Doomscrolling during COVID-19:
The negative association between daily social and traditional media consumption and mental health symptoms during the COVID-19 pandemic

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Consumption of traditional and social media markedly increased at the start of the COVID-19 pandemic as new information about the virus and safety guidelines evolved. Much of the information concerned restrictions on daily living activities and the risk posed by the virus. The term "doomscrolling" was used to describe the phenomenon of elevated negative affect after viewing pandemic-related media. The magnitude and duration of this effect, however, is unclear. Furthermore, the effect of doomscrolling likely varies based on prior vulnerabilities for psychopathology such as a history of childhood maltreatment. It was hypothesized that social and traditional media exposure was related to an increase in depression and PTSD and that this increase was moderated by childhood maltreatment severity. Participants completed a baseline assessment for psychopathology and 30 days of daily assessments of depression and PTSD. Using multilevel modeling on 1,117 daily observations, social media access was associated with increased depression and PTSD. This association was stronger for those with more severe maltreatment histories. Furthermore, those with more severe baseline psychopathology used more social media during this period. These results suggest that doomscrolling is associated with increases in psychopathology for those with existing vulnerabilities.

The COVID-19 pandemic has altered the global mental health landscape (Galea et al., 2020). Preliminary reports demonstrated that changes to daily living caused by the pandemic collectively increased psychopathology including depression and anxiety (Fullana et al., 2020; Wang et al., 2020). These changes included the need for social distancing, wearing of face coverings, and closures of businesses and schools. Information about these changes were largely disseminated through traditional news sources and social media. The near ubiquitous reach of modern day media has made understanding its impact on mental health during the pandemic a top research priority (Holmes et al., 2020). The extent to which repeated exposure to pandemic-related media impacts mental health is unclear, especially for those with pre-pandemic risk factors for psychopathology such as childhood maltreatment. Determining the direction and strength of this association is critical to determining the scale of the pandemic's effect on mental health.

The Social Amplification of Risk framework offers a model to explain how repeated exposure to such media may increase psychopathology (Kasperson et al., 1988).

This framework suggests that a public health risk can be amplified in the transmission of new information via messaging valence and frequency. Information delivered via the internet, including social media and news alerts, is often negatively valenced such that it includes risk-amplifying language (Sell et al., 2017). Mobile devices allow frequent access to such media as well. Prior work has shown the utility of this framework in understanding the public's response to a public health emergency (Ng et al., 2018). Those exposed to negatively valenced media associated with a public health emergency (haze related to air pollution) reported increased perceived risk and negative affect. At the outset of the COVID-19 pandemic, there was an immense amount of information shared about virus transmission and safety guidelines. Much of this information had a negative valence. The term "doomscrolling" was used to describe the supposed increase in negative affect that resulted from repeated scrolling through news stories on a mobile device (Fig. 1). The magnitude and duration of the increase in negative affect of this effect is unclear, however.

There is limited literature on the relation between repeated exposure to media and mental health during an ongoing stressor such as the COVID-19 pandemic. Much of the prior work on media exposure and psychopathology
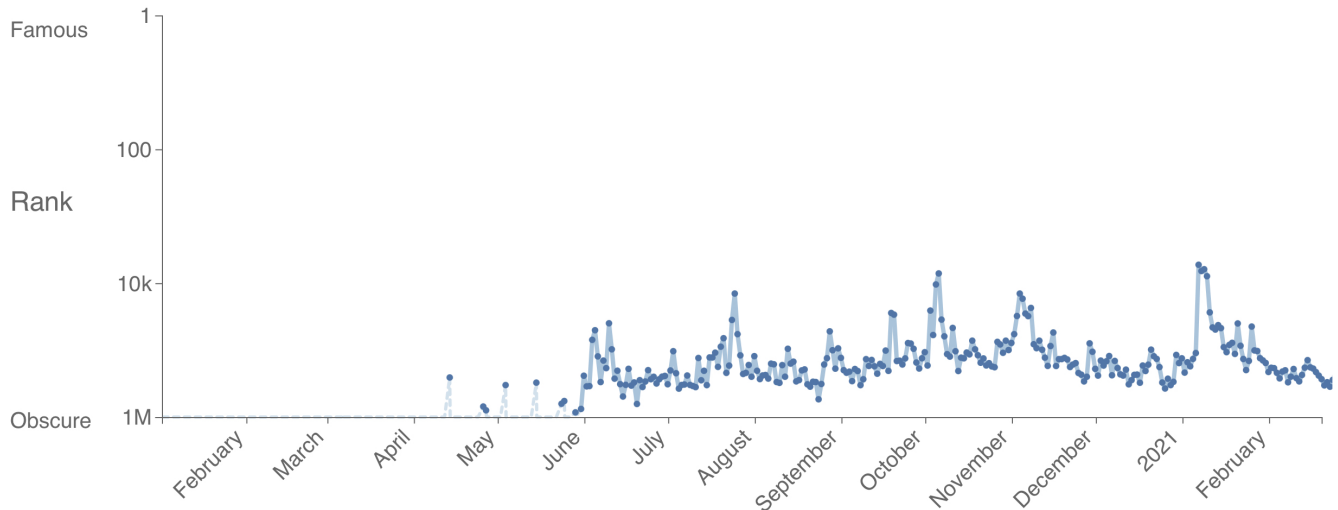
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FIG. 1. Daily ranking of the term "doomscrolling" based on usage in English tweets on Twitter from January 1, 2020 through March 21, 2021. Vertical axis is logarithmic scale. The time series demonstrates the emergence and persistent use of term on social media. Doomscrolling arose in the days following the murder of George Floyd. Various peaks appeared subsequently, particularly after the US presidential election on November 4, 2020 and the storming of the Capitol by Trump supporters on January 6, 2021. Data obtained from the Storywrangler project (Alshaabi et al., 2020): https://storywrangling.org/?ngrams=doomscrolling&metric=freq&start=2020-01-01&end=2021-03-21&rt=true.

has come from events of mass trauma. Regular exposure to media coverage of the Boston Marathon bombing was associated with increased acute stress symptoms (Holman et al., 2014). However, mass traumas are often acute events, whereas the COVID-19 pandemic was an ongoing, year-long stressor. The persistent nature of the pandemic required individuals to remain informed via media about ongoing changes to daily living whereas media after acute events largely reported on prior events. This difference may alter the psychological impact of regularly accessing media as the information is pertinent to an ongoing event.

Moreover, little is known about the longitudinal impact of sustained media exposure on mental health during an ongoing disaster. Although much research is ongoing, several studies have demonstrated a positive relation between media exposure related to COVID-19 and symptoms of depression and anxiety in samples obtained in China and Spain (Fullana et al., 2020; Gao et al., 2020; Wang et al., 2020). These studies were cross sectional and used retrospective reports of media use. Although this provides an overview of the association between an ongoing public health stressor and media exposure, it does not provide information as to how daily exposure influences fluctuations in mental health symptoms. With mobile devices, individuals have access to news media on demand with a near limitless supply of information via traditional and social media outlets. Longitudinal methods that evaluate daily access, such as daily diary studies, are needed to examine this relation. Such studies allow for an examination of the association

between daily media access and daily mental health. Given the ongoing nature of the pandemic, this approach is needed to determine if changes in psychopathology related to media exposure were temporary, such that they faded quickly, or persistent, such that cumulative exposure gradually increased severity. Understanding this dynamic relation is critical to guiding public health messaging and clinical guidance.

Those with histories of childhood maltreatment may be more susceptible to the negative impacts of repeated media exposure. Several studies have suggested that those with histories of childhood maltreatment are more likely to engage in problematic internet use (Yates et al., 2012; Hsieh et al., 2016). The association between social media use among those with maltreatment histories has been examined less frequently. One study reported a relation between more problematic social media use and childhood maltreatment severity (Worsley et al., 2018). The increased social media use among those with such histories was proposed as a coping mechanism to manage distress. That is, those with histories of childhood maltreatment may have fewer coping strategies available in times of distress and thus turn to social media. Social media, however, may exacerbate their symptoms given the overall negative valence of much of the available content. Indeed, those with PTSD have been shown to engage in more problematic mobile phone use (Contractor et al., 2019). A limitation of this work is the reliance on retrospective self-reports of social media use as opposed to longitudinal assessments of actual media use. Thus, it remains unclear as to the extent that actu-

	M	SD
Age	18.89	0.90
Baseline Pandemic Depression (PHQ-9)	9.45	6.45
Baseline Pandemic PTSD (PCL-5)	26.26	19.02
Childhood Trauma Questionnaire Total Score	44.32	17.74

	N	%
Sex (Female)	53	86.7
Transgender	5	8.2
Race		
White	55	90.2
African American	2	3.3
Asian American	1	1.6
Biracial	3	4.9
Annual Household Income		
< $30,000	21	34.4
$30,000–$50,000	12	19.7
> $50,000	24	39.3
History of Major Depressive Episodes	16	26.2
History of PTSD	25	41.0

TABLE I. Descriptive information about the sample ($N = 61$).

al social media use during the pandemic was associated with changes in psychopathology among those with histories of childhood maltreatment.

The present study evaluated the association between daily exposure to pandemic-related media and symptom severity for depression and posttraumatic stress disorder (PTSD). The present study used a daily diary methodology to measure this relation over 30 days. Furthermore, comparisons were made between social media and traditional media given the potential for social media to have a stronger negative valence than traditional media. It was hypothesized that daily exposure to pandemic-related news media and social media would be associated with elevated symptom severity for all three disorders. It was also hypothesized that the magnitude of the increase in symptom severity after viewing media would be moderated by the severity of childhood maltreatment history. To determine the extent that those with elevated psychopathology may be more prone to turn to social media, the relation between baseline psychopathology and overall social and traditional media use during the first month of the pandemic was examined. Finally, the cumulative effect of media consumption on PTSD and depression symptoms during the month-long assessment period was also evaluated.

I. METHODS

A. Participants

Participants were 61 young adults ($M_{years} = 18.89$, $SD_{years} = 0.90$) who participated in a larger study on the impact of childhood maltreatment on neurological mechanisms of psychopathology (Tab. I). Participants were recruited for the parent study as those with elevated histories of childhood maltreatment ($n = 41$) and those with minimal exposure to childhood maltreatment ($n = 20$). Inclusion criteria required a score on the Adverse Childhood Experiences Scale (ACEs) greater than 3 and experiencing childhood maltreatment prior to age 18. Childhood maltreatment was defined as an experience that would have warranted disclosure to child protective services. The childhood maltreatment status was verified by a trained research assistant during a diagnostic interview. For those in the comparison group, inclusion criteria required a score on the ACES < 3 and lack of any identifiable childhood maltreatment during the diagnostic interview. All participants were aged 18-20 years. Exclusion criteria included having a psychotropic medication change within the past two months.

B. Measures

1. MINI International Neuropsychiatric Interview for the DSM 5 (MINI: Sheehan et al., 1998).

The MINI is a semi-structured interview that assessed the presence of mental health disorders according to the DSM 5. The MINI was administered prior to the start of the pandemic as part of the parent study. For the present study, the MINI was used to assess a history of major depressive disorder (MDD). Interviews were administered by trained research assistants. A licensed clinical psychologist examined concordance rates for 20% of interviews. Agreement was found to be 100%.

2. Clinician Administered PTSD Scale (CAPS; Weathers et al., 2018).

The CAPS is the gold standard clinical interview for the assessment of PTSD in adult samples. The CAPS was administered prior to the start of the pandemic as part of the parent study to determine the presence of a PTSD diagnosis to all participants. Interviews were administered by trained research assistants. A licensed clinical psychologist examined concordance rates for 20% of interviews. Agreement was found to be 100%.

3. *Childhood Trauma Questionnaire (CTQ: Bernstein et al., 1997).*

The CTQ is a 28-item self-report scale that assesses five categories of negative childhood experiences: emotional neglect, emotional abuse, physical neglect, physical abuse, and sexual abuse, and has excellent psychometric properties. A total scale with scores ranging from 5-125 is obtained with higher scores indicating greater abuse. Internal consistency for the CTQ was excellent in the current sample, $\alpha = .91$.

4. *Patient Health Questionnaire – 9 (PHQ-9: Kroenke et al., 2001).*

The PHQ-9 is a validated measure of depressive symptoms. Symptoms of depression are rated on a 0-3 scale with higher scores indicating more severe depression. Internal consistency for the PHQ-9 was excellent, α's > .91.

5. *PTSD Checklist for DSM-5 (PCL-5; Bovin et al., 2016)*

The PCL-5 is a 20-item self-report measure of PTSD symptoms. Ratings are made on a 0-4 scale, with higher scores indicating more severe PTSD symptoms. Internal consistency for the PCL- was excellent, α's > .95.

6. *Media Exposure*

Media exposure was measured with a multi-choice question – "How did you get any news about the coronavirus today?" The choices were: Social media (Instagram, Twitter, Facebook, etc.), television, radio, podcast, newspaper or newspaper app or newspaper website, phone news alert, and "I didn't get any news today about the coronavirus". Participants were allowed to select multiple modalities for a given day. For the present study, this question was dichotomized to no access and access. Cumulative exposure was calculated by using the cumulative sum of the days of media exposure for the 30-day assessment period.

C. Procedure

Data collection for the present study occurred in two phases. The first phase was conducted as part of a larger study examining the association between childhood maltreatment and psychopathology in young adults. Participants were recruited from the community via flyers, online advertisements, and partnerships with local advocacy agencies that work with youth with maltreatment histories. Recruitment occurred from July 18th, 2018 to February 13th, 2020. A total of 74 participants completed study procedures. Participants completed the MINI, CAPS, and CTQ as part of a larger assessment battery for this phase.

The first cases of COVID-19 in Vermont, where the study was conducted, was recorded on March 7th, 2020. Businesses and schools closed, and stay-at-home orders were issued between March 10th and March 24th, 2020. From April 3rd, 2020 to April 9th, 2020, all participants were contacted to complete a measure battery that included the baseline PHQ-9 and PCL-5. Of those contacted, 62 (83.8%) completed the assessment. Of those who did not participate, 2 (2.7%) declined and 10 (13.5%) did not respond. There were no significant differences on pre-pandemic measures between those who responded and those who did not.

Participants were then invited to participate in the second phase; a daily diary study in which they completed a daily assessment that included a PHQ-9, PCL-5, and the media access question for 30 days. Measures were anchored to that specific day. One participant completed only 1 assessment and was removed from all analyses, resulting in an analyzed sample of 61. A total of 1,117 responses were recorded. Notifications to complete the daily survey were sent via automated text using the Survey Signal platform (Chicago, IL). Notifications were sent randomly between 7:00PM and 8:30PM with a reminder sent 2 hours later if responses were not provided within that timeframe. The notification text included a link to an online survey that was administered via Qualtrics. In total, participants had until 7AM the following day to complete the survey.

D. Data Analytic Plan

The hypotheses about daily media exposure were examined within a multilevel model framework with separate models for each outcome (depression, PTSD). The outcomes of interest were daily symptom scores. Liner and quadratic terms were first evaluated to determine the trajectory that best characterized the time-series. The fixed effects of interest were the slope reflecting linear change in outcomes for the assessment period, the time-varying predictor of access to COVID-19-related social and news media, and the interactions between media access and childhood maltreatment. Additional variables included as covariates were pre-COVID presence diagnosis of MDD and PTSD, and gender. Time was scaled in days with 0 fixed to the first day of the assessment period. A random effect for intercept was included.

The relation between baseline psychopathology and cummulative media use was assessed with a linear regression model. Predictors were baseline depression and PTSD symptoms as well as history of childhood maltreatment. The outcome was the number of days in which social media and traditional media were accessed. Separate models were used for each outcome. Covari-

Depression (PHQ-9)

Variable	b	SE	p
Time	-0.05	0.01	<.001
Social Media Access	-0.96	0.66	.143
Traditional News Media Access	0.40	0.62	.518
CTQ	0.05	0.29	0.074
Baseline Depression (PHQ-9)	0.54	0.08	<.001
Pre-COVID Diagnosis of MDD	-0.07	0.97	0.941
Male Gender	-0.63	1.14	.582
Social Media Access * CTQ	0.03	0.01	.035
Traditional News Media Access * CTQ	-0.01	0.01	.354

PTSD (PCL-5)

Variable	b	SE	p
Time	-0.08	0.03	.008
Social Media Access	-3.78	1.58	.017
Traditional News Media Access	1.69	1.50	.258
CTQ	0.05	0.08	.502
Baseline PTSD (PCL-5)	0.48	0.07	<.001
Pre-COVID Diagnosis of PTSD	3.97	2.50	.118
Male Gender	-3.90	2.85	.177
Social Media Access * CTQ	0.11	0.04	.002
Traditional News Media Access * CTQ	-0.06	0.03	.074

TABLE II. Multilevel models with pandemic-related media access predicting depression and PTSD during the first 30 Days of the COVID-19 pandemic.

ates included pre-pandemic diagnoses, childhood maltreatment severity, and gender.

To assess hypotheses about the effect of cumulative exposure on psychophatology, a linear regression model was used. Outcomes were severity of depression and PTSD at 1-month follow-up while controlling for symptom severity at the start of the pandemic. Predictors of interest included the sum of days of access to social media and sum of access to other news media. Covariates included baseline levels of psychopathology at the start of the pandemic, a pre-pandemic diagnosis of major depressive episodes or PTSD, gender, and childhood trauma severity.

II. RESULTS

An initial model suggested that depression (b = -0.05, p ¡ .001) and PTSD (b = -0.08, p = .012) symptoms significantly decreased during the 30-day assessment period. Childhood maltreatment was associated with depression (b = 0.16, p < .001) and PTSD (b = 0.31, p < .001) symptom severity. A prior diagnosis of PTSD was associated with elevated PTSD symptoms (b = 9.90, p = .002). However, a prior diagnosis of major depressive episodes was unrelated to current symptoms. Gender was not associated with either outcome.

COVID-19 related social media was accessed on 44.6% of the assessments whereas news media was accessed for 34.3% of the assessments. Newspapers were the most
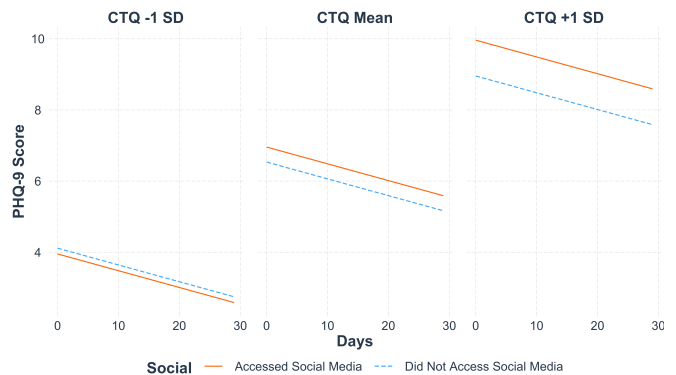

FIG. 2. Model implied interaction of the association between PHQ-9 (depression) and social media access at different levels of CTQ scores (childhood maltreatment). The left panel corresponds to CTQ scores 1 standard deviation below the mean, the central panel corresponds to CTQ scores at the mean, and the right panel corresponds to CTQ scores 1 standard deviation above the mean.

accessed traditional media source (23.7%), followed by television (16.4%), Radio (3.7%), and Podcasts (2.2%). Given this dichotomy, non-social media sources were aggregated into a traditional media variable.

Multilevel models then examined the role of media access and childhood maltreatment on psychopathology (Tab. II). For depression, there was a significant interaction between childhood maltreatment histories and social media access (b = 0.03, p = .035). Probing this interaction at the different levels of social media access indicated that depression was elevated on days when social media was accessed and that this increase was greater for those with more severe childhood maltreatment histories (Fig. 2). The mean effect size of accessing social media on depression was d = 0.44, 95% CI: 0.31 to 0.57.

For PTSD, there was also a significant interaction between childhood maltreatment histories and social media access (b = 0.11, p =.002). Probing this interaction at the levels of social media access revealed a similar pattern of findings to that of depression. That is, social media was associated with elevated PTSD symptoms and the magnitude of this increase was associated with the severity of childhood maltreatment history (Fig. 3). The mean effect size of accessing social media on PTSD was d = 0.36, 95% CI: 0.21 to 0.52. There were no significant main effects or an interaction between traditional media and childhood maltreatment history for depression or PTSD.

The association between baseline psychopathology and number of days of social media and traditional media access was then examined. Baseline PTSD (b = 0.17, SE = 0.07, p = .012) and depression (b = 0.58, SE = 0.17, p = .001) were positively associated with social media use during the start of the pandemic (Tab. III). There were no main effects for childhood maltreatment history or significant interactions with baseline psychopathology. There were no significant associations between psy-
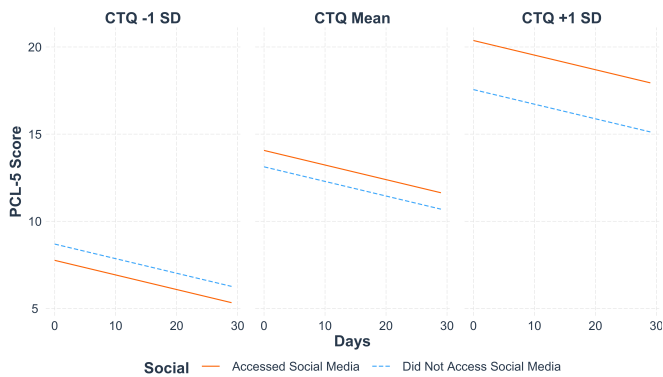
FIG. 3. Model implied interaction of the association between PTSD (PCL-5) and social media access at different levels of CTQ scores (childhood maltreatment). The left figure corresponds to CTQ scores 1 standard deviation below the mean, the central figure corresponds to CTQ scores at the mean, and the right panel corresponds to CTQ scores 1 standard deviation above the mean.

Depression (PHQ-9)

Variable	b	SE	p
Baseline Depression (PHQ-9)	0.58	0.17	.001
CTQ	-0.09	0.06	.189
Pre-COVID Diagnosis of Major Depression	-4.31	2.36	.074
Male Gender	0.28	2.73	.920

PTSD (PCL-5)

Variable	b	SE	p
Baseline PTSD (PCL-5)	0.17	0.07	.012
CTQ	-0.15	0.08	.064
Pre-COVID Diagnosis of PTSD	0.69	2.72	.800
Male Gender	-1.57	2.97	.600

TABLE III. Association between depression and PTSD at the start of the pandemic and frequency of social media and traditional media access during the 30-day assessment period.

chopathology and number of days of traditional media access. Finally, the influence of cumulative exposure on psychopathology was assessed. There were no significant effects of cumulative exposure to social media or traditional media on changes in PTSD or depression during this month. Furthermore, interactions between childhood maltreatment history and cumulative exposure to social media were not significant.

III. DISCUSSION

The results of the present study showed an association between daily exposure to pandemic-related social media and elevated depression and PTSD symptoms during the initial months of the COVID-19 pandemic in the United States. This relation was moderated by a history of childhood maltreatment such that those with a more severe history experienced a greater increase. This set of associations was not found for exposure to traditional media during the same period. Furthermore, social media was accessed more frequently than traditional media. Taken together, these findings suggest that exposure to social media during the pandemic may have exacerbated mental health conditions for those with prior vulnerabilities (Holmes et al., 2020).

The association between social media access and psychopathology among those with childhood maltreatment histories is likely bidirectional. Those with elevated depression and PTSD at the start of the pandemic accessed social media more frequently. Prior work on the use of social media among those with maltreatment histories posited that overuse of social media may be a coping strategy to alleviate distress (Worsley et al., 2018). Those with histories of childhood maltreatment have been shown to more often rely on maladaptive coping strategies (Perlman et al., 2016). Thus, those with elevated psychopathology at the start the pandemic may have turned to social media more regularly for information about the pandemic as well as a means to reduce symptoms of psychopathology.

The social amplification of risk framework also suggests the opposite direction—that accessing social media may exacerbate psychopathology. The study was conducted was early in the pandemic when new restrictions were being placed on travel, businesses and schools were closing, and social distancing measures were put into effect. It is likely that the social media viewed during the study period had a strong negative valence that in turn amplified the perception of health risk as well as negative affect and ultimately increased symptoms. A recent cross-sectional study indicated that exposure to pandemic-related social media increased negative affect, which in turn increased symptoms of depression and traumatic stress (Zhao and Zhou, 2020). Given the strong association between negative affect and childhood maltreatment, those with such histories are posited to be more vulnerable to the onset of negative affect associated with social media access (Teicher et al., 2006; Nanni et al., 2012). More nuanced work is needed to evaluate the strength and directionality of these relations to better understand the bidirectional relation between social media access and psychopathology.

This work has implications for the dissemination of public health messaging. First, there was no relation between psychopathology and exposure to traditional media. Accessing public health information via traditional media sources may impose less psychological stress than via social media. Traditional media sources typically often present a single item at a time for the reader to review. Even when reviewing a newspaper, either in print or on a digital platform, the majority of articles displayed are related to a single topic and may be of limited personal relevance. Social media, in contrast, displays information on a range of topics and the user often has a personal connection with the stories or the authors.

As such, relying on social media for public health messaging may come at a cost to the user in that they are likely to be exposed to a range of additional information that may increase their current level of depression and PTSD. However, social media was accessed considerably more often than traditional media in the current sample. Relying on traditional media for public health campaigns may have limited reach for younger individuals. Information disseminated via public health agencies and the news media would benefit from framing messages that are risk-consistent to minimize their potential to elicit distress. Related work on messaging has shown that individuals prefer positively framed messages when directed at changing personal behavior (Muench et al., 2014), which is important for promoting COVID-19 related behavior change.

These findings also have implications for clinical work with those with maltreatment histories. Clinicians should assess the amount of social media that clients consume related to the pandemic, particularly when depression or PTSD symptoms are reported. Specific plans and strategies to reduce social media consumption may be useful. Helpful strategies may include turning off notifications on mobile devices to minimize stress-inducing intrusions as well as engaging in safe and pleasurable activities without a mobile device. Planned breaks from COVID-19 related media may be beneficial as well.

The study had several limitations of note. First, the amount or duration of media consumed per day was not assessed and so it is unclear if more consumption in a given day is associated with greater changes in PTSD and depression. Objective data on media consumption should be collected via mobile devices (e.g., ScreenTime) in future work. Second, the sample was majority female and entirely composed of young adults. It is unclear how these findings may generalize to a sample of older adults who may be affected by the pandemic differently, such as concerns about childcare and the presence of chronic health conditions. Third, the assessment period was at the early phase of the pandemic at the US. More work is needed to determine how these relations changed as the pandemic continued.

The results from the present study demonstrated that regular social media exposure is associated with an increase in depression and PTSD, even when accounting for pre-pandemic mental health. This result highlights a major challenge imposed by the COVID-19 pandemic – remaining informed is associated with a mental cost. Strategies to limit doomscrolling and engage in positive activities may offset the detrimental effect of engaging in these symptoms. Exploring the interactive effects of media exposure, related stressors, and protective factors on mental health is imperative to determining the broader impact of the pandemic and how to respond to these events.

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