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Is Ignorance Bliss: The Relationship Between News Exposure and Mental Health

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News exposure has yet to be studied as a daily hassle contributing to anxiety. This study aimed to (1) establish if a relationship between news exposure and anxiety levels exists, (2) evaluate whether anxiety levels change over time in relation to news exposure, and (3) establish if emotion regulation moderates these relationships. Participants reported their news exposure, psychological symptoms, intolerance of uncertainty, psychological flexibility, and perseverative thinking. Five hundred and two participants were in the initial sample, followed by 304 in Wave 2 and 305 in Wave 3. About half of the participants were daily consumers of news. Controlling for age, there was no direct correlation between news exposure and anxiety levels concurrently or prospectively. Participants' access to news did not significantly differ between waves. Wave 1 news-related variables did not predict anxiety at Wave 1 or 2. Overall, participants who experienced greater enjoyment from the news were less stressed and had greater psychological flexibility. Prospectively, they were less likely to be depressed, controlling for initial levels. Greater exposure and less news enjoyment predicted more intolerance of uncertainty prospectively. Overall, those who reported high levels of depression reported lower levels of engagement and enjoyment from the news while having higher intolerance of uncertainty, perseverative thinking, and less psychological flexibility. Although our findings did not support our hypothesis about anxiety, news exposure and level of enjoyment from news predicted other areas of psychological distress. This indicates a need for more nuanced research on the relationship between news exposure and mental health outcomes.

Keywords: news, daily hassles, depression, anxiety, uncertainty

According to the Anxiety and Depression Association of America, anxiety disorders are the most common mental illness in the United States, affecting approximately 18% of the adult population yearly (2019). Kessler and colleagues (2012) found that in the United States, the lifetime prevalence of anxiety disorders is estimated to be as high as 33.7%, and generalized anxiety disorder is estimated to be 9%. Additionally, the World Health Organization estimates the global prevalence of anxiety disorders at 3.4% (World Health Organization, 2017). This large percentage affects individuals, their families, and the community at large. In 2002 the economic burden of anxiety disorders was estimated to be over $42 billion per year, including medical costs and loss of work productivity (Wittchen, 2002), and has since risen to an estimated $56 billion (Chisholm et al., 2016). Previous research has highlighted several risk factors for developing anxiety disorders. While all major anxiety disorders are linked to genetic predisposition (Hettema et al., 2005), heritability is only part of the picture for anxiety disorders. Along with genetics, environmental factors also contribute to the development of an anxiety disorder. These can include life stressors such as childhood adversity, childhood sexual assault, or the loss of a significant family member through death or separation, all of which could contribute to an increased vulnerability to anxiety disorders (Hettema et al., 2005).

Concerning environmental factors, daily stressors could also contribute to level of anxiety. Past research has determined that over and above the impact of major life events, daily hassles—

small, annoying, but recurrent life demands—might be even more influential on an individual's mood and anxiety levels (Russell & Davey, 1993). Furthermore, recent research supports the idea that cumulative stress, such as daily hassles, is predictive of psychological disorders such as depression. Vinkers and colleagues (2014) investigated cumulative stress, daily hassles, childhood maltreatment, and major life events as indicators of major depressive disorder (MDD) later in life. This study not only supported the notion that cumulative stress is significantly related to MDD but also found that this relationship is influenced by a person's neuroticism (Vinkers et al., 2014). Specifically, Vinkers and colleagues found that cumulative stress was more predictive of depression in those who reported high neuroticism, suggesting that certain traits may predispose people to react to stress in a way that may lead to psychological disorders. As news exposure is a daily occurrence for most people and can often have a negative emotional tone, it may serve in a similar capacity to other daily stressors that contribute to cumulative stress.

With the rise in social media (e.g., networking sites, Facebook, Instagram, Twitter) use, there has been a growing interest in how the use of technology, particularly social media, affects mental health. In the United States, approximately 90% of young adults use social media, and the majority use social media at least once a day (Pew Research Center, 2015). Findings have been mixed regarding whether social media is a benefit or detriment to mental health and overall life satisfaction. Whereas some studies support social media use as a contributor to increased self-esteem and social connectedness, other research has indicated that more time spent on social media led to increases in depression and anxiety symptoms (Andreassen et al., 2016; Block et al., 2014; Kross et al., 2013; Lin et al., 2016; Woods & Scott, 2016, see Primack, 2017).

Primack and colleagues (2017) investigated the use of multiple platforms of social media in relation to overall well-being. The researchers found that, when adjusting for time spent on social media, both depression and anxiety scores were positively correlated with the increased number of social media platforms used (Primack, 2017). One explanation for this relationship is that the use of multiple social media platforms, similar to multitasking, produces comparable negative effects (Primack, 2017). Previous research supports multitasking's relationship to increased anxiety and depression levels (Becker et al., 2013). Given this, in our study, we incorporated the number of sources of current events—like newspapers, television programs, and websites—as a factor in calculating news exposure.

While social media's influence on mental health has been a popular topic in recent years, recent research has begun to tease apart the information to which people are exposed. Researchers addressed the non-social features of smartphone use in relation to depression, anxiety, and stress (Elhai et al., 2017). Elhai and colleagues (2017) separated smartphone use into social use and non-social use, with the latter category including news consumption and entertainment. They found that non-social smartphone use was related to anxiety levels; however, in disagreement with Primack (2017), they found that social smartphone use was inversely related to depression (Elhai et al., 2017). Notably, to examine the mental health impact of smartphone use, Elhai and colleagues (2017) used Mechanical Turk (MTurk) to recruit a large, diverse sample of participants. While they took a cross-sectional approach to investigate their variables, they did not examine the impact of news consumption on anxiety levels over time.

Other related research also supports the idea that exposure to news may be a possible risk factor for psychological problems. Much of the coverage of current events outlets tend to include reports of crimes and other violence. One study addressed the impact of violent images and found that frequency rather than the duration of exposure was more predictive of mental health distress (Feinstein et al., 2014). It is thus likely that people who are more

frequently exposed to current events coverage would be affected by violent or anxiety-provoking images that may contribute to distress.

Notably, whereas almost everyone is exposed to current events to some extent, people can control their exposure by seeking out or avoiding particular news outlets. Valentino and colleagues (2009) found that, in general, there is a relationship between having a tendency for information seeking and anxiety levels. However, the reason for seeking information mattered. Specifically, their research found that information seeking that leads to the answer of an anxiety-provoking topic could resolve anxiety; however, superfluous information that does not lead to the resolution of a problem may cause further anxiety (Valentino et al., 2009). As news reports often present negative, anxiety-provoking information that does not necessarily resolve questions, the news could cause increases in anxiety. In fact, studies examining this cognitive style, called perseverative thinking, have found that nonclinical populations have lower scores on negative perseverative thinking compared to those diagnosed with depression or anxiety disorders (Ehring et al., 2011).

People who have difficulty managing their emotions and tolerating the uncertainty of daily life may be particularly vulnerable to the negative effects of news exposure. Thus, it is important to address whether excessive news exposure is a particular problem for those who have poorer emotion regulation ability. Emotional regulation is a range of activities, including the ability to self-monitor, interpret, and alter internal and external emotional expressions in an effort to respond to environmental demands in an appropriate manner (Klemanski et al., 2017). Klemanski and colleagues (2017) found that adolescents who had increased social anxiety and symptoms of depression self-reported less emotional awareness and decreased emotion management strategies. This finding supports Gross's (1998) original framework suggesting that difficulties in emotion regulation could sustain disorders such as anxiety. One way to capture emotional regulation is through intolerance of uncertainty (IU). Previous research has established that intolerance of uncertainty is related to anxiety disorders, with the majority of research supporting IU's relationship specifically to generalized anxiety disorder (GAD) (Boswell et al., 2013).

As a major component of GAD is worrying, research shows that worrying may be a function of lower psychological flexibility described as experiential avoidance (Hayes et al., 2004). For instance, those who take part in experiential avoidance — avoidance of emotions, thoughts, physical sensations, memories, and so on — may have more difficulty with the uncertainty of news, and this type of incomplete information could induce greater anxiety (Hayes et al., 2004). If a person has previously watched the news and experienced anxiety, they might categorize news as an experience worth avoiding in the future, and therefore be more distressed when exposed to it without seeking it. Previous research indicates that perseverative thinking – repetitive thinking – is common in those with GAD and leads to further distress (Ruscio et al., 2015). However, this relationship may be maintained in those with no previous or current psychopathology. Ruscio and colleagues (2015) found that even among nonclinical populations, those who engaged in perseverative thinking experienced worse outcomes than those who did not (Ruscio et al., 2015). As this study focuses on the general population, stress induced by information or news specifically could affect those who ruminate more so than those who do not.

The Present Study

Although the impact of social media on mental health has been examined in prior research, there is little literature that addresses the possible effects of chronic news exposure. To tease apart participant exposure to varying types of information, we created a study-specific questionnaire to ask about news behaviors. This questionnaire differentiated between social media and current event exposure. We also asked about accessing news,

sources, reasons for seeking, avoidance and seeking behavior, and enjoyment from the news. We made these various distinctions to better understand what aspects, if any, of news exposure impacted the psychological well-being of participants and to understand any moderators of this relationship.

This is an important area of research, given that people have more formats to access news today than ever before and that the news often reports negative or distressing information. This study examined the relationship between news exposure and psychological distress. Similar to Elhai and colleagues (2017), we used Mechanical Turk to survey a large sample of adults over three waves over three months. Given the existing literature on the impact of daily hassles and social media use, we hypothesized that greater news exposure would predict higher anxiety levels concurrently and prospectively but that the use of more adaptive emotion regulation strategies may serve as a protective factor.

The current study had three main aims. The first aim was to establish if there is a relationship between news exposure and anxiety levels by using a cross-sectional approach with the data from the first time point. The second was to evaluate whether anxiety levels changed over time in relation to news exposure. By using data from multiple time points, we were able to longitudinally evaluate whether anxiety levels changed over time in relation to initial news exposure. We expected that people with higher initial levels of news exposure would be more likely to experience increases in anxiety levels over time, as the news may have a cumulative impact as a chronic stressor. Our last aim was to establish if emotion regulation moderates these relationships. Specifically, we hypothesized that those who use more adaptive emotion regulation strategies (i.e., those who are more tolerant of uncertainty, are less likely to engage in perseverative thinking, and are more accepting of their experiences) would be less affected by the information they were exposed to, and their news exposure would be less predictive of their psychological distress. As news can create a sense of uncertainty about the world, as it often does not provide a full picture of a situation and creates doubts about safety, we hypothesized that those who have less tolerance for uncertainty would be more distressed when more exposed to the news. Similarly, we expected that those who experience more intrusive and repetitive negative thoughts, as well as those who tend to avoid unpleasant experiences, would be more affected by news exposure.

Method

Participants

We collected data from participants in three waves over three months. During Wave 1, 601 participants began our survey; however, 99 participants were excluded as they failed a simple inattention test (e.g., "please click 'Agree' for this item") or did not complete the survey in its entirety. Our final sample for Wave 1 was 502 participants (320 women, 181 men, and 1 participant who identified as intersex), with ages ranging from 18 to 77 years (*Mage* = 37.26 years, *SD* = 12.93). With regard to gender identity, 316 identified as female, 179 identified as male, three identified as transgender, one identified as intersex, and three chose not to identify. Of our sample, 26.1% described themselves as a student, while 15.3% reported being unemployed, and 67.8% worked at least 21 to 40 plus hours a week. For full demographics of Wave 1, see Table 1.

Procedure

Participants were recruited via TurkPrime, which utilizes members from Amazon's Mechanical Turk (MTurk). Once participants accepted our Human Intelligence Task (HIT) from TurkPrime, they were directed to complete a survey through a secure online data collection program called Qualtrics (Qualtrics, Provo, UT). During our initial recruitment phase, we had a bounce rate of 15% and a completion rate of 73%. The bounce rate was calculated based on how many people clicked on our survey description in MTurk and chose not to par-

Table 1

Demographics of Wave 1

Race (%)		
	Caucasian/White	80.1
	African American/Black	9
	Asian	8.6
	Latinx/Hispanic	5.8
	Multiracial	2
	Native American/Alaska Native	1.4
	Otherwise written in	1
	Native Hawaiian/Pacific Islander	0.4
	Middle-Eastern/North African	0.4
Marital Status (%)		
	Married	44.6
	Single	33.5
	Dating Seriously	10.8
	Divorced	7.6
	Engaged	3.8
	Dating Casually	3.4
	Widowed	2
Income (%)		
	<$15,000	9.6
	$15,000-25,000	14.3
	$25,000-35,000	14.7
	$35,000-50,000	14.7
	$50,000-75,000	10.2
	>$100,000	12.8
Education (%)		
	Some high school	8
	High school diploma/GED	12
	Some college	41.6
	Bachelor's degree	32.9
	Professional / Graduate degree	11.8

Note. Percentages for Race are greater than 100 as participants were able to select multiple responses.

ticipate in the study. The completion rate was the percentage of individuals who accepted the HIT and successfully submitted a code for compensation. For each of the three waves, the HIT consisted of an online informed consent, followed by a survey that included demographic information, a study-specific news exposure questionnaire that asked about current event news, as well as social media use, to gauge the level of information exposure, and questionnaires to understand participant's psychological distress and ability to regulate emotions. Once participants completed all the questionnaires in the survey, they were provided with a secret code to enter on MTurk to receive compensation.

We invited participants to complete our second and third waves via TurkPrime through their unique WorkerID, which allowed us to maintain their anonymity. All participants who completed Wave 1 in its entirety were included in the invitation lists for Wave 2 and Wave 3. On average, the waves were open for 16 days, with approximately a month in between each of the waves. Wave 1 participants were compensated $0.15, Wave 2 participants were compensated $0.35, and Wave 3 participants were compensated $0.50, for a total of $1.00 if participants completed all three waves. Notably, for the second and third waves, we sent reminder invitations before the close of the wave to those who were eligible to complete our study. Several participants provided helpful feedback on the survey, and we granted them an unannounced bonus ($0.50). After the third wave, we exported all the data into a format readable by the program Statistical Package for the Social Sciences (SPSS), which we used to analyze our data. Later in analyses, we used an SPSS macro program called ModText (http://davidakenny.net/dtt/moderate.htm), which allowed us to conduct and interpret interactions (Kenny, 2010). The Institutional Review Board approved all procedures.

Measures

News Exposure Questionnaire

To gauge how much information exposure our participants were receiving, we created our questionnaire based on prior studies of social media (see Correa et al., 2010), but instead focused on current events exposure to measure areas of news exposure, effort, and enjoyment. At each of our time points, we asked participants to reflect on the past week and answer about specific information exposure (see Appendix A for News Exposure Questionnaire). We asked on how many days of the past week they posted/read/listened to Facebook, Twitter, Instagram, News (i.e., current events), and how many times a day they accessed the news (e.g., once, two to three times, four to six times, or seven or more times). Social Media Use was calculated by the sum of Facebook use, Twitter use, and Instagram use. Information Use was calculated by summing Facebook use, Twitter use, Instagram use, and News use. We also broke down sources of current events exposure into different categories, including "morning/evening news programs (e.g., NBC, Fox News)," "entertainment news programs (e.g., TMZ, E! News)," "Newspapers (e.g., The New York Times)," "Radio Stations," "Social media (e.g., Twitter, Facebook)," "Websites (e.g., bbc.com)," and "Phone or tablet applications (e.g., Apple News, Flipboard)." We also asked participants to rank their preference order from the aforementioned sources from one (most preferred) to seven (least preferred). To measure participants' reason for news exposure, we asked why they accessed the news and provided them with the options "seek out specific information (e.g., to answer a particular question)," "to stay informed," "as part of my routine," and "to have things to talk about with others."

For analysis, we created three sum scores to understand the participants' experience with the news. News Exposure is a composite score that combined the variables of News Use, News Per Day, and News Types assessed by the questionnaire. News Effort was determined by the degree to which the participants sought out or avoided the news based on an 8-point scale, with the lowest

point representing "I avoided the news" and the highest point representing "I sought out the news." These scores were centered such that negative scores suggested "news avoidance" and positive scores suggested "seeking behavior." News Enjoyment was determined by the level participants reported enjoyment from the news based on a 5-point scale from one (none at all) to five (a great deal). The sum scores News Effort and News Enjoyment helped us to better understand participants' relationship in engaging with the news and their emotional response to News Exposure.

Psychological Distress

The Depression Anxiety Stress Scale (DASS-21; Antony et al., 1998) was used to evaluate participants' mental health with regard to depression, anxiety, and stress. The DASS-21 is a psychometrically validated questionnaire with advantages to the original 42-item version, including fewer questions, clearer factor structure, and a less inter-factor correlation (Antony et al., 1998). The DASS is scored on a 4-point scale from zero (never) to three (almost always), and the sums of respective scores can be doubled to compare to the extended DASS-42. The depression subscale consisted of seven items, including statements like "I found it difficult to work up the initiative to do things," and scores greater than nine are indicative of above normal. The anxiety subscale consisted of seven items, including statements like "I felt scared without any good reason," and scores above seven are considered above normal. The stress subscale consisted of seven items, including statements like "I tended to over-react to situations," and scores greater than 14 are considered above normal based on norms established by Antony et al. (1998). We calculated the internal consistency of the measure using Cronbach's alphas, which demonstrated good internal consistency for the total DASS-21 distress score ($\alpha = .96$), as well as each subscale: depression ($\alpha = .94$), anxiety ($\alpha = .89$), and stress ($\alpha = .91$).

Psychological Flexibility

Participants completed the Acceptance & Action Questionnaire-II (AAQ-II; Bond et al., 2004) to evaluate their propensity to accept or avoid experiences as a measure of psychological flexibility. While the AAQ-II measures the same concepts as the original AAQ-I ($r = .97$), it has better psychometric consistency (Bond et al., 2011). The AAQ-II contains seven questions and is scored on a 7-point scale from one (never true) to seven (always true). The seven items include statements like "I am afraid of my feelings" and "worries get in the way of my success." The scores of each question are usually summed such that higher scores indicate a lower level of psychological flexibility. For ease of interpretation, we reverse coded the scores such that higher scores presented greater acceptance (i.e., psychological flexibility). Notably, Bond and colleagues (2011) determined a 3- and 12-month test-retest reliability of .81 and .79, respectively. As our study is longitudinal, the test-retest reliability was important to our study. The measure showed good internal consistency in our study ($\alpha = .94$).

Intolerance of Uncertainty

The Intolerance of Uncertainty Scale (IUS; Carleton et al., 2007) was used to measure how well participants deal with ambiguity in daily life. This scale contains 27-items that require participants to rate themselves on a 5-point scale from one (not at all characteristic of me) to five (entirely characteristic of me) on items like "uncertainty stops me from having a firm opinion," and "unlike me, others always seem to know where they are going with their lives." Although some studies examine this scale based on separate factors where factor one measures items indicating the belief that "uncertainty has negative behavioral and self-referent implications," and factor two measures items indicating the belief that "uncertainty is unfair and spoils everything" (Sexton & Dugas, 2009) for the purpose of our study, we chose to use the total score of the IUS in analysis. This measure had good internal consistency in our sample ($\alpha = .97$).

Perseverative Thinking

Lastly, in the second and third waves of our surveys, we asked participants to complete the Perseverative Thinking Questionnaire (PTQ; Ehring et al., 2011) to provide information about how they typically think about negative experiences or problems. This questionnaire contains 15 items scored on a 5-point scale from zero (never) to four (always), with higher sums indicating thinking characterized as repetitive, intrusive, difficult to disengage from, unproductive, and occupying mental capacity. The PTQ includes items like "thoughts intrude into my mind" and "my thoughts repeat themselves." Notably, we also included an attention filter within this questionnaire ("please select 'always' for this item") to help identify inattentive participants and exclude them from analyses. This scale had good internal consistency for our sample ($\alpha = .97$).

Results

Preliminary Analyses

Of our original 502 participants at Wave 1, we had 304 (60.5%) complete Wave 2 and 305 (60.7%) complete Wave 3. Notably, 252 (50.2%) participants completed all three waves. We examined whether waves differed on important demographic variables. Between all waves, there were no statistical differences between waves with regards to gender (χ^2 (4) = .99, p = .911). However, there was a significant difference in ages between waves, $F(2, 1107) = 5.78$, p = .003, with a higher average age of participants at Waves 2 and 3 compared to Wave 1 (see Table 2 for participant characteristics). Furthermore, whereas gender was not

Table 2

Participants Characteristics by Wave

	Wave 1		Wave 2		Wave 3	
Measure	*M*	*SD*	*M*	*SD*	*M*	*SD*
Age	37.26	12.93	39.81	13.17	40.06	13.26
Gender (% Female)	62.9	-	64.5	-	66.6	-
News Exposure	10.73	4.39	11.04	4.25	11.54	8.01
News Effort	1.24	1.88	1.31	1.82	1.29	1.81
News Enjoyment	3.25	1.11	3.24	1.13	3.28	1.14
Social Media Use	7.96	5.34	8.12	5.52	8.19	5.51
DASS Depression	5.51	5.84	4.96	5.67	4.99	5.69
DASS Anxiety	4.02	4.59	3.59	4.39	3.92	4.46
DASS Stress	6.06	4.85	5.82	4.70	6.02	4.93
Acceptance	33.99	11.56	34.38	11.16	34.59	11.50
IUS	66.05	26.41	67.12	24.65	66.48	25.61
PTQ[a]	-	-	27.29	14.34	28.40	14.52

Note. DASS = Depression Anxiety Stress Scales; IUS = Intolerance of Uncertainty Scale; PTQ = Perseverative Thinking Questionnaire. [a]The PTQ was only administered in Waves 2 and 3.

related to any of our outcome variables of interest (all *p*-values > .46), we determined that age correlated with the majority of our variables. Older participants tended to have lower depression, anxiety, and stress as indicated by participants' subscores on the DASS, as well as lower scores on the IUS and reported lower Social Media Use (all *r*-values < -.28, $p < .01$). Older participants also reported higher News Use, News Exposure, News Effort, News Enjoyment, and psychological flexibility (i.e., experiential acceptance) (all *r*-values > .25, $p < .01$). Thus, we controlled for age when testing our hypotheses about the relationship between news exposure and psychological distress.

Participants' Information Use and Preferences

The following data was captured by the News Exposure Questionnaire. Our participants frequently took part in watching, hearing, and/or reading about the news, which we categorized as current events news. Of our 502 participants, 77.5% engaged in the news a minimum of four days a week, and 45.2% engaged with current event news every day in the week. Of the participants who accessed the news, the majority (70.6%) accessed the news multiple times a day. We asked participants in the past week the sources they used to access the news and reported the following: social media (63%), websites (63%), morning/evening news (53%), newspapers (26%), radio stations (26%), phone or tablet applications (19%), entertainment news (16%), and did not access the news (2%). Percentages do not add up to 100% as participants could choose multiple sources. When asked to rank news platforms based on preference, their top preference was as follows: morning/evening news programs (32%), websites (31%), social media sites (18%), newspapers (7%), radio stations (5%), phone or tablet applications (4%), and entertainment news (2%). With regard to motivation for accessing the news, participants were most likely to report seeking out the news to stay informed (40%), followed by the news being part of their routine (32%), then to seek out a specific answer (21%), and lastly to have points for conversation (10%). When asking about social media, participants reported accessing the following platforms at least once in the past week: Facebook (85.7%), Twitter (49%), and Instagram (44.2%).

Along with asking what information participants engaged with, we asked our participants to describe the most recent news event they remembered hearing or reading about. Of the 300 responses, 270 (90%) reported negative events (i.e., deaths of celebrities, worries about security, and political uncertainty). Of the remaining responses, only 2.6% were positive events (i.e., a woman helping an animal shelter), with the remaining 7.3% reporting neutral or factual information (i.e., an article about football). While this information may not proportionally represent events reported in the news, it does depict what is most salient in our participants' memory. From our results, it appears that negative reports are what leave a lasting impression on those who engage with the news.

Does News Exposure Relate to Psychological Distress?

To address our first aim of establishing if there is a relationship between news exposure and anxiety, we conducted concurrent analyses using partial correlations that controlled for age. As expected, all our information and news-related variables significantly positively correlated, and all psychological distress variables were significantly positively correlated (all *p*-values < .001; see Table 3 for correlations of measures of Wave 1 controlling for age). Although we did not find a significant direct correlation between news exposure and anxiety levels, those who were more anxious (higher DASS Anxiety scores) reported higher intolerance of uncertainty ($r = .54$, $p < .001$), and perseverative thinking ($r = .49$, $p < .001$), and lower psychological flexibility, i.e., Acceptance ($r = -.59$, $p < .001$) suggesting experiential avoidance.

In addition to addressing our main variable of interest, anxiety, we also looked at the relationship between news exposure and depression

Table 3

Correlations of Measures at Wave 1 Controlling for Age

Measures	1	2	3	4	5	6	7	8	9	10
1. Information Use	-									
2. News Exposure	.49***	-								
3. News Effort	.36***	.53***	-							
4. News Enjoyment	.25***	.38***	.64***	-						
5. Social Media Use	.94***	.24***	.20***	.14**	-					
6. DASS Depression	-.09*	.03	-.06	-.09†	-.09†	-				
7. DASS Anxiety	-.03	.03	.04	-.02	-.003	.66***	-			
8. DASS Stress	-.05	.02	-.02	-.09*	-.04	.77***	.74***	-		
9. Acceptance	.03	-.02	.07	.14**	.01	-.74***	-.59***	-.65***	-	
10. IUS	-.01	.02	.02	-.004	-.006	.60***	.54***	.63***	-.67***	-
11. PTQ[a]	.04	.08	-.08	-.09	.04	.68***	.49***	.70***	-.75***	.69***

Note. DASS = Depression Anxiety Stress Scales; IUS = Intolerance of Uncertainty Scale; PTQ = Perseverative Thinking Questionnaire.
[a]The correlations with PTQ were calculated at Wave 2, since the measure was not administered during Wave 1.
†$p < .06$ * $p < .05$. ** $p < .01$. *** $p < .001$

and stress as measured by the DASS. We looked at these additional variables to understand if news exposure had potential relationships not previously considered. Depression levels either approached significance or had weak significant correlations with Information Use, Social Media Use, and News Enjoyment (p-values < .06). Those with higher depression scores based on the DASS reported lower frequency of Information Use (r = -.09, p = .044), lower Social Media Use (r = -.09, p = .510), and less News Enjoyment (r = -.09, p = .052). Additionally, participants who were more depressed tended to have higher intolerance of uncertainty (r = .60, $p < .001$), perseverative thinking scores (r = .68, $p < .001$), and lower psychological flexibility, i.e., Acceptance (r = -.74, $p < .001$). Lastly, stress levels as determined by DASS scores had a significant correlation with News Enjoyment, such that those who enjoyed the news less were more stressed (r = -.09, p = .049). Although stress did not significantly correlate to our other news variables (i.e., News Exposure and News Effort), those who reported higher stress reported higher intolerance of uncertainty (r = .63, $p < .001$), perseverative thinking scores (r = .70, $p < .001$), and lower psychological flexibility, i.e., Acceptance (r = -.65, $p < .001$).

Does News Exposure Change Over Time?

We conducted a Repeated-Measures ANOVA to determine whether the waves significantly differed on variables of interest. We found no significant differences on News Exposure [Wilks' Lambda = .982, $F(2, 250) = 2.27$, p = .106], News Effort [Wilks' Lambda = .997, $F(2, 250) = 0.36$, p = .700], or News Enjoyment [Wilks' Lambda = .998, $F(2, 250) = 0.26$, p = . 770] between the three waves. This suggests that participants' access to current events news was fairly stable over time. However, the analysis was significant for DASS Depression scores [Wilks' Lambda = .963, $F(2, 250) = 4.796$, p = .009]. A Bonferroni post hoc test indicated that the mean scores for Wave 1 (M = 5.51, SD = .368) were significantly higher than the scores for Wave 2 (M = 4.96, SD = 0.36) and Wave 3 (M = 4.99, SD = 0.36); Waves 2 and 3 did not significantly differ. On the DASS Anxiety and Stress subscales, there were no significant differences between any of the waves (all p-values > .05). In other words, our participants were significantly more depressed during Wave 1 as compared to the later waves, which may correspond to the timing of Wave 1 being close to the winter holidays along with its overlap with the 2016 presidential election.

Do News Variables Predict Changes in Mental Health Over Time?

To address our second aim, we ran Multiple Regression analyses, in which we controlled for age and the initial levels of the variables of interest. While running our regressions, we looked at news exposure, news enjoyment, and news effort simultaneously as possible predictors of psychological distress. Notably, initial levels significantly predicted later levels for all our variables of interest in these models (all *p*-values < .001). Additionally, multicollinearity was not a concern as all Tolerance levels were < 1 and all VIF levels were < 2.5.

Anxiety levels at Wave 2 and Wave 3 were not predicted by any of our Wave 1 news-related variables (*p*-values > .40). Neither were stress levels at Wave 2 or 3 (*p*-values > .60). However, controlling for News Exposure and News Effort as well as age and initial level of depression, News Enjoyment ratings significantly predicted the DASS depression scores at Wave 2 (b = -0.51, t = -2.23, p = .026). Notably, news variables did not explain a significant proportion of variance in Wave 2 depression scores above and beyond age and initial levels, adjusted $R2$ = .69 ($\Delta R2$ = .002, p = .550). This relationship was not maintained over the following month, with no significant news-related predictors for Wave 3 DASS depression scores (*p*-values > .30). In other words, those who receive more enjoyment from the news seem to have less depression over time in the short-term, but not long-term.

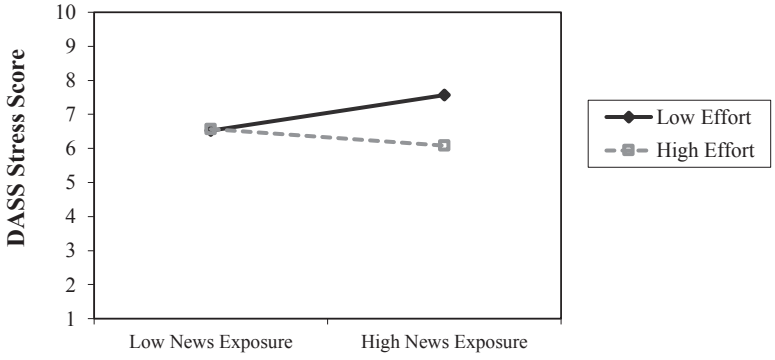
Both Wave 1 News Exposure scores (b = 0.57, t = 2.48, p = .014) and News Enjoyment scores (b = -2.26, t = -2.22, p = .270) significantly predicted IUS scores at Wave 3, though no news-related variables were significant for predicting Wave 2 IUS scores, when controlling for age and initial levels scores (*p*-values > .15). This suggests that those who are more exposed to the news or who enjoy the news less may, over time, have more difficulty tolerating uncertainty. Lastly, experiential acceptance and perseverative thinking changes were not significantly predicted by initial News Exposure levels (*p*-values > .06).

Does Emotion Regulation Moderate the Relationship Between News Exposure and Mental Health?

Our last aim was to establish if emotion regulation moderates potential relationships between news exposure and psychological distress. Although there was no significant direct relationship found between anxiety and News Exposure, we examined whether aspects of emotion regulation may interact with News Exposure in predicting psychological distress while controlling for age. We found a significant interaction effect of News Exposure x News Effort in predicting DASS Stress (b = -.08, R^2 = .01, p = .050). Figure 1 shows that participants who made a greater effort to seek the news and had higher News Exposure were less stressed than those

Figure 1

News Exposure and DASS Stress Moderated by News Effort



Note. DASS = Depression Anxiety Stress Scales. When controlling for age, we found that News Effort was a significant moderator of the relationship between News Exposure and DASS stress scores. Those who put in higher effort to seek the news and had high news exposure were less stressed than those who tended to avoid the news but also had high news exposure.

who tended to avoid the news but had high News Exposure. There were no significant interaction effects of News Exposure x News Effort on DASS Anxiety or DASS Depression scores (p-values > .40). Furthermore, News Exposure did not interact with News Enjoyment, psychological flexibility (i.e., experiential acceptance), intolerance of uncertainty, or perseverative thinking to predict any psychological distress variables (p-values > .25). Notably, when controlling for News Exposure in these analyses, higher levels of News Enjoyment predicted lower levels of stress (b = -.11, p = .024) and depression (b = -.11, p = .022), whereas greater tendency to avoid the news predicted higher levels of depression (b = -.13, p = .023).

Discussion

The study aimed to identify whether there is a link between news exposure and mental health factors such as anxiety, stress, and depression. Although we hypothesized that the frequency at which people are exposed to current events coverage would predict anxiety levels, we did not find a direct relationship between anxiety and news exposure. Information exposure appeared to be more relevant to participants' depression, as higher depression scores were related to less use of total information (including social media use and overall social media and current events use) and marginally less enjoyment of news. These relationships could be in part due to the relationship between social isolation and depression, as people with lower moods tend to withdraw and may have less energy to engage in information use, particularly social media, and tend to be less active in their social life (Elhai et al., 2017). One interpretation of these findings is that engaging in information exposure could be protective against isolation and depressive symptoms; however, it could also be that those who are not experiencing any depressive symptoms would be more likely to engage in daily routines such as keeping up with the news (Elhai et al., 2017).

As previously researched by Valentino and colleagues (2009), those who engage with more information use may be using that information to answer questions to resolve anxiety, or that information may simply fuel further information seeking. Consistent with this, we found that greater News Exposure and less News Enjoyment predicted more intolerance of uncertainty prospectively, controlling for initial levels. It may be that people who are seeking out the news but find it unpleasant experience increased difficulties coping with ambiguity over time, perhaps leading to an even greater focus on unhelpful and unpleasant information seeking. Given that we found depression, anxiety, and stress scores all positively correlated with intolerance of uncertainty and perseverative thinking in our sample, this pattern could be maladaptive over a longer period.

Whether participants identified as a 'seeker' or 'avoider' of the news also appears important to reactivity to the news. In our study, participants who reported the highest stress levels were those that had high levels of exposure to news and simultaneously wanted to avoid exposure to news. Notably, we found no other significant interaction effects. Similar to Valentino and colleagues (2009), it may be that those who seek out information are more so protected by the information when they make an effortful choice to engage in it.

Additionally, participants in our study who reported enjoying the news tended to have lower stress levels, somewhat lower depression, and greater psychological flexibility. Furthermore, over time, these people tended to be less likely to be depressed, controlling for initial levels of depression. Therefore, a willingness to learn about even unpleasant current events may be adaptive, as it demonstrates greater psychological flexibility as described by experiential acceptance.

Strengths and Limitations

Although we were specifically interested in the relationship between information exposure and anxiety, we used multiple measures to create a fuller picture of how information affects mental

health. Since there is no established measure for news exposure, we created our own. However, when creating this measure, we kept in mind previous research that measured similar constructs, such that our news and information behavior questions were adapted from research on social media exposure (Correa et al., 2010). In addition, our other measures of psychological distress and emotional regulation were psychometrically sound, with strong reliability, and were well established.

Through our use of MTurk and Turk Prime for recruitment, we were able to gather a more diverse sample rather than using undergraduates or other more homogenous samples. By using a sample of adults from the general population, as opposed to targeting a college population or treatment-seeking clinical population, we increased our variability. Using only students might have biased our results, as college students may not engage with news exposure as regularly as the general adult population and are generally more distressed (Sharp & Theiler, 2018). Moreover, if we sampled a clinical population, we would have only learned about those at the high end of anxiety symptoms. However, it is important to note that our study began around the 2016 presidential election, which could have impacted our concurrent results at Wave 1.

Despite our sample having diverse socioeconomic, gender, and relationship status backgrounds, the majority of participants identified as White, and all had to be familiar with computers to access the survey, suggesting a certain minimum education level. Although our sample had more females (62.74%), gender did not appear to influence any of our factors. Since age influenced our measures, we controlled for this influence in our final analyses.

As our study was longitudinal, we planned for attrition and therefore began by recruiting a large sample. Notably, about half of these participants completed all three waves, allowing us to look at their experiences over time. We tried to minimize attrition by recruiting experienced users and informing participants initially that this would be a longitudinal study where they would be contacted again if eligible. In future studies increased compensation, and more consistent reminder e-mails could increase retention. Since our News Exposure Questionnaire was self-report, our participants might not have provided the most accurate account for how much information they engaged with and were exposed to, as participants may have wanted to manage impressions by over-reporting news engagement. Future studies could require participants to keep a more detailed log to ensure correct information.

An additional improvement for future studies could include a more specific reporting of news sources. Specifically, participants could be asked about their specific sources of news information, as providers of the news are often politically aligned, and those who engage in the news that matches their own beliefs may be less distressed than those who expose themselves to multiple news sources that may challenge their beliefs. Along with our findings, it could be that those who are more psychologically flexible (i.e., endorse experiential acceptance) engage with challenging beliefs but are better able to cope than those who are not as flexible (i.e., endorse experiential avoidance). This would be another interesting area to explore in future studies.

Lastly, a major limitation of this study is that it was entirely conducted online, a procedure that can lead to questions of validity. To maximize the quality of our data, we limited potential participants to those who had previous experience with MTurk. Specifically, we required our participants to have a prior HIT Approval Rate of 90-100% and were required to have completed at least 100 prior HITs. Additionally, since our data collection consisted of multiple surveys, we included multiple attention measures to ensure participants were not thoughtlessly clicking through our measures. As our participants were compensated through MTurk, only participants who completed all measures and successfully attended to our attention filters were in-

cluded in our analysis.

Implications and Future Research

Although our findings did not support our predictions about news exposure and anxiety levels, we found that some news-related variables predicted psychological distress. This study highlights a future area of research on this potential chronic stressor. Future studies might sample a clinically anxious or depressed population to examine whether those who have an anxiety or depressive disorder are more influenced by superfluous information exposure. For example, those who take part in more perseverative thinking may benefit more from an information exposure intervention rather than the general population. Since news exposure was not a daily hassle for everyone in this study, rather only those who also tended to try to avoid the news, this study highlights that chronic stressors may affect those individuals differently, like those predisposed to stress. If information exposure does pose more detriment to those with mental health disorders, this may be an area important for clinicians to assess before or during psychotherapeutic treatment.

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Appendix A

News Exposure Questionnaire

How many days out of the <u>past 7 days</u>, did you post on Facebook or read any updates from people you know?

1 2 3 4 5 6 7

How many days out of the <u>past 7 days</u>, did you post on Twitter or read any updates from people you know?

1 2 3 4 5 6 7

How many days out of the <u>past 7 days</u>, did you post on Instagram or look at any updates from people you know?

1 2 3 4 5 6 7

How many days out of the <u>past 7 days</u>, did you watch/hear/read about the news (current events)?

1 2 3 4 5 6 7

<u>In this past week</u>, on days that you did access the news, how many times per day (on average) did you watch/hear/read about the news?

Once per day

2-3 times

4-6 times

7 or more times

I did not access the news at all

<u>In this past week</u>, where did you get your news information? (Check all that apply)

Morning/evening news programs (e.g., FOX news, NBC)

Entertainment news programs (e.g., TMZ, E! News)

Newspapers (e.g., The New York Times)

Radio stations (e.g., NPR)

Social media (e.g., Twitter, Facebook)

Websites (e.g., bbc.com)

Phone or tablet applications (e.g., Apple News, Flipboard)

I did not access the news at all

Please order the following list in terms of your preference for receiving news information (1 being most preferred 7 being least preferred)

Morning/evening news programs (e.g., FOX news, NBC)

Entertainment news programs (e.g., TMZ, E! News)

Newspapers (e.g., The New York Times)

Radio stations

Social media (e.g., Twitter, Facebook)

Websites (e.g., bbc.com)

Phone or tablet applications (e.g., Apple News, Flipboard)

Thinking about this past week, how much did the following statements apply regarding your decision to access the news? (Check all that apply.)

	Does not describe me at all (1)	(2)	(3)	(4)	(5)	Very much describes me (6)
I accessed news to seek out specific information (e.g., to answer a particular question).						
I accessed the news to stay informed.						
I accessed news as part of my routine.						
I accessed the news, because I wanted to have things to talk about with others.						

How much do you make an effort to access the news/recent events?

(1) Strongly AVOID the news
(2)
(3)
(4)
(5)
(6)
(7)
(8) Strongly SEEK OUT the news

How much do you enjoy reading/hearing/watching the news?

(1) A great deal
(2) A lot
(3) A moderate amount
(4) A little
(5) None at all