-report, including gender, and age.

5.2.2. Socioeconomic status

We chose to use a subjective measure of socioeconomic status in order to obtain a single standardized metric across all of the countries in our sample (many of which use different currencies). Previous research has demonstrated that subjective SES is a robust indicator of economic status that accounts for factors beyond simple monetary income (e.g., Anderson et al., 2020). In order to gauge subjective SES participants responded to the item: “My economic status is: (higher than average; average; lower than average).”

5.2.3. Psychopathology indicators

Participants completed local versions of the Depression, Anxiety and Stress Scale (DASS-21; Brown et al., 1997). They responded to 21 items describing negative emotional states experienced during the past week. The DASS-21 contains three subscales (depression, anxiety and stress), and total scores indicate general psychological distress. These three separate scales are based upon the tripartite model of anxiety and depression (Clark & Watson, 1991). The scale has demonstrated good psychometrics properties (see Brown et al., 1997); the individual subscales tend to show strong convergent and discriminant validity with other similar measures of anxiety and depression (e.g., Bener et al., 2016; Norton, 2007). Alpha values in our samples ranged from 0.90 to 0.95. Responses were made along a 1 (did not apply to me at all) to 4 (applied to me very much) scale.

5.2.4. Country-level variables

We categorized countries based on publicly available data (worldmeters.info) involving COVID-19 infection rates. We assigned countries with less than 100 reported infections per million inhabitants a severity level of 1, countries with between 100 and 2000 infections per million inhabitants a severity level of 2, and countries with greater than 2000 cases per million inhabitants a severity level of 3. This severity index was based off of the specific window of time in which data was collected in each individual country.

We obtained GDP per capita for each country from the official World Bank national accounts database (worldbank.org).

5.3. Data Analysis

We performed all statistical analyses using SPSS (Version 25). Missing data in the formal questionnaires was less than 0.1 %, (missing completely at random) and was replaced with the expectation maximization algorithm. Missing data on demographic variables was less than 0.2 % and was not replaced. We did not remove possible outliers. We evaluated the effects of country on study variables with analysis of variance and Cramer’s V.

We employed Multilevel modeling (MLM) to assess the influence of both individual (socioeconomic status, age, gender) and country-level variables (severity index and GDP) on markers of psychopathology (general psychological distress, depression, stress, and anxiety). All of these variables, with the exception of gender, were treated as continuous. In all four analyses, we implemented a restricted likelihood method. The null models served as baseline models with random intercepts to help us determine whether MLM was warranted. Full models incorporated all individual and country-level variables. We chose to treat both subjective SES and the severity index, which are ordinal variables, as continuous. Likelihood-ratio tests indicated that treating subjective SES and country-level severity as continuous in the model was a more parsimonious option than treating them as categorical, without a significant loss of information. Furthermore, follow-up analyses showed that our primary results did not meaningfully change when treating these variables as categorical. It’s important to note that there is some debate over the proper treatment of ordinal variables in an MLM model, but our approach was ultimately informed by previous literature (Long and Freese, 2006, pg. 421; Pasta, 2009, pg. 3).

To determine the adequacy of the MLM method, we compared nested models with basic models by chi square difference tests (maximum likelihood method). All variables were standardized. We probed significant interactions detected in the analyses with simple slopes analyses between the predictor and the outcome variables at different levels of the moderating variables. For continuous moderator variables like age, we tested relationships at low (~1 SD: 18–22), mean (0 SD: 23–49) and high (1 SD: 50–85) levels of the moderator variable.

6. Results

We observed significant differences based on age, F (1, 29) = 80.74, p < .001, η 2 = 0.174, economic status, F (1, 29) = 18.16, p < .001, η 2 = 0.045, and gender, Cramer’s V = 0.334, p < .001, between countries. Also, countries differed in their level of psychological distress, F (1, 29) = 22.19, p < .001, η 2 = 0.054, depression, F (1, 29) = 21.80, p < .053, η 2 = 0.054, anxiety, F (1, 29) = 24.17, p < .001, η 2 = 0.059, and stress, F (1, 29) = 24.63, p < .001, η 2 = 0.060. In all countries, most people reported having medium socio-economic status (from 50.2 % to 86.1 %), see Table 1. Participants with the highest levels of psychological distress were from Bangladesh and the UK, and participants with the lowest levels were from Germany and Nigeria. A total of eight countries were classified as having low severity pandemic index, 14 as medium and eight as high.

6.1. Predictors of psychological distress, depression, anxiety, and stress

All four null models (psychological distress: 2LL = 31340.321; depression: 2LL = 31349.215; anxiety: 2LL = 31286.590; stress: 2LL = 31285.004) showed that the effect of country was significant on participant’s psychological distress (Wald Z = 3.62, p < .001, ICC = 0.055),
depression (Wald $Z = 3.61, p < 0.001$, ICC = 0.053), anxiety (Wald $Z = 3.62, p < 0.001$, ICC = 0.064), and stress (Wald $Z = 3.63, p < 0.001$, ICC = 0.056). ICCs showed that between 5.3 and 6.4 % of the variance of different markers of psychopathology was explained by variables at the country level. Accordingly, we assessed the full models, incorporating both individual-level and country-level variables. All complete models were significantly better than the null models (see Table 3).

Our analyses indicated that participants’ depression, anxiety and distress levels, as well as their total scores of psychological distress (depression, anxiety and distress combined), were related to age, gender and economic status. Older participants and males tended to report lower levels of markers of psychopathology as compared to
younger participants and females, respectively. Country-level variables (GDP and severity of the pandemic) were not directly linked to depression, anxiety, stress and general psychological distress. The main effects of each individual difference variable on each psychopathology indicator are reported in Table 2, and models with the full-interaction terms are reported in Table 3.

Assessment of individual-level interactions showed significant moderating effects of age on the relationship between gender and markers of psychopathology. Though women reported higher levels of psychopathology markers overall, this difference was more pronounced among younger individuals (compared to middle aged and older individuals). This moderation pattern was observed in all four outcome variables, namely total psychological distress, depression, anxiety and stress (see Table 4).

The effect of age on all markers of psychological distress seemed to be stronger when the economic status of the person was lower (see Table 4). This suggests that, for people with lower economic status, younger age is a higher risk factor for showing markers of psychopathology than for their more affluent counterparts.

In the cross-level interactions, GDP did not moderate the relationship between any of the individual characteristics and markers of psychological distress, p > .05. Severity index of the COVID-19 pandemic, however, had a significant impact on the relationship between individual-level variables and measures of psychopathology (see Table 5).

We found significant moderating effects of severity index on the relationship between depression and age, as well as the relationship between anxiety and age. The effect of age seemed to be the lowest on depression at medium levels of severity but showed similar tendencies at low and high severity levels. As for the anxiety levels, the strongest relationships between anxiety and age were detected at low levels of severity as compared to medium and high levels. Although the severity index did not significantly moderate the relationship between general psychological distress and age, we observed more pronounced relationships between age and psychological distress at low and high severity levels. We similarly observed a stronger relationship between age and stress at high severity levels, though again the moderation was not significant. Overall, in case of all outcome variables, effect of age was the lowest at medium levels of severity (see Table 5).

Our results indicate a clear effect of severity index on the relationship between countries, the existing mental health disparities targeted by this research increase. Mental health outcomes overall were worse for women (vs. men), younger people (vs. older people), and individuals with lower (vs. higher) subjective economic status. Nevertheless, these demographic differences in indicators of psychopathology were the most pronounced in countries where the coronavirus outbreak was the most severe. This pattern was most clear in regards to SES and gender. We interpreted our findings to suggest that the COVID-19 pandemic may be

between economic status and global psychological distress, depression and anxiety. At the lowest severity level of the outbreak, participants’ global psychological distress, depression and anxiety were not related to their economic status. These relationships were significant at medium and high levels of severity, and were in fact strongest at high levels. The effects of economic status on stress seemed to follow a similar pattern, but the main interaction term was not significant, p > .05 (see Tables 3 and 4). Overall these results indicate that, as severity levels increase, the adverse effects of low economic status on psychopathology become more pronounced.

### Table 2

Main effects of multilevel models predicting markers of psychopathology.

|                      | Psychological distress B (SE) | Depression B (SE) | Anxiety B (SE) | Stress B (SE) |
|----------------------|------------------------------|-------------------|----------------|---------------|
| **Individual-level variables** |                              |                    |                |               |
| Gender               | .230 (.021)**                | .148 (.021)       | .187 (.021)    | .278 (.021)   |
| (female)             | ***                          | ***               | ***            | ***           |
| Age                  | -.143 (.010)**               | -.139 (.010)      | -.104          | -.138         |
| Economic status      | .055 (.009)**                | .068 (.009)       | .057 (.009)    | .026 (.009)   |
| Country-level variables |                             |                    |                |               |
| Severity index       | .037 (.065)                  | .043 (.065)       | -.058         | .095 (.063)   |
| GDP                  | -.046 (.057)                 | -.016 (.058)      | -.077         | -.038         |
| **Covariance parameters** |                             |                    |                |               |
| Residual variance    | .908***                      | .913***           | .918***       | .905***       |
| Intercept variance   | .047***                      | .048***           | .039***       | .044***       |
| –2 log likelihood    | 30529.847                    | 30585.527         | 30632.653     | 30487.626     |
| **χ² (df) difference** | 806.068 (8)**                | 759.249 (8)       | 649.679       | 792.980       |
| with null model (ML) | (8)**                        | (8)**             | (8)**         | (8)**         |

Note: *p < .05; **p < .01; ***p < .001. All p values are two-tailed.

### Table 3

Multilevel models predicting markers of psychopathology.

|                      | Psychological distress B (SE) | Depression B (SE) | Anxiety B (SE) | Stress B (SE) |
|----------------------|------------------------------|-------------------|----------------|---------------|
| **Individual-level variables** |                              |                    |                |               |
| Gender               | .235 (.021)**                | .146 (.021)       | .190 (.021)    | .288 (.021)   |
| (female)             | ***                          | ***               | ***            | ***           |
| Age                  | -.214 (.012)**               | -.211 (.012)      | -.159          | -.201 (.011)  |
| Economic status      | .052 (.009)**                | .065 (.009)       | .054 (.009)    | .023 (.009)   |
| **Country-level variables** |                              |                    |                |               |
| Severity index       | .048 (.069)                  | .051 (.069)       | -.047         | .104 (.069)   |
| GDP                  | -.029 (.061)                 | .003 (.061)       | -.065         | -.024 (.061)  |
| **Individual-level interactions** |                              |                    |                |               |
| Age × Gender         | .075 (.010)**                | .069 (.010)       | -.058 (.011)  | .074 (.010)   |
| Economic status      | .046 (.009)**                | .051 (.009)       | -.033         | -.038 (.009)  |
| Gender × Economic status | .004 (.009)                  | .010 (.009)       | .001 (.009)   | .001 (.009)   |
| **Cross-level interactions** |                              |                    |                |               |
| Severity index × Age | .052 (.020)                  | .043 (.020)       | .051 (.020)   | .002 (.020)   |
| Severity index × Gender | .062 (.016)**                | .064 (.015)       | .075          | .082 (.016)   |
| Severity index × Economic status | .037 (.017)*                | .042 (.017)*      | .039 (.017)   | .020 (.017)   |
| GDP × Age            | .014 (.018)                  | -.023 (.018)      | -.009         | -.006 (.018)  |
| GDP × Gender         | .031 (.017)                  | .035 (.017)*      | .030 (.017)   | .019 (.017)   |
| GDP × Economic status | .008 (.015)                  | .007 (.015)       | .007 (.015)   | .007 (.015)   |
| **Covariance parameters** |                              |                    |                |               |
| Residual variance    | .893***                      | .899***           | .909***       | .891***       |
| Intercept variance   | .054***                      | .054***           | .041***       | .054***       |
| –2 log likelihood    | 30396.385                    | 30463.201         | 30572.473     | 30369.904     |
| **χ² (df) difference** | 1036.748 (15)                | 978.723           | 807.626       | 1007.958      |
| with null model (ML) | (15)**                       | (15)**            | (15)**        | (15)**        |

Note: *p < .05; **p < .01; ***p < .001. All p values are two-tailed.
economic status and stress. *p < .05; **p < .01; ***p < .001. All p values are two-tailed.

Table 4
Simple slopes of the moderating effects of age/economic status with individual predictors on markers of psychopathology.

| Outcome                        | Moderator  | Predictor       | Gender          | Economic status |
|--------------------------------|------------|-----------------|-----------------|-----------------|
| General psychological distress | Low        | -.166 (.023) ***| -.115 (.011) ***| .100 (.023) *** |
|                                | Medium     | .077 (.011) *** | .066 (.024) *** | .116 (.011) *** |
|                                | High       | .135 (.023) *** | .094 (.023) *** | .054 (.011) *** |
| Depression                     | Low        | -.235 (.028) ***| .044 (.017) *** | -.032 (.020)    |
|                                | Medium     | .062 (.016) *** | .106 (.013) *** | .078 (.013) *** |
|                                | High       | -.188 (.028) ***| -.196 (.014) ***| -.169 (.016) ***|
| Anxiety                        | Low        | -.191 (.020) ***| -.194 (.034) ***| -.203 (.014) ***|
|                                | Medium     | .054 (.011) *** | .055 (.014) *** | .064 (.014) *** |
|                                | High       | .135 (.017) *** | .142 (.014) *** | .155 (.017) *** |
| Stress                         | Low        | -.206 (.028) ***| -.202 (.014) ***| -.200 (.023) ***|
|                                | Medium     | -.138 (.012) ***| .142 (.012) *** | .094 (.011) *** |
|                                | High       | -.186 (.012) ***| -.191 (.012) ***| -.194 (.014) ***|

Note. *p < .05; **p < .01; ***p < .001. All p values are two-tailed.

Table 5
Simple slopes of the moderating effect of the severity index with individual predictors on markers of psychopathology.

| Outcome                        | Severity index | Individual predictors (separate analyses) |
|--------------------------------|-----------------|------------------------------------------|
| General psychological distress | Low             | -.206 (.028) *** .075 (.017) -.032 (.020) |
|                                | Medium          | -.138 (.012) *** .123 (.017) .055 (.013) |
|                                | High            | -.191 (.020) *** .169 (.015) .155 (.017) |
| Depression                     | Low             | -.188 (.028) *** .062 (.017) -.026 (.020) |
|                                | Medium          | -.143 (.012) *** .062 (.015) .078 (.013) |
|                                | High            | -.180 (.020) *** .114 (.015) .154 (.017) |
| Anxiety                        | Low             | -.235 (.028) *** .044 (.017) -.020 (.020) |
|                                | Medium          | -.107 (.012) *** .106 (.015) .064 (.013) |
|                                | High            | -.122 (.020) *** .134 (.019) .155 (.017) |
| Stress                         | Low             | -.143 (.028) *** .086 (.016) -.039 (.020) |
|                                | Medium          | -.120 (.012) *** .158 (.015) .038 (.013) |
|                                | High            | -.203 (.020) *** .200 (.019) .114 (.017) |

Note. No significant overall moderating effect of severity index was detected on the relationships of age and general psychological distress; age and stress; and economic status and stress. *p < .05; **p < .01; ***p < .001. All p values are two-tailed.

Further perpetuating societal inequalities in mental health across the world.

Our results are perhaps not altogether surprising. Women (e.g., Simon, 2002) and lower-income individuals (Gresenz et al., 2001) tend to report poorer mental health in general, and emerging research thus far has indicated that the same trend is occurring during the COVID-19 pandemic (e.g., Flentje et al., 2020; Zheng et al., 2021). Our data corroborate these patterns quite clearly, and further demonstrate that these disparities are greater in places where the pandemic is more severe. Though the cross-sectional nature of our design does limit our interpretations, these disparities could reflect factors such as increased childcare burden on women, or decreased job security for low SES individuals. Similar investigations may help to contextualize these data. For example, our findings complement research from the same time period showing that subjective judgments of COVID-19 threat (along with factors like gender and financial insecurity) correspond to worse mental health outcomes (Wilson et al., 2020; Zheng et al., 2021). Taken together with these studies, our results can more confidently be interpreted as evidence that mental health disparities increase as the pandemic worsens.

While collective traumas may theoretically impact all people equally, it certainly makes sense that members of advantaged groups would be better able to protect themselves against the potential deleterious impacts. Indeed, previous research has suggested that socially disadvantaged groups suffer more acute psychologically impacts of past collective traumas than socially advantaged groups (Purtle, 2012). In the case of a viral pandemic, these groups may have less access to critical resources, live in conditions that are more optimal for the spread of contagions, and face greater systemic and interpersonal bias when seeking medical treatment. Emerging research from the COVID-19 pandemic suggests that mental health inequalities are being exacerbated in a similar fashion (e.g., Di Gessa et al., 2021; Gibson et al., 2021). While many factors have likely contributed to the observed pattern of results, they ultimately confirm and extend previous research on collective trauma and social inequality.

Our findings involving age, however, are slightly less straightforward to interpret. Some previous studies have found young age to be a risk factor for mental health outcomes during COVID-19 (e.g., Banks and Xu, 2020). However, as we previously outlined, older age is a major risk factor for health outcomes (Lloyd-Sherlock et al., 2020), which provides reason for competing predictions about how this relationship would change as a function of country severity. We observed inconsistent effects for age in our sample. For example, while the negative relationship between age and stress was most extreme at high levels of severity, the negative relationship between age and anxiety was the most extreme at low levels of severity. One speculative explanation for this pattern is that health anxiety in young individuals is contributing to distress in younger individuals. Another possibility is that, while more concrete factors like unemployment disproportionately stress younger individuals when the pandemic is severe, older individuals are actually better equipped to manage abstract and existential threats of a global pandemic before it has become severe. Finally, it may be that there is something qualitatively different about the countries with low level severity in our sample. For example, most countries in the low severity index were African and Asian countries. These countries tend to have higher levels of youth unemployment (Tai et al.), which could contribute to increased anxiety even with low infection rates.

7.1. Limitations

It is important to note several limitations of this research. First, though we had a large global sample, our sample ultimately had unequal group sizes in regards to country, SES, and gender. The majority of our sample subjectively reported having an “average” level of income, which does limit the interpretation of our results as it calls into question how representative the low-SES and high-SES categories were in each...
clear and urgent picture of how this societal event is interacting with existing inequalities to impose unequal systemic burdens to global country-level pandemic severity increases. These findings help to paint a mental health. demonstrate that these disparities tend to become more pronounced as disadvantaged groups. While previous research has shown that lower socioeconomic status impacted our results. Future research should seek to rule out this possibility.

8. Conclusion

Overall, the current research is an important contribution to the growing body of literature that highlights the ways that the current global pandemic is disproportionately impacting the mental health of disadvantaged groups. While previous research has shown that lower SES, younger age, and female gender are risk factors for worse mental health outcomes from COVID-19, we utilize a large global sample to demonstrate that these disparities tend to become more pronounced as country-level pandemic severity increases. These findings help to paint a clear and urgent picture of how this societal event is interacting with existing inequalities to impose unequal systemic burdens to global mental health.

Author statement

Joseph Maffly-Kipp: Manuscript writing, Editing, Revision, Reporting of results. Nikolett Eisenbeck: Study Design, Data Collection, Data Analysis, Reporting of Results, Revision. David Carreno: Study Design, Data Collection, Revision. Joshua Hicks: Editing, Revision, Reporting of results, Supervision of Project.

Data availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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