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Title: Parental burnout across the globe during the COVID-19 pandemic

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Conflict of Interest Statement

No Conflict of Interest

Abstract

The COVID-19 pandemic has affected all societies worldwide. The heightened levels of stress that accompanied the crisis were also expected to affect parenting in many families. Since it is known that high levels of stress in the parenting domain can lead to a condition that has severe consequences for health and wellbeing, parental burnout, we examined whether the prevalence of parental burnout in 26 countries (9923 parents; 75% mothers; mean age 40) increased during COVID-19 compared to few years before the pandemic. In most (but not all) countries, analyses showed a significant increase in the prevalence of parental burnout during the pandemic. The results further revealed that next to governmental measures (e.g., number of days locked down, home-schooling) and factors at the individual and family level (e.g., gender, number of children), parents in less (versus more) indulgent countries suffered more from parental burnout. The findings suggest that stricter norms regarding their parenting roles and duties in general and during the pandemic in particular might have increased their levels of parental burnout.

Keywords: Prevalence, COVID-19, Parental burnout, Culture, Indulgence

Impact statement

The results of this unique international study by the International Investigation of Parental Burnout (IIPB) -- which includes Western and non-Western countries across the globe -- point to the importance of considering parental burnout as a syndrome helping to meet specific Sustainable Development Goals. Of all the potentially modifiable influences affecting individuals' healthy live and wellbeing across the life course (i.e., SDG 3), positive parenting in the early years has the potential to become a common pathway -by fostering social and emotional skills- to promote a range of heathy outcomes in both children and adults. Acknowledging that parenting can be extremely demanding and exhausting for parents who are confronted with specific individual, family and country level characteristics, may give rise to develop programs how to encourage parents to minimize exhaustion in their parenting role and how to adopt nonviolent ways of disciplining children (SDG 16.2). The various individual and cultural factors as well as COVID-19 factors that have been found related to prevalence rates of parental burnout give indications with factors need to be addressed to promote health and wellbeing of parents and children (SDG3) and to diminish or prevent violence against children (SDG16.2).

Parental Burnout Across the Globe During the COVID-19 Pandemic

Worldwide, approximately three-quarters of a million people each day experience the rewards as well as the challenges of becoming new parents (Bornstein, 2019). These new parents have the important task to raise their children and to contribute to their development and well-being. The important role of parenting for children's wellbeing is nowadays globally accepted and recognised by the United Nations, in alignment with the 2030 Agenda for Sustainable Development that the member states of the United Nations adopted in 2015. Of the 17 Sustainable Development Goals (SDG) that have been set, several specifically address the family and recognize the family as the center of social life and wellbeing (SDG 3), and therefore, make parenting and the parenting task an integral part of the sustainable goals (United Nations, 2015).

Although parenting is experienced by many parents as satisfying, it also has been recognized as stressful at times (Abidin, 1990; Deater-Deckard, 2014). When parents lack the resources needed to handle the stressful moments related to parenting, they may develop 'parental burnout,' a condition comprised of four main dimensions: emotional exhaustion, contrast with the previous parental self, loss of pleasure in the parental role, and emotional distancing from one's child(ren) (Mikolajczak & Roskam, 2018; Mikolajczak, et al., 2019). As shown by Mikolajczak et al. (2020), parental burnout has been recognized as a unique syndrome, empirically distinct from job burnout, depression or common parental stress that may occur when risks (demands) are not compensated by enough resources within the family.

When parents experience extremely high levels of exhaustion and emotional distancing in their parenting task they can become neglectful or violent towards their children (Hansotte, et al., 2020). Mikolajczak, Brianda et al. (2018) showed a substantial association between experienced parental burnout and neglectful and violent behavior towards the child(ren). Given that the

association between parental burnout and violence did not decrease the significance level when controlling for demographic factors and was not assumed at all typical of families with low socioeconomic status, the syndrome of parental burnout represented a threat to children's well-being even in the most educated families. Therefore, the specific target (SDG 16.2) in the 2030 Agenda for Sustainable Development to end all forms of violence against children gives impetus towards a focus on the syndrome of parental burnout in all countries across the globe.

Prevalence rates of parental burnout

A recent initiative known as the International Investigation of Parental Burnout (IIPB) consortium assessed the prevalence of parental burnout in over 40 countries (Western and non-western) globally before the pandemic (Roskam et al., 2021). Results of data collected in 2018-2019 showed a worrying number of parents experiencing parental burnout worldwide. Importantly, the prevalence rates of parental burnout varied across countries (Roskam et al., 2021), and it appeared that country-specific cultural factors were found to be associated with parental burnout. For example, differences between countries in prevalence rates of parental burnout were found related to the countries' specific cultural value of 'individualism.' Parents in more individualistic countries (e.g., Belgium, Poland, United States) reported higher average levels of parental burnout compared to parents living in more collectivistic countries (e.g., Chile, China, Portugal) (Roskam et al., 2021). Although more studies are needed to understand the mechanisms that link individualism to parental burnout, the increasing demands created by parenting norms and the intensification of parental investment in the more individualistic Euro-American countries might explain this link (Nelson, 2010; Roskam et al., 2021). Moreover, various factors at both the individual and family level were found related to parents' feelings of burnout by their parenting tasks (for a synthesis see Mikolajczak, Raes et al., 2018). But what

about the role of parental burnout in relation to the COVID-19 pandemic that took over the world in 2020?

Parental burnout during the COVID-19 pandemic

The outbreak of COVID-19 in 2020 –and the attempts to control it had an enormous impact on people’s family lives and on parenting tasks (Weaver & Swank, 2021). The COVID-19 pandemic increased the number of stressors (e.g., additional chores, home schooling, struggling to occupy children while working from home) and limited the access to usual resources (e.g., no reliance on babysitters, no day care, no grandparents to watch over the children, no leisure activities to breathe out from parenting). Since an imbalance between risks and resources underlies parental burnout (Mikolajczak & Roskam, 2018), the COVID-19 pandemic -with its increased potential for risks and stressors- might lead to a rise in parental burnout.

Since state-imposed lockdown measures could place parents at higher risk for parental burnout symptoms (Griffith, 2020) and given that COVID-19 affected families in countries across all five continents, with lockdown measures differing between countries, we examined whether Hofstede’s (2001) cultural values, as indicators of cross-cultural differences, were related to parental burnout levels during the pandemic. Hofstede (2001) identified six statistically different dimensions of culture: 1) individualism versus collectivism (i.e., the extent to which individuals are integrated within groups, the strength of ties with other individuals) 2) power distance (i.e., the extent to which power is expected and accepted to be distributed unequally by less powerful members of organizations, institutions, or society); 3) uncertainty avoidance (i.e., to which extent members feel comfortable or uncomfortable in ambiguous, new, different from usual or surprising situations); 4) masculinity versus femininity (i.e., the distribution of values

between gender); 5) long-term versus short-term orientation (i.e., the sense of conservatism or traditionalism in an organization, institution, or society) and 6) indulgence versus restraint (i.e., the extent to which a society allows the fulfilment of basic human desires that are associated with joy in life and happiness). Each country can be positioned on these six dimensions relative to other countries.

By conducting a new data collection wave in the countries participating in the IIPB consortium in 2020 and comparing the 2020 results to findings of data collected in 2018-2019, we sought to investigate whether the prevalence rates and mean levels of parental burnout increased during the lockdown.

The main research questions of this study were:

1. Have prevalence rates and/or mean levels of parental burnout increased in 2020 (Wave 2), measured during the COVID-19 pandemic, compared to 2018-2019 (Wave 1)?
2. Which sociodemographic and family characteristics are associated with higher levels of parental burnout during the COVID-19 pandemic?
3. Which individual and state imposed governmental lockdown measures during the COVID-19 pandemic have had an effect on the levels of parental burnout?
4. What country-specific cultural values have had an effect on levels of parental burnout during the COVID-19 pandemic?

Given the unique situation of the COVID-19 pandemic across the globe, we were able to assess what country-specific cultural values were related to the relation between lockdown measures taken by the government and the level of parental burnout in a country.

5. To what extent have country-specific cultural values mitigated the strength of the impact of governmental measures on parental burnout?

Methods

Procedure and participants

For the data collection, members of the IIPB who participated in the first wave of data collection (see Roskam et al., 2021) were contacted again in April 2020. Not all members were able to collect data during the COVID-19 pandemic, usually due to practical reasons. Finally, members of 26 countries agreed and were able to join the second wave of data collection. Six of the countries were not present in the first wave of the data (i.e., Czech Republic, Egypt, Greece, Israel, Lithuania, and New Zealand). Members of the IIPB collected data by varying recruitment procedures (e.g., social media networks, newspaper advertisement, word of mouth, and door-to-door) and the survey was completed either by paper-and-pencil or online. Parents were eligible to be included in the study if they had at least one child, regardless of their age, still living at home. To avoid bias, the study was introduced as a study designed to better understand parental satisfaction and exhaustion around the world. No incentives were offered to participate. See supplemental material (Appendix A) for the data collection procedure in each country.

Respondents who did not complete the Parental Burnout Assessment (PBA) (Roskam, Brianda & Mikolajczak, 2018) were not included in the present research. The final sample included 9,923 parents (74.7 % mothers and 25.3% fathers) from the following countries: Belgium (14.6%); Burundi (1.7%); Cameroun (2.2%); Finland (10.7%); France (7.2%); Italy (3.2%); Japan (2.0%); Peru (3.0%); Poland (3.3%); Portugal (5.3%); the Netherlands (4.1%); Turkey (2.5%); United States (2.7%); Vietnam (1.8%); Czech Republic (3.5%); Egypt (1.5%); Israel (2.5%); New Zealand (0.8%); China (5.8%); Chili (6.8%); Colombia (2.2%); Lithuania (1.7%); Iran (2.1%);

South Korea (2.4%); Greece (3.5%); and Uruguay (2.8%). Ethical approval was obtained by the Ethic Review Board of Tilburg University (EC2018.013R) and/or an institutes' ethics board.

Measures

Parental burnout

Parental burnout was assessed with the PBA (Roskam et al., 2018), a 23-item questionnaire assessing the four core symptoms of parental burnout: Emotional exhaustion (9 items) (e.g., *I feel completely run down by my role as a parent*); contrast with previous parental self (6 items) (e.g., *I tell myself I'm no longer the parent I used to be*); loss of pleasure in one's parental role (5 items) (e.g., *I do not enjoy being with my children*); and emotional distancing from one's children (3 items) (e.g., *I am no longer able to show my children that I love them*). All questions were scored using a 7-point Likert scale from 0 to 6 (i.e., never, a few times a year, once a month or less, a few times a month, once a week, a few times a week, every day). In our analyses, both the summed score, as well as a prevalence rate of parental burnout will be used as outcome variables. Firstly, the parental burnout score is computed by summing the item scores (ranging from 0 to 138): higher scores reflect higher parental burnout level. The internal consistency of the scale was assessed by use of Cronbach's alpha and was indicated to be good to excellent within countries, ranging from .87 to .98 (see supplemental material Appendix B). To indicate to what extent the construct of parental burnout is measured the same across the different countries (with measurement invariances), we refer to Roskam et al. (2021). Secondly, prevalence rates of parental burnout were computed to compare the waves of data collection. Cut-off scores for parental burnout in the current study were operationalized based on a pre-registered independent study (Brianda et al., 2020) using a multi-method and multi-informant analysis strategy and Roskam et al's. (2021) research. Indicators of parental burnout, such as

self-reports of parents, views of external clinical judges, and a biological measure of chronic stress (the hair cortisol concentration), resulted in a validated cut-off criterion value on PBA equal to or greater than 86 (95% CI: 79.49 – 93.03) (see <https://osf.io/ujfb3> for more details about the analysis strategy). According to Roskam et al. (2021), parents were judged to have parental burnout if their score was equal to or higher than 92 (i.e., if they experience *all* 23 symptoms at least once a week or if they experience at least 16 symptoms daily). This cut-off score of 92 was considered the most stringent cut-off (i.e., the most conservative prevalence value to avoid overdiagnosis of burnout and was therefore used in the subsequent analyses in the current study.

Individual sociodemographic variables – level 1.

In the present study, the following sociodemographic variables were included: Gender (0 = mother, 1 = father); age; educational level (number of successfully completed school years); paid profession (0 = yes, 1 = no); type of neighbourhood (0 = disadvantaged, 1 = average, 2 = prosperous); and financial situation 5 categories (0 = very good, 1 = good, 2 = sufficient, 3 = moderate 4 = poor).

Family variables.

The following factors were included in the analyses as variables at the family level: number of children; having a child in the age category 0-4 (0 = no, 1 = yes); having a child with special needs such as a chronic illness or disability (0=no, 1= 1 child, 2 = more than 1 child); and family type (0 = other, 1 = single parent, 2 = two-parent family).

Individual lockdown variables.

Respondents were asked to answer questions related to their personal situation during the COVID-19 pandemic such as working from home (0 = yes, 1 = no); home-schooling your

children (0 = yes, 1 = no); and number of days locked down; and attention a child requires (0 = independent including lunch, 1 = independent excluding lunch, 2 = check every hour, 3 = constantly soliciting me).

Country specific state-imposed lockdown measures – level 2.

The Stringency Index of the Oxford COVID-19 Government Response Tracker (OxCGRT; Hale et al., 2021) was used as an assessment for the state-imposed lockdown measures per country. The OxCGRT collected daily scores for each country on policy indicators (e.g., school- and workplace closure), economic policies (e.g., income support), and health system policies (e.g., testing regimes) with regards to the COVID-19 pandemic. In the current study, one score on the Stringency Index was allocated for each country by calculating the average score on this index during the period of data collection in that specific country (see <https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker>).

A review of this scoring procedure suggested a high degree of accuracy in our data collection. As of 31 December 2020, 84.79% of all the data points had not changed, and since 1 June 2020, 87.45% of the data points had not required a revision (i.e., post-hoc alterations to the coding scheme and factual errors). Just 0.41% of the observations were escalated by the reviewers for adjudication (0.25% since 1 June 2020). The scores generated using an IRT model were highly correlated to a linear index ($r = 0.98$), which reinforces the validity of the approach (see Hale et al. [2021] for information on the actual measures of the index and the methodology of the data collection and aggregation procedure).

Cultural values.

Cultural values for each country were assessed with the six dimensions identified by Hofstede (2001, 2011): Individualism (IDV), Power Distance (PDI), Masculinity (MAS),

Uncertainty Avoidance (UA), Long Term Orientation (LTO), and Indulgence (IND). For the levels of each country see <https://www.hofstede-insights.com/product/compare-countries>. Each dimension ranges from 0 – 100, with 50 as a mid-level. The rule of thumb is that if a score is under 50 the culture scores relatively low on that scale and if any score is over 50 the culture scores high on that scale. Burundi and Cameroun do not have scores on any of the six cultural values and for Israel no score for Indulgence was available (see supplemental material Appendix C). Researchers have reported the following Cronbach's alpha coefficients at the country-level for each value dimension: .81 (IDV), .84 (PDI), .76 (MAS), .72 (UA), .57 (LTO) and .79 (IND) (see Beugelsdijk et al., 2015; Hofstede & Minkov, 2013). In terms of construct validity, significant correlations were reported by Taras et al. (2012) and Guo et al. (2018) between theoretically relevant external criteria like the Human Development Index (i.e., a statistic composite index of life expectancy, education and per capita income indicators) and IDV (.56, $p < 0.05$), PDI (-.58, $p < 0.05$), MAS (.21, $p < 0.05$), and LTO (.60, $p < 0.05$), and between the World Giving Index (i.e., a national measure of prosocial behavior) and UA (-.40, $p < 0.01$) and IND (.54, $p < 0.01$). Table 1 shows the descriptive statistics for variables of interest in the current 2020 Wave. We additionally checked the main sociodemographic variables of the two waves. The results revealed that gender ($\chi^2 = 50.75$, $p < .0001$), paid profession ($\chi^2 = 18.81$, $p < .0001$) and neighbourhood ($\chi^2 = 7.781$, $p < .0001$) did not significant differ between the two waves. However, this significant level may be due to the large sample sizes. Odds ratios for these variables (gender, OR=1.28 [95% CI = 1.21-1.35, $p < .001$]; paid profession, OR = 1.14 [95% CI = 1.08-1.21, $p < .0001$]; neighbourhood, OR = 1.08 [95% CI = 1.02-1.14, $p < 0.05$]) indicated very small differences between the 2018-2019 and 2020 waves. Family composition ($\chi^2 = 1.84$, $p = .18$), age ($M_1 = 39.20$, $SD = 8.90$ vs. $M_2 = 39.99$, $SD = 8.08$, $t = -1.25$, $p = .33$), educational level

($M_1 = 14.89$, $SD = 4.34$ vs. $M_2 = 15.74$, $SD = 4.57$, $t = .15$, $p = .89$), and number of children ($M_1 = 1.98$, $SD = 1.19$ vs. $M_2 = 1.98$, $SD = 1.12$, $t = 0.99$, $p = .45$) were not significantly different between the two waves.

Insert Table 1 about here

Statistical analyses

To answer the first research question, we compared the mean levels of parental burnout and prevalence rates of parental burnout of Wave 1 (2018-2019) and Wave 2 (2020, during the COVID-19 pandemic) by performing a logistic regression analysis and Mann Whitney U tests. For tests for invariance of measures of burnout we refer to tests as reported in the study of Wave 1 (Roskam et al., 2021).

For the second to fifth research question, a total of five models were fitted in SPSS 26 by use of hierarchical multilevel regression modelling fitted with Restricted Maximum Likelihood (REML). Hierarchical models were run to select the model that had the best fit to the data (i.e., provided the most parsimonious explanation for the data, but that still shows an adequate fit). For this purpose, the Akaike's information criterion (AIC) and the Schwarz's Bayesian information criterion (BIC) were used, where lower values indicate better model fit (Stoica & Selen, 2004; Akaike, 2019). As a result, the best fitted model will be reported in the results section, in comparison to the null-model. To increase the interpretability of model parameters, predictor variables were rescaled with categorical variables having a meaningful zero-point. Continuous variables were centered on the grand mean. *Model 0* presents the empty model and functioned as a reference null model to estimate intra-class correlation. *Model 1* introduced the effects of individual socio-demographical variables; *Model 2* introduced family factors; *Model 3* introduced the individual lockdown measures; *Model 4* introduced the country specific state-

imposed lockdown measures and cultural values of the country; and *Model 5*, included interaction effects between the country specific state-imposed lockdown measures and cultural values in each country to test whether country specific cultural values mitigated the strength of the governmental measures on parental burnout.

Results

Prevalence rates of parental burnout in 2020 compared to 2018-2019

In total, 26 countries participated in 2020 and collected parental burnout data, with six out of 26 countries not having participated in the first wave of the data collection (i.e., Czech Republic, Egypt, Greece, Israel, Lithuania, and New Zealand) (See supplemental material Appendix D for Figures with percentages of parental burnout in each country at wave 1 and wave 2).

Results of a Mann-Whitney U test showed that the average mean level of parental burnout did not significantly differ between the two waves (Wave 1 mean rank = 17.0, Wave 2 mean rank = 22.0, $U = 133$, $z = -1.387$, $p = .172$). However, the prevalence rates of parental burnout were significantly higher in the second wave, compared to the first wave (Wave 1 mean rank = 15.50, Wave 2 mean rank = 23.50, $U = 104.5$, $z = -2.219$, $p = .03$).

To check whether the mean levels and prevalence rates of parental burnout were related to participation or no participation in the COVID-19 wave we compared the countries that collected data in Wave 1 only with countries that had gathered data in both waves. A Mann-Whitney U test showed no significant differences in mean levels and prevalence rates of parental burnout between the countries that participated in wave 1 and not in wave 2, and the countries that participated in both waves (mean levels of parental burnout $U = 213$, $z = -1.76$, $p = .860$, prevalence rates $U = 119$, $z = -.025$, $p = .980$).

Results of a logistic regression analysis (Table 2) to compare prevalence rates of parental burnout during the first wave in 2018-2019 and the second COVID-19 wave showed a significant increase in parental burnout for the total sample (4.2% vs 5.8% respectively). The odds of having parental burnout during the COVID-19 wave was 1.39 times higher than the odds of having parental burnout during the pre-COVID wave 1 ($p < .001$) with varying odds among countries.

Insert Table 2 about here

Impact of various individual and country level characteristics on parental burnout

Multilevel analyses were performed to answer the research questions concerning the association between individual level characteristics, governmental measures and the levels of parental burnout during the COVID-19 pandemic and to what extent differences in country cultural values were related to the increase in the levels of parental burnout. The null-model indicates an intraclass correlation of approximately 9 percent (76.96 / 833.32). Based on the fit indices Model 4 showed the best fit to the data (see supplemental material Appendix E). This fourth model included all variables that were added in the first three models (i.e., sociodemographic variables, family variables, lockdown variables) and also variables on level two (i.e., stringency of lockdown and cultural values). The results of this final and best fitted model (model 4) are described below in more detail (Table 3).

Insert Table 3 about here

Impact of individual and family characteristics on parental burnout

With regard to the sociodemographic variables, significant effects were found for gender, age, and the financial situation of the parents. First, the results indicated that women (mothers) showed a higher level of parental burnout compared to men (fathers) ($B = 4.49, p < .001$). The results for age indicated that the higher the age of the parents, the lower the level of parental

burnout ($B = -.15, p = .014$). In addition, the results showed that compared to a poor financial situation, a very good ($B = -10.07, p < .001$), good ($B = -6.98, p < .001$), sufficient ($B = -4.90, p = .012$), and moderate ($B = -3.85, p = .046$) financial situation decreased the level of parental burnout. The better the financial situation, the lower the level of parental burnout. The family type (e.g., two-parent, single parent or other) did not show a significant effect on the level of parental burnout.

A significant effect was found for having a child with special needs, having a child under the age of four, and the number of children in the household on levels of parental burnout. This indicated that having two or more children with special needs or suffering from medical-, physical-, emotional-, cognitive-, or behavioural problems increased the level of parental burnout compared to having no child ($B = -12.31, p < .001$) or one child ($B = -4.83, p = .02$) with special needs. In addition, the number of children ($B = 1.82, p < .001$) increased the level of parental burnout. For those parents having children all above the age of 4 levels of parental burnout significantly decreased ($B = -2.41, p = .02$).

Impact of individual lockdown measures on parental burnout

For the individual lockdown variables, significant effects were found for days that families were locked down, whether parents had a task of home-schooling their children, and the amount of attention the child(ren) required from them during the day. First, the more days respondents were locked down, the higher the mean level of parental burnout ($B = .05, p < .001$). The need for home-schooling significantly increased the levels of parental burnout ($B = 3.21, p < .001$). In addition, compared to parents who had to check on their children every hour, parents with independent children ($B = -16.88, p < .001$), and parents that only needed to be present

during lunchtime ($B = -9.08, p < .001$) showed lower levels of parental burnout. The more attention a child required, the higher the levels of parental burnout.

Country-specific cultural values and the strength of the impact of governmental measures on parental burnout

With regard to the country level variables, no significant results were found for the stringency index (i.e., the state-imposed lockdown measures). The analyses only revealed a significant effect for the level of indulgence. The results of our analysis showed that the higher the level of indulgence in a country, the lower the level of parental burnout ($B = -.26, p = .016$).

A final model did not reveal significant results, showing that country specific cultural values did not mitigate the strength of the governmental measures on parental burnout.

Therefore, we refrain from describing this model in detail.

Discussion

Since the family is regarded as the natural and elementary unit of almost all societies, there are many reasons to focus on the role of families and parenting in meeting the current Sustainable Developmental Goals. An increase in families' wellbeing and a reduction of family violence is considered to be achieved by supporting parents in positive parenting practices and by diminishing stressors in families (Richardson et al., 2020). In this context, the main goal of the present study was to assess whether a stressor like the COVID-19 pandemic -with its related state-imposed lockdown measures- affected the prevalence of parental burnout (as an indicator of a lack of positive parenting practices and risk factor for increased family violence) worldwide. The results of our analyses showed that the global prevalence of parental burnout significantly increased in many countries during the COVID-19 pandemic. These results confirmed that the pandemic affected family life seriously and dovetails with independent studies conducted in the

United States (Russell et al., 2020), Italy (Spinelli et al., 2020), and Germany (Calvano, et al., 2021).

Although the odds of experiencing parental burnout were higher in most Western and non-Western countries in 2020 than before the COVID-19 pandemic in 2018-2019, the size of the increase varied considerably across countries. Various individual and family factors were found to be related to increases in rates of parental burnout. Mothers, younger parents, those in poor financial situations, those with more than one child with problems or special needs, those with more children living at home, and those having children under the age of four evidenced higher levels of parental burnout during the pandemic. These factors also were found to be significantly related to parental burnout in previous pre-COVID studies focusing on parental burnout (Roskam et al., 2021). Having young children (between the age of 0 and 4), more children, and children with special needs certainly increases the attention that children require from parents on a daily basis (Lundberg et al., 1994; Mikolajczak et al. 2018) and increases the levels of stress associated with parenting. This did not change in 2020. In times of COVID-19 when parents may lose jobs and are confronted with financial uncertain situations it is not surprising that the amount of stress increases and puts an additional strain on family life and parenting practices. People's daily routines changed and apart from working from home and parenting, parents were fed up with the task of home schooling their children. This required extra attention and increased level of stress (Griffith, 2020). The results of our analysis are in line with previous findings and support the assumption that strict lockdown measures (i.e., work remote, stay at home, closing of schools and daycare facilities) increased parental burnout (Joyce, 2022; Skjerdingsstad et al., 2021).

With regard to the cultural values discussed by Hofstede (2011), the seemingly protective factor of collectivism (versus individualism) in experiencing parental burnout (Roskam et al., 2021) disappeared during the pandemic when many families were in lockdown and social contacts were restricted. During the pandemic, living in a more indulgent country appeared to be a protective cultural value for developing parental burnout. The finding that indulgence is the main contributing cultural value related to parental burnout across countries during the pandemic seems to contrast with the finding of Roskam et al (2021) which showed no significant effect of indulgence. This difference is particularly interesting because it shows that when external circumstances change, the protective (or vulnerability) role of cultural values may change too. A value that was not found to be particularly protective in “regular” circumstances became particularly protective in a context of extreme stress on the parents. In response to adversity (e.g. a pandemic and lockdown), individuals from a culture of indulgence might feel that they still have control over their participation in life activities, while individuals from a background of cultural restraint may have a sense of helplessness and be less actively involved in taking control over their involvement in enjoyable activities. This finding on the protective role of indulgence opens perspectives for studies at the individual level too and fits well with existing results showing that parents who take leisure time are actually less vulnerable to parental burnout (Piroux & Mehauden, 2018). Moreover, perhaps less strict norms regarding parenting roles and duties during the pandemic, in particular, in indulgent countries can leave room for individuals to adapt to the extraordinary COVID-19 situation. This may subsequently lead to more freedom for parents how to balance work and home or how to shape the parental role.

Recently, studies have outlined how to prevent or decrease parental burnout (Brianda et al (2020). High levels of parental burnout in families at risk can be reduced by supporting

parents on how to deal with social pressure and perfectionism by enhancing their emotion regulation competencies and stress management techniques. Parents who received a brief and focused intervention not only reported significant decreases in parental burnout symptoms and negative emotions but also decreases in neglect and violence towards their children.

Because of varying rates per country, different sample sizes across countries, variations in geographical areas per country, the overrepresentation of mothers in almost all countries, and potential unmeasured factors that cannot be ruled out, our results must be interpreted with caution. Nevertheless, the results of this unique study involving 26 Western and non-Western countries around the globe point to the importance of considering parental burnout as a syndrome shaped by various individual and cultural factors as well as natural disasters like pandemics. Acknowledging that parenting can be extremely demanding and exhausting for many parents across the globe, particularly in times of the COVID-19 pandemic, may give rise to the development of specific parenting programs. Those programs should focus on minimizing the exhaustion of parents and should aim to support these individuals to adopt nonviolent ways of parenting their children (SDG 16.2) in order to promote the health and wellbeing of their offspring (SDG3).

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Table 1. Description of the individual level variables (i.e., demographic, parental workload and individual lockdown)

	N	Mean	SD	%
Parental burnout	9923	27.44	28.53	
Age	9895	39.99	8.08	
Gender: male (female)	9923			25 (75)
Educational level	9894	15.74	4.57	
Paid profession: no (yes)	9914			22 (78)
Financial sit: Very good	9051			16
Financial sit: Good	9051			36
Financial sit: Sufficient	9051			26
Financial sit: Moderate	9051			17
Financial sit: Poor	9051			5
Neighbourhood: Disadvantaged	9875			7
Neighbourhood: Average	9875			63
Neighbourhood: Prosperous	9875			30
Number of children	9705	1.98	1.12	
Problem child: none	9699			81
Problem child: one	9699			16
Problem child: >1	9699			3
Child under age 4: yes (no)	9923			44 (56)
Family type: Two-parent	9694			78
Family type: Single parent	9694			11
Family type: Other	9694			11
Days locked down	6682	42.07	34.72	
Work from home: yes (no)	8400			75 (25)
Attention child: independent including lunch	9365			35
Attention child: independent excluding lunch	9365			20
Attention child: check every hour	9365			43
Attention child: constantly soliciting me	9365			2
Home-schooling: no (yes)	9179			29 (71)

Running head: PARENTAL BURNOUT ACROSS THE GLOBE DURING THE COVID-19 PANDEMIC

Table 2. Results of logistic regression for countries participating in 2018-2019 and 2020 (n=20)^a

Country	2018-2019		2020		Wave 1 vs Wave 2
	N	Prevalence burnout	N	Prevalence burnout	Odds Ratio
Belgium	1689	8.1	1445	7.5	0.92
Burundi	187	5.9	216	25.9	5.60***
Cameroun	208	0.5	217	4.6	10.00*
Chile	431	3.9	670	8.5	2.26**
China	722	1.4	578	1.7	1.25
Colombia	95	1.1	221	6.3	6.36
Egypt	267	2.6	152	2.6	1.00
Finland	1730	4.9	1058	5.8	1.18
France	1357	5.5	716	6.7	1.23
Iran	448	1.3	213	4.2	3.25*
Italy	350	0.6	315	1.9	3.38
Japan	500	1.8	200	2.0	1.11
Peru	312	1.3	301	3.3	2.65
Poland	457	7.7	329	6.7	0.86
Portugal	407	2.0	522	4.6	2.40*
The Netherlands	221	2.2	409	2.2	0.97
Turkey	452	0.2	249	1.2	5.50

Running head: PARENTAL BURNOUT ACROSS THE GLOBE DURING THE COVID-19 PANDEMIC

Uruguay	299	0.3	283	0.4	1.06
USA	406	7.9	263	9.1	1.17
Vietnam	271	0.4	182	1.0	3.00
Total	10622	4.2	8323	5.8	1.39***

Note: * $p < .05$, ** $p < .005$, *** $p < .001$

a Prevalence rates of countries only participating in 2020: Czech Republic (n=350) 3.4%; Greece (n=347) 3.2%; Israel (n=245) 2.0%; Lithuania (n=169) 8.5%; New Zealand (n=83) 3.5%; South Korea (n=237) 5.9%.

Table 3. Multilevel unconditional model and (best fit) conditional model 4

predicting parental burnout.

	Unconditional model		Model 4	
	Est.	SE	Est.	SE
Intercept	-1.33	1.75	22.27***	3.22
Sociodemographic variables				
Gender [<i>ref father</i>]			4.49***	.88
Profession [<i>ref no</i>]			.63	.95
Age			-.15*	.06
Educational level			.03	.11
Neighbourhood [<i>ref prosperous</i>]				
Disadvantaged			1.57	1.59
Average			-.13	.84
Financial situation [<i>ref poor</i>]				
Very good			-10.07***	2.06
Good			-6.98***	1.90
Sufficient			-4.90*	1.95
Moderate			-3.85*	1.92
Family characteristics				
Problem child [<i>ref more than 1 child</i>]				
None			-12.31***	1.92
1 Child			-4.83*	2.07
Child under 4 [<i>ref yes</i>]			-2.41*	1.01
N. of children			1.83***	.40
Family type [<i>ref two-parent</i>]				
Single parent			.32	1.22
Other			.30	1.13
Individual lockdown variables				
Work from home [<i>ref no</i>]			-.91	.91

Running head: PARENTAL BURNOUT ACROSS THE GLOBE DURING THE COVID-19 PANDEMIC

Home-schooling [<i>ref no</i>]			3.21***	.90
Days lockdown			.05***	.01
Attention child [<i>ref check every hour</i>]				
Independent 0			-16.88***	1.11
Indep. excl lunch 1			- 9.08***	1.05
<hr/>				
Country level variables				
<hr/>				
Stringency index			.07	.22
Power distance (PDI)			-.04	.31
Individualism (IDV)			.07	.10
Masculinity (MAS)			-.02	.09
Uncertainty Avoidance (UAI)			.04	.07
Long-term Orientation (LTO)			-.16	.10
Indulgence (IND)			-.26*	.09
<hr/>				
Individual variance	756.36***	10.75	663.29***	12.66
Country variance	76.96***	22.72	33.96*	16.43
% explained individual variance			12.30	
% explained country variance			55.87	

Note: *** $p < .001$, ** $p < .01$, * $p < .05$

Running head: PARENTAL BURNOUT ACROSS THE GLOBE DURING THE COVID-19 PANDEMIC

SUPPLEMENTAL MATERIAL APPENDIX A. TABLE A. Data collection procedure in each country¹

Country	Sampling Procedure	Location of Data Collection ²	Survey Type ³ (% Online)	Period of Data Collection
Belgium	Convenience- and snowball sampling	Flanders and Wallonia, Belgium	100	April 17 to June 5 2020
Burundi	Convenience sampling (including parents who already receive psychological support; paper based)	Bubanza, Bujumbura Mairie, Bujumbura rural (western Burundi), Bururi and Rumonge (Southern Burundi)	0	May 1 to September 1 2020
Cameroun	Convenience sampling (o.a. through schools; paper based)	Yaounde, Mfoundi department, Central Region	0	May 4 to August 10 2020
Chile	Convenience sampling (Social network sites)	Metropolitan region of Chile	100	May 18 to August 27 2020
China	Convenience sampling (schools)	Shanghai, China	100	June 1 to June 14 2020
Colombia	Convenience sampling (university staff and social media)	Bogota, Colombia	100	June – September 2020
Czech Republic	Snowball sampling (Email, sharing)		93.2% (paper pencil: 6.8%)	May 5 to 29 June 2020
Egypt	Convenience sampling (Social network sites)	Menoufia Region	0 (paper pencil:100%)	April 27 to May 2 2020
Finland	Convenience sampling (Facebook, media channels, major news channels, university website)	Finland	100	April 20 to 13 May 2020
France	Convenience sampling (Online platform)			April 23 to May 11 2020
Greece	Convenience- and snowball sampling	University of Athens	100	April 23 to May 21 2020
Iran	Convenience- and snowball sampling	Tehran	100	February 28 – April 15 2020
Israel	Random sample (Survey company) and convenience sampling (Facebook)	Jerusalem	100	May 2020
Italy	Convenience sample (Faceook, word-of-mouth)	Italy	100	April 16 – May 17 2020
Japan	Quota sampling and polling (Research company)	Saporro, Japan (Data from 47 prefectures in Japan)	100	May 2020
Lithuania	Convenience sampling (e-network of schools)	Klaipeda City Municipality, Klaipeda District Municipality, and Plunge District Municipality	100	June 2020
New Zealand	Convenience sampling (online parenting platforms, parenting forums and childcare centres)	North-, and South Islands of New Zealand. University of Canterbury, Christchurch	100	May – July 2020
Peru	Convenience sampling	Lima, Peru	100	April 28 – May 20 2020
Poland	Convenience and snowball, SONA research pool	Sopot, Poland	100	26 April – 26 May 2020
Portugal	Convenience and snowball	Coimbra, Porto	81	April-May 2020
The Netherlands	Convenience and snowball	Tilburg, The Netherlands	100	April 13- August 22
Turkey	Convenience sampling (parent groups) and snowball sampling (through pre-school teachers, school principals and school counselors)	Istanbul and Ankara	100	April 30 – June 1, 2020
Uruguay	Convenience and snowball	Montevideo, Uruguay located on the banks of the Río de la Plata	0 (paper and pencil:100%)	September and October 2020
USA (Chicago)	Convenience sampling (Facebook, email)	Chicago, United States (Chicago school of professional psychology)	100	May 2020
Vietnam	Convenience sampling and snowball sampling	Ho Chi Minh City, Vietnam	0 (paper-pencil: 100%)	June 3 – June 20 2020

¹ More information about the data collection procedure in each country is available upon request to the first author. ² Location is larger for countries where online survey was used because it has been spread all over the country. The location that is mentioned is where the sampling and data collection started. ³ Survey Type: Online vs. Paper-Pencil.

Supplemental material APPENDIX B

TABLE B. Mean levels, prevalence rates and reliability scores of parental burnout for each country in 2020.

	Parental Burnout		PBA	Prevalence of
	<i>M</i>	<i>SD</i>	Reliability (Cronbach α)	Parental Burnout %
Belgium	34.36	31.13	.97	7.5
Burundi	43.49	42.64	.97	25.9
Cameroun	22.12	25.65	.95	4.6
Chile	33.99	33.01	.97	8.5
China	15.31	21.10	.97	1.7
Colombia	27.90	30.51	.97	6.3
Czech Republic	20.85	24.08	.97	3.4
Egypt	41.90	22.53	.87	2.6
Finland	29.48	29.67	.97	5.8
France	33.24	29.55	.97	6.7
Greece	25.66	23.21	.95	3.2
Iran	12.44	24.41	.98	4.2
Israel	23.04	23.26	.96	2.0
Italy	20.61	23.15	.95	1.9
Japan	11.34	20.91	.96	2.0
Lithuania	36.59	20.30	.97	3.0
New Zealand	29.82	27.39	.97	3.6
Peru	27.83	26.90	.96	3.3
Poland	32.80	29.10	.97	6.7
Portugal	25.64	27.44	.97	4.6
South Korea	31.40	30.31	.97	5.9
The Netherlands	23.40	22.83	.96	2.2
Turkey	14.66	18.62	.94	1.2
Uruguay	13.77	14.13	.90	0.4
USA (Chicago)	34.92	30.86	.97	9.1
Vietnam	16.34	18.89	.93	1.0

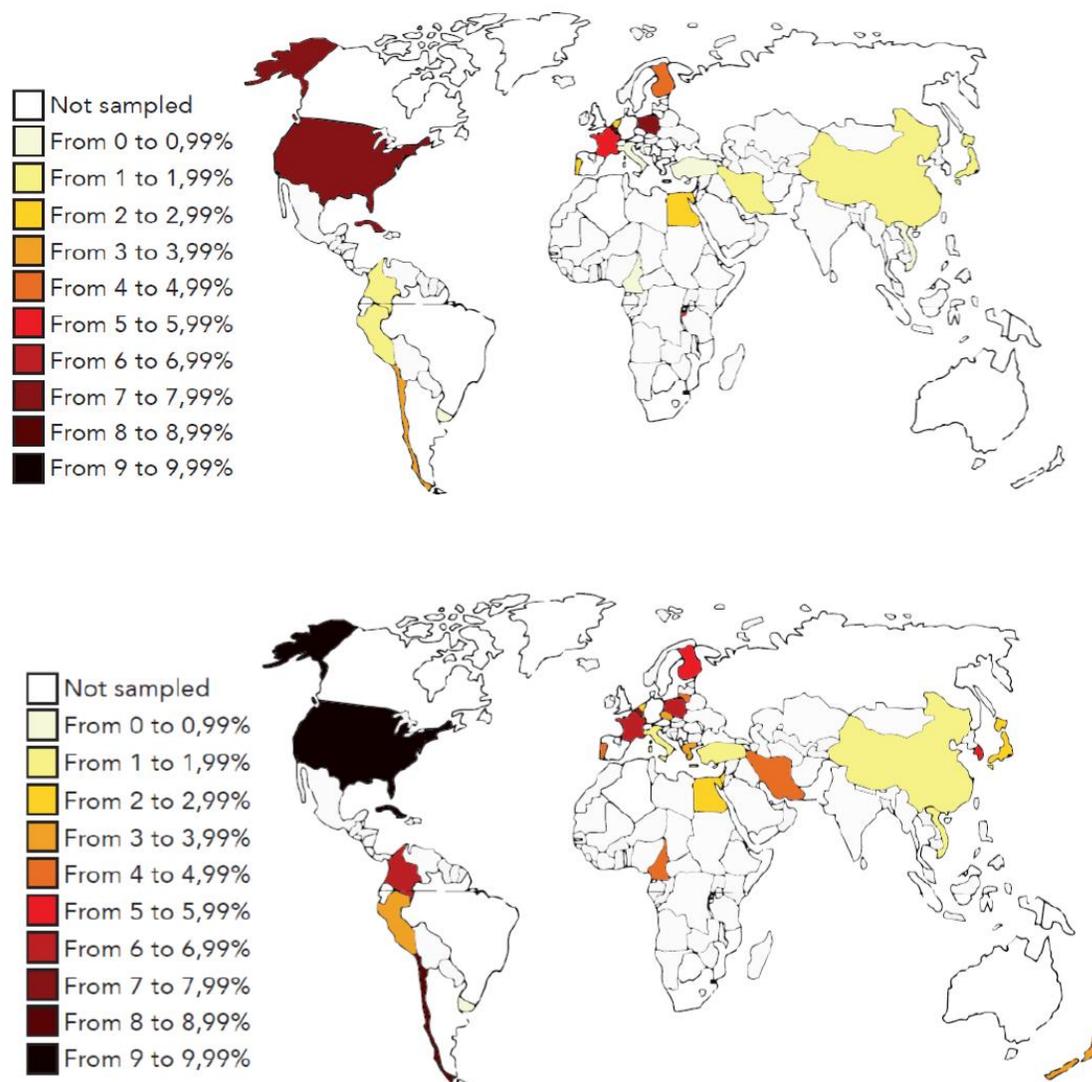
SUPPLEMENTAL MATERIAL APPENDIX C.

TABLE C. Description of the country level variables (stringency index and cultural values).

	N	Min	Max	Mean	SD
Stringency index	9923	16	94	70.14	16.11
Power distance (PDI)	9534	13	80	57.10	15.03
Individualism (IDV)	9534	13	91	50.96	23.33
Masculinity (MAS)	9534	14	100	45.50	16.75
Uncertainty Avoidance (UAI)	9534	30	100	77.42	21.29
Long-term Orientation (LTO)	9534	7	93	53.10	24.64
Indulgence (IND)	9289	4	94	48.21	15.94

SUPPLEMENTAL MATERIAL D.

FIGURES 1A and 1B: Prevalence rates of parental burnout for each country in 2018-2019 (pre-COVID) and in 2020



Supplemental material APPENDIX E

Table E: Fit indices BIC and AIC

Fit Index	Null model	Model 1	Model 2	Model 3	Model 4	Model 5
AIC	94025.536	84735.789	84173.155	55224.479	51634.561	51688.839
BIC	94039.941	84749.987	84187.346	55237.831	51647.786	51702.058

Note: lower values indicate better model fit

