



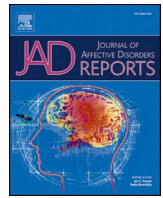
Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



Contents lists available at ScienceDirect

Journal of Affective Disorders Reports

journal homepage: www.sciencedirect.com/journal/journal-of-affective-disorders-reports

Brief Report

Increasing aggression during the COVID-19 lockdowns

William D.S. Killgore^{*}, Sara A. Cloonan, Emily C. Taylor, Ian Anlap, Natalie S. Dailey

University of Arizona College of Medicine, United States

ARTICLE INFO

Keywords:

COVID-19
Coronavirus
Lockdowns
Aggression
Anger
Hostility

ABSTRACT

Background: To combat the spread of COVID-19, many communities implemented restrictions on personal movement, often referred to as “lockdowns.” We hypothesized that continued lockdowns might be associated with increased feelings of aggression.

Methods: Over the first six months of the COVID-19 pandemic, the Buss-Perry Aggression Questionnaire (BPAQ) was administered to a total of 5,928 adults distributed proportionally from across the United States during independent online cross-sectional surveys collected each month. Data across the 6-month period were compared between those under lockdown versus those not under such restrictions.

Results: BPAQ Total Aggression scores showed a significant main effect for both month and lockdown status as well as a significant interaction effect, with increasing scores evident for those reporting that they were under lockdown relative to those reporting no restrictions. This same pattern was evident for all four subscales of the BPAQ, including Physical Aggression, Verbal Aggression, Anger, and Hostility.

Limitations: Random sampling of the entire population was not possible, so generalization of the results should be made with caution. Additionally, data were collected cross-sectionally and cannot be considered to reflect longitudinal change within individuals. Finally, the cross-sectional survey design means that it is impossible to infer that the lockdowns caused the increase in aggression.

Conclusions: Lockdowns were associated with elevated levels of aggression that were higher in later months of the national pandemic response.

On March 13, 2020, the United States declared a National Emergency to control the spread of the COVID-19 virus, and in the ensuing weeks and months, many communities throughout the nation implemented large-scale stay-at-home or shelter-in-place orders. These measures resulted in substantial changes in the daily lives of individuals across the country as the populace learned to adjust to a “new normal.” During these “lockdowns,” communities experienced significant restrictions on movement, and in many locations around the country, people were only allowed to leave their homes in cases of emergency or to obtain basic necessities for living. In many cases, non-essential gatherings of people were prohibited, and customers were not allowed to enter certain establishments (e.g., restaurants) or strict limits on entry were enforced (<https://www.wsj.com/articles/a-state-by-state-guide-to-coronavirus-lockdowns-11584749351>). As the pandemic continued through the summer months of 2020, these restrictions on movement occurred just as racial tensions, protests, and riots escalated, natural disasters plagued many areas of the country, and political rancor dominated the months leading up to a dramatic and contentious presidential election.

Throughout this unrest, there was ongoing uncertainty and anxiety about the persistent spread of the novel coronavirus, the mounting death toll, discord over the effectiveness of social distancing and mask use, and the ending of the first round of temporary government stimulus for tens of millions of unemployed workers. Balancing the pressures to sustain the economy, some communities reopened while others remained under continued or renewed lockdown orders as waves of infections surged in various states.

Not surprisingly, mental health problems including anxiety disorders, depression, loneliness, and suicidal ideation all escalated during the course of the first year of the COVID-19 pandemic (Groarke et al., 2020; Killgore et al., 2020a, 2020b, 2021; Killgore et al., 2020c, 2020d; Marroquin et al., 2020; Wang et al., 2020). As the lockdowns continued month-after-month through the summer of 2020, we hypothesized that the prolonged social isolation and the severe restrictions to travel and normal work and recreational activities would contribute to feelings of reduced relatedness to others, decreased sense of autonomy, and degraded self-efficacy, which are critical components of one’s sense of

^{*} Corresponding author.

E-mail address: killgore@psychiatry.arizona.edu (W.D.S. Killgore).

<https://doi.org/10.1016/j.jadr.2021.100163>

Received 16 December 2020; Received in revised form 22 May 2021; Accepted 25 May 2021

Available online 28 May 2021

2666-9153/© 2021 The Author(s).

Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

self-determination (Ryan and Deci, 2000a, b). Because these experiences involve thwarted goals, we could define them as frustrating experiences. An influential theory, known as the reformulated *frustration-aggression hypothesis* (Berkowitz, 1989), suggests that aggression is a common outcome of thwarted individual goals, particularly when the frustration leads to a negative affective state. In other words, when a person is blocked in reaching a desired goal (e.g., wanting to travel outside the home and spend time socializing at a favorite destination with loved ones), the resulting negative affective state will predispose them toward aggressive inclinations, which may be experienced/expressed in various ways, including, but not limited to, physically aggressive behavior, verbally aggressive responses, feelings of anger, and/or hostility. While overt demonstration of aggression is not inevitable, frustrations do tend to increase the inclination toward aggressive tendencies (Breuer and Elson, 2017). Based on the reformulated frustration-aggression hypothesis, we expected that individuals who perceived themselves as being under lockdown status, particularly as the pandemic continued unabated for multiple months, would be more likely to find the experience to be frustrating, which would then lead to higher levels of aggression than those not under stay-at-home restrictions. Early evidence that aggression might be increasing during the pandemic came from a study suggesting that, particularly for women, there was a significant increase in the aggressive content of dreams during the months of March through July of 2020 (Kilius et al., 2021). However, no studies have yet directly addressed levels of measured aggression as a function of lockdown status during the COVID-19 pandemic.

If prolonged restriction of personal movement and disruption in daily life contribute to hindering individual goals, it would logically follow that aggression would increase during lockdowns. If this hypothesis was supported, this would be particularly worrisome, as many individuals under stay-at-home orders have remained sequestered with their intimate partners, children, and/or other housemates with little opportunity for expressing frustration and pent up negative emotions in healthy ways, raising the possibility for increased intimate partner violence or child abuse (Evans et al., 2020). To understand the effects of lockdowns on aggression as the pandemic unfolded, we collected responses to a well-validated aggression questionnaire in an online survey administered independently each month to a sample of adults in the United States throughout the first six months of the lockdowns. We hypothesized that mean aggression scores would be greater for those remaining under lockdowns compared to those who reported that they were not under such restrictions at the time of assessment and would tend to be greater in later months of the assessment period.

Methods

Participants

A total of 5,928 English speaking adults living in the United States from all 50 states and the District of Columbia (53.7% females and 46.3% males) completed a set of online assessments including the Buss-Perry Aggression Questionnaire (BPAQ). As part of a larger ongoing study monitoring various aspects of mental health during the pandemic, data were collected online using the Amazon Mechanical Turk (MTurk) crowdsourcing platform and participants were compensated for their time. Other findings from this project have been reported elsewhere (Killgore et al., 2020a, Killgore et al., 2020b; Killgore et al., 2021, 2020c, 2020d), but the data on aggression are novel and have never been reported previously. The survey was open to English speaking adults living in the United States, between the ages of 18 and 90 years of age, who demonstrated at least a 6th grade English reading comprehension. The proportion of participants from each U.S. state closely matched the proportions reported from 2019 U.S. Census data. The assessments were administered cross-sectionally to six independent samples, collected at approximately one-month intervals (i.e., April 9, 10, 2020, $n = 928$, age = 36.4, SD = 12.3 years; May 11–14, 2020, $n = 943$, age = 36.0, SD =

12.1 years; June 10–13, 2020, $n = 1,009$, age = 35.3, SD = 11.8 years; July 14–18, 2020, $n = 1,034$, age = 35.8, SD = 12.1 years; August 11–12, 2020, $n = 998$, age = 36.6, SD = 12.2 years; September 10–11, 2020, $n = 1,016$, age = 37.4, SD = 12.0 years).

Participants indicated whether they were currently under a stay-at-home, shelter-in-place, or lockdown order. Being under “lockdown” was defined as an affirmative response to this query. Of the total sample, $n = 3,612$ reported that they were under lockdown status, while $n = 2,316$ reported no such restrictions at the time of the assessment. All participants provided written informed consent and the protocol was approved by the Institutional Review Board of the University of Arizona.

Materials and procedure

At each administration, participants completed an online battery of questionnaires that included the Buss-Perry Aggression Questionnaire (BPAQ) (Buss and Perry, 1992), a widely used metric of aggressive tendencies that has acceptable psychometric properties (Harris, 1997), as well as other questions about demographics and personal reactions to the COVID-19 pandemic. The BPAQ includes a *Total Aggression* score, as well as four sub-scales measuring *Physical Aggression* (tendency to get in physical altercations or hit another person), *Verbal Aggression* (tendency to argue or verbally lash out at others), *Anger* (tendency to lose one's temper), and *Hostility* (mistrust of others and a feeling that one is being slighted). Aggression data were analyzed using a 2 (lockdown status) \times 6 (month) analysis of variance (ANOVA), controlling for age, sex, primary job loss due to COVID-19 (yes/no), and annual income. Pairwise post-hoc comparisons between lockdown and non-lockdown groups were conducted at each month. Similarly, within each group (i.e., lockdown versus no lockdown) post-hoc comparisons were conducted between each pair of contiguous months. All post-hoc comparisons were corrected using Bonferroni procedure to maintain family-wise error ($p < .05$).

Results

Total aggression

As evident in Fig. 1A, scores reflecting overall aggression showed a main effect of time, $F(5, 5912) = 16.90, p < .0000001$, and a main effect of lockdown status, $F(1, 5912) = 35.89, p < .0000001$. However, these findings should be interpreted in light of a significant interaction effect of time and lockdown status, $F(5, 5912) = 9.22, p < .0000001$. Specifically, Bonferroni pairwise comparisons between consecutive months showed that for those reporting they were under lockdown status, Total Aggression scores were significantly lower in May compared to April (M difference = 3.39, SE = 1.00, $p = .011$), and significantly higher in June compared to May (M difference = -4.93 , SE = 1.20, $p = .001$), and July compared to June (M difference = -6.75 , SE = 1.19, $p = .0000002$). In contrast, for those reporting that they were not under lockdown, the only between-month difference occurred between June and July (M difference = -5.26 , SE = 1.53, $p = .008$). Additionally, we compared the Total Aggression scores between those who reported being under lockdown and those who were not at each month. Total Aggression scores were significantly higher for those under lockdown in June ($F_{1,5912} = 15.13, p = .0001$), July ($F_{1,5912} = 19.21, p = .00001$), August ($F_{1,5912} = 34.45, p < .0000001$), and September ($F_{1,5912} = 64.03, p < .0000001$), compared to those who were not. Because of the significant effect observed for Total Aggression scores, we further analyzed the four subscales of the BPAQ in the same way.

Physical aggression

For physically aggressive tendencies, there was a main effect of time, $F(5, 5912) = 12.16, p < .0000001$, a main effect of lockdown status, $F(1, 5912) = 23.65, p = .0000001$, and a significant interaction between time

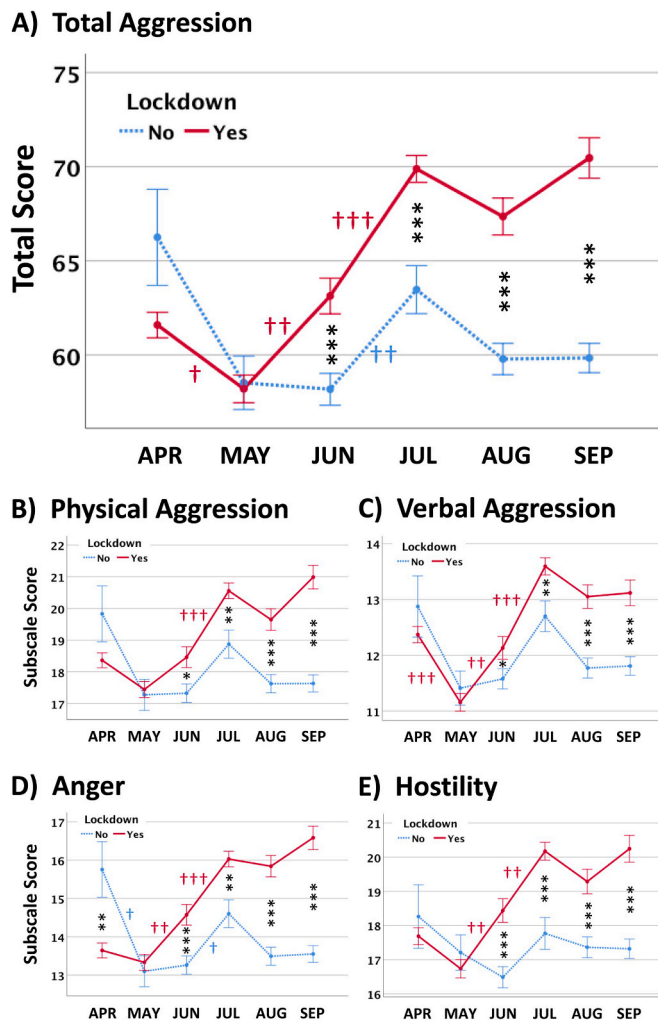


Fig. 1. Mean total and subscale scores for the buss-perry aggression questionnaire for the six months during the early phase of the COVID-19 pandemic, including scores for (A) Total Aggression, (B) Physical Aggression (e.g., getting in fights), (C) Verbal Aggression (e.g., arguing), (D) Anger (e.g., losing one’s temper), and (E) Hostility (e.g., jealousy of others’ success). The data show significantly greater aggression for those under lockdown (solid red) compared to those not under lockdown (dashed blue) beginning in June 2020. The asterisks (*) reflect between group comparisons at each month (* $p < .05$, ** $p < .01$, *** $p < .001$, Bonferroni corrected post-hoc comparison). The daggers (†) indicate within group comparisons between consecutive months († $p < .05$, †† $p < .01$, ††† $p < .001$, Bonferroni corrected post-hoc comparison).

and lockdown status, $F(5, 5912) = 6.94, p = .0000002$ (see Fig. 1B). Bonferroni pairwise comparisons between consecutive months showed that for those under lockdown, Physical Aggression scores were significantly higher in June compared to May (M difference = -2.09 , $SE = 0.41, p = .000005$). In contrast, for those not under lockdown, no pairwise differences were found between consecutive months. Group-wise comparisons revealed that Physical Aggression scores were higher for those under lockdown relative to those who were not for the months of June ($F_{1,5912} = 6.66, p = .010$), July ($F_{1,5912} = 11.08, p = .001$), August ($F_{1,5912} = 20.53, p = .000006$), and September ($F_{1,5912} = 53.44, p < .0000001$).

Verbal aggression

For the tendency to argue or verbally lash out, there was a main effect of time, $F(5, 5911) = 15.56, p < .0000001$, a main effect of lockdown status, $F(1, 5911) = 13.82, p = .0002$, and a significant

interaction between time and lockdown status, $F(5, 5911) = 4.33, p = .0006$ (see Fig. 1C). Bonferroni pairwise comparisons between consecutive months showed that for those under lockdown status, Verbal Aggression scores were significantly lower in May compared to April (M difference = 1.21 , $SE = 0.22, p = .0000003$), and significantly higher in June compared to May (M difference = -0.97 , $SE = 0.26, p = .0000002$). However, for those reporting that they were not under lockdown, there were no significant pairwise differences between Verbal Aggression scores in consecutive months. Further, within each month separately, we compared the Verbal Aggression scores between those who reported being under lockdown and those who were not. Verbal Aggression scores were significantly higher for those under lockdown in June ($F_{1,5911} = 4.10, p = .043$), July ($F_{1,5911} = 8.08, p = .004$), August ($F_{1,5911} = 21.28, p < .000004$), and September ($F_{1,5911} = 21.05, p < .000005$) than those who were not.

Anger

With regard to the tendency to be “hotheaded” or lose one’s temper, there was a main effect of time, $F(5, 5912) = 13.65, p < .0000001$, a main effect of lockdown status, $F(1, 5912) = 28.72, p < .0000001$, and a significant interaction between time and lockdown status, $F(5, 5912) = 10.61, p < .0000001$ (see Fig. 1D). Bonferroni pairwise comparisons between consecutive months showed that for those under lockdown status, Anger scores were significantly higher in June compared to May (M difference = -1.24 , $SE = 0.34, p = .004$), and July compared to June (M difference = -1.46 , $SE = 0.34, p = .0002$). In contrast, for those reporting that they were not under lockdown, Anger was significantly lower in May compared to April (M difference = 2.66 , $SE = 0.83, p = .020$), and was significantly higher in July compared to June (M difference = -1.34 , $SE = 0.43, p = .030$). When lockdown groups were compared within each month separately, Anger scores were significantly lower for those under lockdown in April ($F_{1,5912} = 7.94, p = .005$). However, those under lockdown showed significantly higher Anger in June ($F_{1,5912} = 13.19, p = .0003$), July ($F_{1,5912} = 11.81, p = .001$), August ($F_{1,5912} = 41.13, p < .0000001$), and September ($F_{1,5912} = 64.76, p < .0000001$) compared to those who were not. Thus, those reporting that they were not under lockdown in April showed a tendency to be angrier than those reporting that they were under lockdown at that time, but, by June and later, the trend reversed and those reporting that they were under lockdown indicated a significantly higher anger (e.g., the tendency to become irritable or “fly off the handle”) than those reporting that they were not under such restrictions.

Hostility

Hostility scores, or the tendency to feel jealous, treated unfairly, and mistrustful of the motives of others showed an increase over time, $F(5, 5912) = 8.46, p = .0000001$, as well as a main effect of lockdown status, $F(1, 5912) = 29.79, p = .0000001$, and a significant interaction between time and lockdown status, $F(5, 5912) = 5.64, p < .000003$ (see Fig. 1E). Bonferroni pairwise comparisons between consecutive months showed that for those under lockdown status, Hostility scores were significantly higher in June compared to May (M difference = -1.70 , $SE = 0.44, p = .002$), and July compared to June (M difference = -1.74 , $SE = 0.43, p = .001$). However, for those reporting that they were not under lockdown, there were no significant pairwise differences between Hostility scores in consecutive months. Additionally, we compared the Hostility scores between those who reported being under lockdown and those who were not, within each month separately. Hostility scores were significantly higher for those under lockdown in June ($F_{1,5912} = 17.70, p = .00003$), July ($F_{1,5912} = 20.39, p = .000006$), August ($F_{1,5912} = 16.75, p < .00004$), and September ($F_{1,5912} = 36.58, p < .0000001$) compared to those not under lockdown.

Discussion

Self-reported aggressive tendencies were elevated during the later months of the six-month period encompassing the initial stay-at-home orders and subsequent summer surge of COVID-19 cases in the U.S. (April–September 2020). While aggression appeared to decline slightly from early April to early May, during the initial period of lockdowns in the U.S., it increased rapidly into June and July, a time when many lockdowns were extended and which was fraught with social unrest, political turmoil, and escalating numbers of positive COVID-19 cases and fatalities. Our data further suggest that elevated aggression was primarily evident among individuals reporting that they were under lockdown compared to those reporting that they were not under such restrictions. Moreover, this pattern was evident for all subscales of the BPAQ, suggesting that as the pandemic raged on month after month, those under lockdown showed greater tendencies to feel suspicious and maltreated, lose their temper easily, verbally attack others, and even engage in physical aggression. The only exception to this pattern was for Anger, which interestingly, was higher among the small proportion (6.4%) who denied being under lockdown during the first month of nationwide stay-at-home orders. While speculative, we propose that those individuals may have coped with their early fears and uncertainty about the pandemic through increased anger, which may have been particularly pronounced in communities that had not yet enacted stay-at-home orders. However, this explanation is speculative and will require additional research. Overall, these data strongly suggest that aggression increased during the early months of the pandemic and it was particularly evident among those who reported being under lockdown.

The present findings are consistent with the reformulated frustration-aggression hypothesis (Berkowitz, 1989), which suggests that the thwarting of a desired goal is sufficient to lead to a negative affective state, which then results in aggressive inclinations (Breuer and Elson, 2017). We hypothesized that individuals undergoing pandemic lockdowns would likely experience a greater frequency of frustrated goals (e.g., prevented from going to work; not allowed to dine at a favorite restaurant; not allowed to shop at favorite stores; unable to gather with friends, attend worship services, or go to communal places of entertainment; etc.) than those living in open communities. Moreover, when considered in light of self-determination theory (Ryan and Deci, 2000a, b), which suggests that frustration occurs when basic psychological needs, including autonomy (e.g., due to general travel restrictions), self-efficacy (e.g., due to inability to engage in normal work activities and be productive in one's chosen profession), and relatedness (e.g., due to restrictions leading to social isolation and loneliness), are thwarted, we would expect to see increased aggression scores on the BPAQ. This was exactly what was observed. Individuals under lockdowns showed significantly higher aggression scores compared to non-restricted individuals, and this was particularly notable in later months of the summer pandemic period. Additionally, macrolevel theories that incorporate the frustration-aggression hypothesis also predict increased aggression when there are systemic frustrations, such as economic downturns, restricted availability of resources, or perceived institutional discrimination against specific societal groups (Breuer and Elson, 2017; Feierabend and Feierabend, 2016; Gurr, 1970). Notably, all of these systemic frustrations were pervasive during the late summer of 2020. Thus, the pandemic restrictions and ongoing social discord appear to have provided a sufficient level of frustration to activate negative affective states and lead to increased aggression, an effect that was particularly notable among those under prolonged stay-at-home orders.

The increase in self-reported aggression is concerning as it portends the possibility of increased behavioral expression of aggression in the form of violent acts during pandemic-related stay-at-home restrictions (Raj et al., 2020). It has been suggested that the COVID-19 pandemic has produced a “perfect storm” of factors that may contribute to increased family violence (Usher et al., 2021). Emerging data appear to support this expectation, although the associations are complex and not

immediately intuitive, as both increases and decreases have been reported by various authors, suggesting that many factors may combine to contribute to actual reports of violence (Cappa and Jijon, 2021). Importantly, however, recent studies covering the early months of the pandemic have highlighted increasing reports of intimate partner violence and physical battery (Aguero, 2021; Boman and Gallupe, 2020; Sanchez et al., 2020). According to one study, there was a 7.5% increase in domestic violence calls within the first five weeks of nationwide social distancing efforts (Leslie and Wilson, 2020). Similarly, another study suggested a 1,493% increase in abusive head trauma among children during the pandemic compared to pre-pandemic prevalence (Sidpra et al., 2020), while another suggested a significant increase in psychological maltreatment or physical abuse of children, especially among those with a parent who lost a job during the pandemic (Lawson et al., 2020). Further, while medical visits for accidental injuries decreased during the stay-at-home period, there was an increase in gun-shot related wounds (Sherman et al., 2020). Thus, while our findings show higher aggression scores for those under lockdowns during the pandemic, the associations are complex and their translation into measurable violent actions is likely to be influenced by numerous other factors, such as duration of confinement to home, availability of social support, access to resources, alcohol or drug use, and other stressors, as well as the mode of assessment (e.g., police report, medical outcomes, surveys, etc.). Out of an abundance of caution, we recommend that clinicians routinely assess their patients for signs of increased aggression and the possibility of domestic violence, abuse, and neglect during large scale pandemic lockdown periods.

The present findings should be interpreted with a few limitations in mind. First, these data were collected using an online survey within a crowdsourcing platform, and therefore, random sampling of the entire national population cannot be assumed. Nonetheless, the sample size is quite large and proportionally representative of the U.S. population from each state, suggesting that the findings are likely to be a reliable indicator of aggressive tendencies in the larger population. Second, these data were collected cross-sectionally among six independent samples over the 6-month period. Therefore, longitudinal changes within individuals cannot be inferred. Ideally, the most elegant and powerful design would have included monthly longitudinal data from the same participants over time, but this was not feasible when the study was initiated. Future studies would benefit from the use of longitudinal designs. Third, while the data are consistent with the hypothesis that lockdowns contributed to the increase in self-reported aggression, causal inference cannot be made due to the survey-based and cross-sectional nature of the data collection. For instance, lockdowns were more likely to occur in regions with greater virus transmission rates, and it is conceivable that the increase in aggression may have emerged as a response to anxieties associated with the virus or distress over job loss, rather than due to the lockdowns themselves. Some of these issues are mitigated by the inclusion of several covariates, including age, sex, job loss, and pre-pandemic income, but cannot fully eliminate these concerns. A related limitation is the lack of nuance in our self-report metric of lockdown status, which was admittedly coarse. In March 2020, when we initially designed the study, we did not foresee the remarkable heterogeneity of stay-at-home mandates that would eventually emerge, how they would be implemented, and their wide-ranging durations across various communities. Nonetheless, to ensure consistency over time, we used the same criteria to define lockdowns at each timepoint, which has its merits and weaknesses. Future work would benefit from a more fine-grained approach that perhaps examines archival data from each locality to identify specific lockdown mandates that were actually present at the time, rather than relying on individual perceptions of these orders. With due consideration of these limitations, these findings suggest that self-reported aggression was higher in the later months of the summer stay-at-home restrictions of the COVID-19 pandemic, and this is particularly evident among those under lockdown. As the nation continues to navigate the uncertainties of the pandemic and appropriate

responses to minimize viral transmission, it will be important to also consider the potential effects of lockdowns and movement restrictions on aggression.

Declaration of Competing Interest

None.

Funding

None.

References

- Aguero, J.M., 2021. COVID-19 and the rise of intimate partner violence. *World Dev.* 137, 105217.
- Berkowitz, L., 1989. Frustration-aggression hypothesis: examination and reformulation. *Psychol. Bull.* 106 (1), 59–73.
- Boman, J.H.t., Gallupe, O., 2020. Has COVID-19 changed crime? crime rates in the United States during the pandemic. *Am. J. Crim. Justice* 1–9.
- Breuer, J., Elson, M., 2017. Frustration-Aggression Theory. In P. Sturme (Ed.), *The Wiley Handbook of Violence and Aggression* (pp. 1-12). Malden, MA, USA: John Wiley & Sons Ltd.
- Buss, A.H., Perry, M., 1992. The aggression questionnaire. *J. Pers. Soc. Psychol.* 63 (3), 452–459.
- Cappa, C., Jijon, I., 2021. COVID-19 and violence against children: a review of early studies. *Child Abuse and Neglect*, 105053.
- Evans, M.L., Lindauer, M., Farrell, M.E., 2020. A Pandemic within a Pandemic-Intimate Partner Violence During COVID-19. *New England Journal of Medicine*.
- Feierabend, I.K., Feierabend, R.L., 2016. Aggressive behaviors within politics, 1948–1962: a cross-national study 1. *J. Confl. Resolut.* 10 (3), 249–271.
- Groarke, J.M., Berry, E., Graham-Wisener, L., McKenna-Plumley, P.E., McGlinchey, E., Armour, C., 2020. Loneliness in the UK during the COVID-19 pandemic: cross-sectional results from the COVID-19 psychological wellbeing study. *PLoS ONE* 15 (9), e0239698.
- Gurr, T., 1970. *Why Men Rebel*. Princeton University Press, Princeton, NJ.
- Harris, J.A., 1997. A further evaluation of the aggression questionnaire: issues of validity and reliability. *Behav. Res. Ther.* 35 (11), 1047–1053.
- Kilius, E., Abbas, N.H., McKinnon, L., Samson, D.R., 2021. Pandemic nightmares: COVID-19 lockdown associated with increased aggression in female university students' dreams. *Front Psychol.* 12, 644636.
- Killgore, W.D.S., Cloonan, S.A., Taylor, E.C., Allbright, M.C., Dailey, N.S., 2020a. Trends in suicidal ideation over the first three months of COVID-19 lockdowns. *Psychiatry Res.* 293, 113390.
- Killgore, W.D.S., Cloonan, S.A., Taylor, E.C., Dailey, N.S., 2020b. Loneliness: a signature mental health concern in the era of COVID-19. *Psychiatry Res.* 290, 113117.
- Killgore, W.D.S., Cloonan, S.A., Taylor, E.C., Dailey, N.S., 2021. Mental health during the first weeks of the COVID-19 pandemic in the United States. *Front Psychiatry* 12, 561898.
- Killgore, W.D.S., Cloonan, S.A., Taylor, E.C., Fernandez, F., Grandner, M.A., Dailey, N.S., 2020c. Suicidal ideation during the COVID-19 pandemic: the role of insomnia. *Psychiatry Res.* 290, 113134.
- Killgore, W.D.S., Cloonan, S.A., Taylor, E.C., Miller, M.A., Dailey, N.S., 2020d. Three months of loneliness during the COVID-19 lockdown. *Psychiatry Res.* 293, 113392.
- Lawson, M., Piel, M.H., Simon, M., 2020. Child maltreatment during the COVID-19 pandemic: consequences of parental job loss on psychological and physical abuse towards children. *Child Abuse Negl.*, 104709
- Leslie, E., Wilson, R., 2020. Sheltering in place and domestic violence: evidence from calls for service during COVID-19. *J. Public Econ.* 189, 104241.
- Marroquin, B., Vine, V., Morgan, R., 2020. Mental health during the COVID-19 pandemic: effects of stay-at-home policies, social distancing behavior, and social resources. *Psychiatry Res.* 293, 113419.
- Raj, A., Johns, N.E., Barker, K.M., Silverman, J.G., 2020. Time from COVID-19 shutdown, gender-based violence exposure, and mental health outcomes among a state representative sample of California residents. *EclinicalMedicine* 26, 100520.
- Ryan, R.M., Deci, E.L., 2000a. Intrinsic and extrinsic motivations: classic definitions and new directions. *Contemp. Educ. Psychol.* 25 (1), 54–67.
- Ryan, R.M., Deci, E.L., 2000b. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *Am. Psychol.* 55 (1), 68–78.
- Sanchez, O.R., Vale, D.B., Rodrigues, L., Surita, F.G., 2020. Violence against women during the COVID-19 pandemic: an integrative review. *Int. J. Gynaecol. Obstet.*
- Sherman, W.F., Khadra, H.S., Kale, N.N., Wu, V.J., Gladden, P.B., Lee, O.C., 2020. How did the number and type of injuries in patients presenting to a regional level I trauma center change during the COVID-19 pandemic with a stay-at-home order? *Clin. Orthop. Relat. Res.*
- Sidpra, J., Abomeli, D., Hameed, B., Baker, J., Mankad, K., 2020. Rise in the incidence of abusive head trauma during the COVID-19 pandemic. *Arch Dis. Child.*
- Usher, K., Bradbury Jones, C., Bhullar, N., Durkin, D.J., Gyamfi, N., Fatema, S.R., Jackson, D., 2021. COVID-19 and family violence: is this a perfect storm? *Int. J. Ment. Health Nurs.*
- Wang, X., Hegde, S., Son, C., Keller, B., Smith, A., Sasangohar, F., 2020. Investigating mental health of US college students during the COVID-19 Pandemic: cross-sectional survey study. *J. Med. Internet Res.* 22 (9), e22817.