Communicating About Mental Health During a Pandemic:
An Examination of Active and Aware Publics on Twitter

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With the arrival of COVID-19, several U.S. states enacted stay-at-home orders to mitigate spread, but the isolation of quarantine and the uncertainty surrounding the virus were likely to have a detrimental influence on mental health. This study investigates how people discussed COVID-19 in relation to mental health on Twitter. Using Crimson Hexagon, this research examines tweets (N = 2,199,625) for three months following the first confirmed case of COVID-19 in the United States and includes a quantitative analysis of the public's concern about the disease as well as a qualitative thematic analysis of conversations on the topic (n = 800). Results indicate that those who discuss mental health online behave as an active and aware public that recognizes how mental health can be affected during a health crisis. The quantitative analysis shows that when cases of the disease increased, mentions of depression, post-traumatic stress disorder, and psychologists also increased. Additionally, as deaths related to the disease increased, so did mentions of psychologists. Qualitative statistics indicate that this public makes a concerted effort to provide social support and solidarity for others.

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The spread of the SARS-CoV-2 virus (i.e., coronavirus) and its associated disease, COVID-19, precipitated the introduction of stay-at-home orders and social distancing across the United States. Past research indicates that the practice of social distancing, while effective at impeding the spread of a communicable disease such as COVID-19, can also have a detrimental impact on people's mental health, causing anxiety, depression, trauma, suicide, and stress (Brooks et al., 2020; Czeisler et al., 2020; Panchal et al., 2020; Salathé, Freifeld, Mekaru, Tomasulo, & Brownstein, 2013).

Similar to how they reacted during the spread of other communicable diseases, such as Ebola and Zika (Guidry, Jin, Orr, Messner, & Meganck, 2017; Liang et al., 2019; Vijaykumar, Nowak, Himelboim, & Jin, 2018; Wang, McKee, Torbica, & Stuckler, 2019), people have used social media to voice their concerns about the spread of COVID-19. Twitter has been identified as a useful platform for study because it provides real-time information that can help organizations understand how people are handling a crisis (Chavarria et al., 2017; Salathé et al., 2013). This information is crucial for mental health organizations and their public relations (PR) practitioners as it informs their strategic planning and implementation of health communication tactics.

Because of the impacts that a pandemic may have on people's mental health, it is important to understand how organizations can reach those who are experiencing worsened mental health during a health crisis. Therefore, this study investigates how mental health is discussed on Twitter in conjunction with the spread of COVID-19. It also explores Twitter users through the situational theory of publics to inform how communication practitioners and mental health organizations may respond in their social media strategies. This is especially important as publics communicate differently in various situations (Aldoory & Austin, 2011). To date, no other research has tracked the mental health conversation on Twitter in this way as much of the relevant research is devoted to creating algorithms that can detect the existence of mental health issues in social media texts (Coppersmith, Dredze, & Harman, 2014; Lachmar, Wittenborn, Bogen, & McCauley, 2017; O'Dea et al., 2015). Yet, Ji, Chun, Wei, and Geller (2015) argue that research needs to "differentiate between the spread of concern about a disease and the spread of the disease itself" (p. 12), which this study attempts to do. This study provides insight into how people discuss mental health online to inform health communicators about how to better leverage Twitter for communicating mental health information.

Situational Theory of Publics

This study employs a situational theory of publics framework to interpret the communication behaviors of people who use Twitter to communicate about mental health during a global health crisis (i.e., the COVID-19 pandemic). Developed by Grunig (1982), the situational theory of publics proposes that publics can be classified according to their awareness of and participation in three communication behaviors: Problem recognition, constraint recognition, and involvement (Grunig, 1988). Problem recognition refers to the extent to which a public recognizes an issue as a serious problem, while constraint recognition explains

the extent to which members of a public feel that they are able to control a problem. And finally, involvement is a measure of how personally involved members of a public are in an issue.

Previous situational theory research has shown that members of a public are more likely to actively communicate about an issue when they recognize a problem, believe they have a measure of control over the problem and feel personally involved in the problem (Aldoory & Austin, 2011). There are four types of publics that vary in the way they approach a situation: Active, aware, latent, and nonpublic (Aylesworth-Spink, 2019). An active public is characterized by high problem recognition and high involvement but low constraint recognition (Aldoory & Austin, 2011; Grunig, 1988); as such, they are active in communicating about the issue (Grunig, 1982). Furthermore, an aware public recognizes the problem but is less active in addressing it, a latent public faces a problem without recognizing it as a problem, and a nonpublic does not face the issue as the issue is not relevant to them at the time (Grunig, 1982).

Due to the participatory nature of social media (Jenkins, 2008), it is likely that an active public will manifest in a conversation about mental health. Active publics are not just active in seeking information but they are also active in sharing information online and providing others with the resources necessary to address a problem (Kim & Grunig, 2011). This group is formed based on emotional arousal—especially negative emotions—regarding a problem and consequently holds stronger opinions on the issue (Shin & Han, 2016). They often have a strong personal connection to an issue and actively disseminate information and solutions to the problems they recognize (Shen, Xu, & Wang, 2019). Opinion leaders may be an especially active public as they are often highly involved in and knowledgeable about issues, which allows them to play a crucial role in the psychosocial health of online health support groups (Kim, Scheufele, Han, & Shah, 2017). As a result of this knowledge and involvement, opinion leaders may actively manage to confront and resolve their problems (Kim et al., 2017).

The situational theory of publics has, more recently, been applied to health PR (Aldoory & Austin, 2011; Aylesworth-Spink, 2019; Guidry et al., 2017). Specifically, health PR campaigns are used to strategically plan and implement communication tactics that help bring awareness to issues, influence health attitudes, develop relationships between health-related organizations and the public, and manage reputations (Aldoory & Austin, 2011; Aylesworth-Spink, 2019). More recently, the theory has also been used in the context of social media and the way in which social media publics share information during risk or crisis situations (see Malasig & Quinto, 2016; Zhao, Zhan, & Wong, 2017). The situational theory of publics is especially relevant when investigating how a public forms in the face of a crisis (Aldoory, Kim, & Tindall, 2010), as research has found that members of a public are more likely to actively seek information during times of risk or crisis (Grunig & Grunig, 2007). To implement their communication strategies, practitioners are apt to identify community members with high involvement who will spread the message (Aylesworth-Spink, 2019; Wirtz, Gardner, & Ngondo, 2011). By understanding the involvement of an active public, practitioners can more effectively create targeted messaging (Aldoory & Austin, 2011).

Health Information on Twitter

Social media provide people with yet another place to find health information online, where they can learn about health issues and concerns (Aylesworth-Spink, 2019; Chavarria et al., 2017). Due to their

affordance of visibility, social media platforms can provide individuals with immediate access to information when they are dealing with difficult issues, including information about self-monitoring and self-care (Aylesworth-Spink, 2019). Opinion leaders who engage on these platforms have been found to be especially important for providing personal experiences and advice to others (Carron-Arthur, Ali, Cunningham, & Griffiths, 2015).

In recent years, researchers have examined how viruses such as Zika and Ebola are discussed on social media. The research found that news media on Twitter strongly influenced the conversation about Zika (Vijaykumar et al., 2018), and that people used Twitter not only to voice their fears about the spread of Ebola but also to criticize how the virus was being dealt with (Mondragon, Gil de Montes, & Valencia, 2017). Relatedly, Guidry and colleagues (2017) found that the most effective social media messaging about Ebola included solution-based messages that also acknowledged people's fears and worries.

Research indicates that fear-based messages are also prominent on Twitter, and that viral tweets are more likely to be emotionally charged (Stieglitz & Dang-Xuan, 2013; Tsugawa & Ohsaki, 2015). Stieglitz and Dang-Xuan (2013) conjecture that tweets, when emotionally arousing—provoking anger or anxiety—may spread more quickly. Those who post about an issue may do so because they feel a physical or emotional proximity to the event, and thereby their tweets are influenced by that connection (Huang, Starbird, Orand, Stanek, & Pedersen, 2015).

Mental Health Content on Social Media

Pandemics can incite uncertainty and fear, thereby influencing people's mental health (Brooks et al., 2020). In the past, researchers have programmed algorithms that detect and track mental health symptoms on Twitter and have thematically evaluated how these issues—including depression, suicidality, and seasonal mood changes—are discussed (Coppersmith et al., 2014; Dzogang, Lansdall-Welfare, & Cristianini, 2016; Lachmar et al., 2017; O'Dea et al., 2015). Research has focused on the impact of emotionally charged mental health hashtags (Lachmar et al., 2017), the uses of social media in health care (Giustini, Ali, Fraser, & Boulos, 2018), and the detection of suicidal language in tweets (O'Dea et al., 2015).

Furthermore, past research has indicated that online spaces allow people with mental health struggles a space to seek out and provide social support (Carron-Arthur et al., 2015; Kim et al., 2017). Social support can contribute to improved knowledge and better coping strategies (Kim et al., 2017). Thus, it is possible that Twitter users take to Twitter as a space to seek out support for their mental health during the COVID-19 pandemic.

COVID-19 and Mental Health

While social distancing has been effective at impeding the spread of COVID-19, it has also had a negative impact on people's mental health (i.e., anxiety, depression, trauma, suicidal thoughts, and stress; see Brooks et al., 2020; Czeisler et al., 2020; Panchal et al., 2020; Salathé et al., 2013). For instance, in a recent survey, Panchal and colleagues (2020) found that 45% of adult Americans felt that their mental health had worsened because of stress about COVID-19. Other factors, such as isolation, job

loss, and fear of self or family getting sick added extra stress (Brooks et al., 2020; Hamel, Kirzinger, Muñana, & Brodie, 2020; Panchal et al., 2020). Additionally, because of the stay-at-home orders related to COVID-19, many people faced economic uncertainty and experienced job loss (Falk, Romero, Carter, Nicchitta, & Nyhof, 2021), which has been associated with an increase in suicide rates (Vandoros, Avendano, & Kawachi, 2019). It is possible that people will develop mental health issues (e.g., stress, trauma, depression, anxiety, and suicidal thoughts) as a result of the fear of the disease; however, as some people have existing mental health issues, their mental health issues may be exacerbated by the consequences of the prevention measures.

To investigate the public's health concerns surrounding the spread of COVID-19, this research examines how people explicitly express their mental health issues by discussing them publicly on Twitter. This study employs a mixed-methods approach, using qualitative data to help explain the quantitative data. It is likely that an active public will manifest in the conversations about mental health, as active publics actively share information online and provide others with the necessary resources to address a problem (Kim & Grunig, 2011). Similar to opinion leaders, active publics may provide knowledge and coping strategies that allow Twitter users to confront and resolve their mental health issues (Kim et al., 2017).

Using Twitter conversations extracted from Crimson Hexagon during the first three months of the COVID-19 outbreak in the United States, this research investigates the following research questions and hypotheses:

RQ1:   *How did the volume of tweets related to mental health and COVID-19 change over time?*

RQ2:   *Who were the most influential opinion leaders in tweets related to mental health and COVID-19?*

H1:   *Fear will be the dominant emotion in the tweets related to mental health and COVID-19.*

H2:   *Due to the negative influence of quarantine on mental health, an increase in tweets related to mental health and COVID-19 will be related to an increase in the number of U.S. COVID-19 cases and deaths.*

RQ3:   *What themes are present in the most visible conversations about mental health and COVID-19 on Twitter, and how do these themes provide insights into the type of public that is involved in these conversations?*

Method

Quantitative Analysis

Using the program Crimson Hexagon, we scraped posts about the conversations on Twitter surrounding COVID-19 and mental health topics. Crimson Hexagon is an artificial intelligence social media analysis platform that has been used in communications research (Lee, Abitbol, & VanDyke, 2020; Su, Scheufele, Bell, Brossard, & Xenos, 2017) to provide insights into Twitter conversations—including post

volume, key terms, post emotions, and key influencers. The program uses Boolean search terms to determine which posts to scrape. Search terms relating to the virus, mental health, and specific mental health symptoms were used to identify online conversations: ("coronavirus" OR "corona virus" OR "COVID-19" OR "COVID 19" OR "COVID") AND ("mental health" OR "psychological health" OR "burnout" OR "burn out" OR "burnt out" OR "anxiety" OR "depression" OR "stress" OR "anxious" OR "depressed" OR "stressed" OR "psychologist" OR "worried" OR "worry" OR "OCD" OR "obsessive" OR "compulsive" OR "obsessive compulsive disorder" OR "suicide" OR "suicidal" OR "PTSD" OR "post traumatic stress" OR "post-traumatic stress" OR "distress" OR "distressed"). The Twitter posts that resulted from these Boolean search terms will hereafter be referred to as the *conversation.*

Data were collected on April 28, 2020, yet the analysis included tweets posted between January 22, 2020 (when the first case of COVID-19 in the United States was confirmed) and April 25, 2020. As of April 25, 2020, there were 934,065 confirmed cases of COVID-19 and 50,698 COVID-19–related deaths in the United States (USA Facts, 2020). Only posts in the English language from the United States were included.

Based on the Crimson Hexagon data, the total volume of the conversation was 2,199,625 tweets, and the total potential impressions surrounding this topic was 33,551,714,988 (i.e., the number of times that the tweets on this topic could have been read by all the followers of each Twitter author for the specified period). The conversation was dominated by those 35 years old and older (77%), followed by those 25 to 34 years old (8%) and 18 to 24 years old (8%), and then those younger than 17 years (6%). Both males (49%) and females (51%) were involved in the conversation.

Among the subcategories examined, anxiety was the highest subcategory (n = 81,281), followed by stress (n = 76,499), depression (n = 56,536), suicide (n = 44,055), psychologist (n = 4,933), post-traumatic stress disorder (PTSD) (n = 4,397), and obsessive-compulsive disorder (OCD) (n = 1,985).

Measures

U.S. COVID-19 Cases and Deaths

Because quarantine and social-distancing guidelines varied across the U.S. states, we used the nationwide-level data of virus cases and deaths to represent quarantine measures, as stricter regulations (i.e., quarantines, stay-at-home orders, and social distancing) were enforced as cases increased (Zraick, Pérez-Peña, & Grady, 2020). The number of cases and deaths between January 22, 2020, and April 25, 2020, were obtained from data sets provided by the nonprofit civic initiative USA Facts (2020).

Mental Health Subcategories

From the Crimson Hexagon data, we extracted the number of tweets posted for each subcategory between January 22, 2020, and April 25, 2020. Subcategories included anxiety, stress, depression, suicide, psychologist, PTSD, and OCD.

Qualitative Analysis

To provide context to the findings from the quantitative data, and answer RQ3, we performed a thematic analysis of a sample of the tweets pulled from each of the conversation subcategories (i.e., anxiety, stress, depression, suicide, psychologist, PTSD, and OCD) and the full sample of tweets. Using the export function of Crimson Hexagon, the researchers exported a post list of the top 800 tweets in the conversation (i.e., those that users interacted with the most), as we were most interested in the topics that gained the most visibility among the public; these tweets would be from influencers that PR practitioners could target and thus build relationships with their public (Edman, 2010). Four researchers then independently analyzed the post content using a qualitative thematic analysis (Nowell, Norris, White, & Moules, 2017). First, the researchers familiarized themselves with the content by reading through the posts. Using the inductive approach, they coded the data, assigning qualitative codes for each post. They then used both a semantic approach (analyzing the explicit content) and a latent approach (examining the subtext and assumptions). Following coding, codes were examined to determine similarities and themes. These themes were refined by comparing them against the data, combining like-themes, and discarding themes that were not as prevalent in the data. This process was performed until the researchers agreed on the established themes and sub-themes. Each theme was named and defined. Throughout the coding process, the researchers engaged in reflexivity to reduce personal bias.

Results

Quantitative Results

To address RQ1, we observed the graphical change in tweets over time. The conversation peaked on March 15, 2020, and then tapered off (see Figure 1).
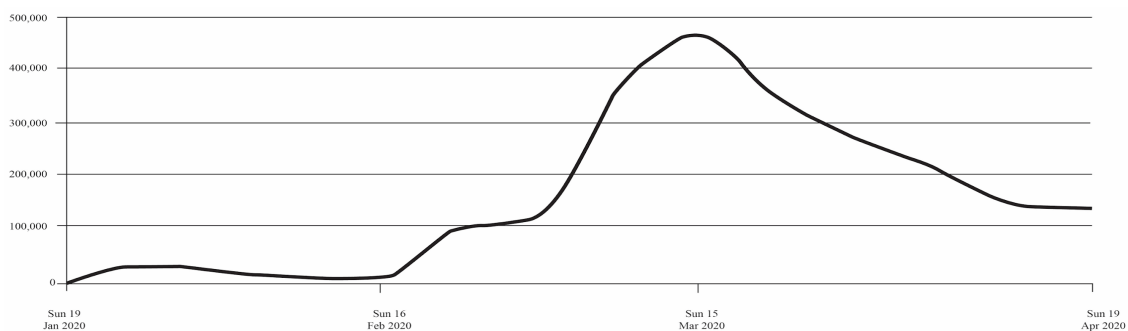

Figure 1. Total volume of conversations on COVID-19 and mental health over time. The total volume of the conversation was 2,199,625 tweets between January 22, 2020, and April 25, 2020.

To evaluate RQ2, we extracted the top 10 influencers (i.e., those who were the most influential across various platforms online) in the conversation and the top 10 most mentioned accounts. Crimson Hexagon calculates an influencer score based on the number of times a user is mentioned or retweeted. The top 10 influencers in the conversation were (in order from most influential) @baeonda (layperson),

@realDonaldTrump (Donald Trump, U.S. politician, verified), @workerism (layperson), @elliottdunstan (layperson), @pearltearizzy (layperson), @senwarren (Elizabeth Warren, U.S. politician, verified), @barackobama (Barack Obama, U.S. politician, verified), @cutmylip_mp3 (layperson), @britrican (layperson), and @jimmykimmel (Jimmy Kimmel, celebrity, verified). Only four of the 10 individuals had verified accounts—that is, an authentic account of an individual or entity of public interest—which included three politicians and one celebrity. The remaining accounts were maintained by nonpublic figures. Furthermore, the top 10 mentions included (in order from most to least) were @realDonaldTrump (Donald Trump, U.S. politician, verified), @SenWarren (Elizabeth Warren, U.S. politician, verified), @gabrielsherman (Gabriel Sherman, U.S. journalist, verified), @SpeakerPelosi (Nancy Pelosi, U.S. politician, verified), @CDCgov (U.S. Centers for Disease Control and Prevention, verified), @POTUS (account of the president of the United States [Donald Trump at the time of data collection], U.S. politician, verified), @nytimes (*The New York Times*, U.S. news company, verified), @politicususa (PoliticusUSA, U.S. news company), @ewarren (Elizabeth Warren, U.S. politician, verified), and @WHO (World Health Organization, verified).

An examination of the emotions present in the conversation and subcategories showed that H1 was supported. The Twitter conversation and subcategories were dominated by the sentiment of fear in all posts regarding mental health and COVID-19 (see Table 1).

Table 1. Percentage of Posts Showing Emotions Present in Posts on the Conversation in All Posts and Subcategory Posts.

	Fear	Sadness	Joy	Disgust	Anger	Surprise
All Posts	56.8%	19.6%	11.4%	8.2%	4.0%	0.0%
Anxiety	89.0%	3.2%	5.9%	0.9%	1.0%	0.0%
Depression	49.7%	42.1%	6.4%	0.8%	0.9%	0.0%
OCD	83.7%	1.4%	6.4%	4.4%	4.0%	0.1%
Psychologist	50.7%	25.6%	20.3%	1.9%	1.5%	0.0%
PTSD	62.9%	19.2%	8.7%	4.7%	4.5%	0.0%
Stress	75.1%	5.9%	10.9%	3.6%	4.5%	0.0%
Suicide	57.5%	30.8%	5.6%	3.8%	2.0%	0.2%

To address H2, we investigated the relationship between the subcategories on Twitter and COVID-19 cases and deaths in the United States. The Pearson correlations revealed several statistically significant correlations (see Table 2). Total weekly COVID-19 cases in the United States were positively correlated with weekly Twitter posts using the terms "depression" ($r = .55$, $p = .04$), "psychologist" ($r = .68$, $p = .01$), and "PTSD" ($r = .58$, $p = .03$). Total weekly COVID-19 deaths in the United States were positively correlated with the posts using the term "psychologist" ($r = .65$, $p = .01$). All other bivariate correlations yielded nonsignificant results. Thus, H2 was only partially supported.

***Table 2. Bivariate Correlations of Weekly Mental Health Subcategory Use and COVID-19 Cases
and Deaths in the United States.***

	COVID-19 Cases	COVID-19 Deaths	M(SD)
Anxiety	.10	−.03	13032.64(18276.71)
Stress	.14	.03	12022.79(18841.09)
Depression	.55*	.42	7927.57(9604.88)
Suicide	.28	.04	4968.71(7391.16)
Psychologist	.69**	.65**	553.86(547.81)
PTSD	.58*	.48	348.07(455.32)
OCD	.08	−.06	283.86(327.18)

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

Qualitative Findings

To answer RQ3, three prominent themes were identified in the Twitter conversation regarding COVID-19 and mental health: (a) mental health support, (b) shifting priorities, and (c) politicized issues. Each theme is associated with various sub-themes and the type of publics that were relevant to the sub-theme (see Table 3).

The first prominent theme found in the discussions was mental health support, which included sub-themes of mental health awareness, expert opinions, self-help resources, fear of spread, concern for essential workers, and social support. A number of the posts discussed mental health awareness; these included the mentioning of various mental health issues and their symptoms. In general, the purpose of these posts was to call attention to those whose mental health might be worsening during the COVID-19 pandemic. Another prominent sub-theme came from the use of expert mental health opinions. These experts included medical practitioners, scientists, and psychologists. Though sometimes overlapping with expert opinions, there was also a clear sub-theme of self-help and resource suggestions. This included self-help articles, the promotion of mental health organizations, and other anecdotal coping mechanisms. Tweets also reflected the idea that mental illness could spread due to social distancing, the spread of germs, and preexisting illnesses. There was also a preoccupation with COVID-19 possibly taking a toll on veterans who already suffer from PTSD. Also among the sub-themes was the concern for essential workers, including health-care workers and first responders. There was some overlap between the essential worker sub-theme and the sub-theme of social support, which included statements of solidarity and encouraging stories as well as expressions of worry over the mental health of people's families and social circles. These tweets were meant to encourage users to reach out to those who might be struggling and to show support for those already experiencing mental health difficulties.

Though many posts focused on mental health issues, there were a significant number of posts that pointed out the need for a shift in priorities. There were two types of posts in this thematic category: (a) those that described COVID-19 as less of a threat compared with other health issues or safety risks and (b) those that expressed the need to worry more about people in isolation who might experience exacerbated mental health symptoms. A number of these posts weighed the options that might reduce the spread of

COVID-19 and indicated that the ramifications of stay-at-home orders and social distancing—though keeping people physically healthy—may be negatively impacting people's emotional health.

Finally, not all the posts in this conversation were specifically about mental health, even though they used these mental health terms; these were politicized issues, including sub-themes of politics and economic concerns. These sub-themes were likely present in part due to dual meanings of the words "stress" and "depression," which can be used in the context of the economy (i.e., economic depression and economic stress) or in the context of mental health; yet these sub-themes also included posts that referred to mental health specifically. Thus, the aforementioned findings related to depression and stress should be approached cautiously. For instance, qualitative analysis indicated that "depression" was used in terms of mental health as well as in terms of an economic depression, and as such, it is unclear which term is truly correlated with the number of COVID-19 cases; however, based on research that indicates economic instability is associated with a decline in mental health and an increase in suicide rates, it should have been positively correlated with COVID-19–related cases and deaths as well (Vandoros et al., 2019). The terms "stress" and "depression" (as they were related to the economy) were not removed from this sample, as the constraints of Crimson Hexagon would also require that we remove all mental health–related posts including the terms "stress" and "depression." Future research should examine the use of these terms using other methods. The sub-theme of politics included posts wherein users politicized COVID-19, or the posts were an expression of politicians' commentary on COVID-19 from their personal political position. Other posts focused on political critiques and criticizing President Trump's actions that users saw as negatively impacting the economy and people's mental health. There was also a sub-theme of economic concerns and the stress that stay-at-home orders would have on the economy.

The qualitative findings of this study supplement the quantitative findings and provide insight into how U.S. Twitter users' communication behaviors can be conceptualized through the situational theory of publics framework (see Table 3). Based on the sub-themes present, it appears that both an active public and an aware public were present in the conversation. Twitter users acted as an active public when they believed their posts could address the problem of mental health issues related to the COVID-19 pandemic; the related sub-themes include mental health awareness, expert opinions, self-help resources, the fear of spread, social support (informationally and emotionally), COVID-19 as less threatening than other health/safety risks, politics, and economic concerns. Furthermore, the aware Twitter public was aware of mental health issues during COVID-19, though less concerned with problem solving (i.e., were not providing solutions to mental health difficulties such as social support); the related sub-themes included mental health awareness, expert opinions, fear of spread, concern for essential workers, COVID-19 as less threatening than other health/safety risks, worry over people in isolation, politics, and economic concerns. It is likely that a latent public and nonpublic did not emerge in this sample as they likely did not have enough awareness of the problem to address it on Twitter, a social media platform that is often dominated by highly emotional and opinionated content (Stieglitz & Dang-Xuan, 2013; Tsugawa & Ohsaki, 2015).

Table 3. Qualitative Themes and Sub-Themes and Relevant Publics.

Theme	Sub-Theme	Type of Relevant Public (i.e., active, aware, latent, nonpublic)
Mental health support	Mental health awareness	active/aware
	Expert opinions	active/aware
	Self-help resources	active
	Fear of spread	active/aware
	Concern for essential workers	aware
	Social support	active
Shifting priorities	COVID-19 less threatening than other health/safety risks	aware
	Worry over people in isolation	aware
Politicized issues	Politics	active/aware
	Economic concerns	active/aware

Discussion

This research examines how mental health issues are discussed online in conjunction with the physical spread of a communicable disease such as COVID-19. Understanding the public's health concerns are important as mental health issues are a likely side effect of a pandemic (Brooks et al., 2020). This study provides health communicators with insights into how publics leverage online discussion platforms to express social support for those in distress.

Findings from the quantitative and qualitative analyses indicate that, overall, people involved in the discussion about mental health and COVID-19 on Twitter act as an active public and an aware public, depending on the issues they post about. As the situational theory of publics suggests, an active public has high problem recognition and high involvement but low constraint recognition (Aldoory & Austin, 2011; Grunig, 1988). In the context of this research, the active public understood that people were experiencing difficulties with their mental health and as such were posting on Twitter about how they and other people could deal with it (i.e., social support). Furthermore, this public likely believed that posting online could help others during this crisis because they perceived fewer constraints, or barriers, to their ability to control the problem. There was also a substantial number of conversation themes that demonstrated the presence of an aware public. Though very similar to the active public in post content, they did not try to solve mental health issues during COVID-19 through self-help resources or social support.

Though the conversation volume was relatively high for this niche topic, the conversation tapered off after about a month of exponential attention. It is possible that this decreased conversation is due to emotional burnout from encountering negative post content related to COVID-19 (Shao, Shi, & Zhang, 2021), which means that it is possible that those active in the conversation became overwhelmed by the amount of information and consequently decreased their media usage.

Based on the engagement (i.e., top influencers and mentions) with the conversation, the data also provide interesting insights that indicate that unverified, layperson accounts have the ability to influence niche topics on Twitter. Only four of the top influencers in this conversation were public figures; in other words, the lay Twitter public is active in recognition of the problem and their involvement (Grunig, 1988). Thus, the active public appears to consist of not only opinion leaders who have some sort of celebrity status but also opinion leaders who are laypeople. It is possible that because this topic is more niche—and perhaps fewer people are posting about it—non-influencers can have more of a voice in the issue.

These results indicate that during the beginning of the COVID-19 pandemic in the United States, the active and aware publics emerged as they became more aware of their need for psychological help as well as their own personal difficulties with social isolation. When there was an increase in COVID-19 cases, people regularly referenced depression, psychologist, and PTSD in their tweets. Additionally, an increase in COVID-19 deaths was associated with posts using the term psychologist. An increase in posts referencing psychologists may indicate the public's increased need to seek expert help or the sharing of expert opinions as people look for mental health relief or solutions to cope with their emotional difficulties associated with an increase in fear and uncertainty. It is possible that discussions surrounding depression also increased over time as research indicates that social isolation and loneliness are related to depressive symptoms (Cacioppo & Cacioppo, 2014); as such, it appears that quarantine and social-distancing regulations may also impact individuals' feelings of sadness and hopelessness. Moreover, anxiety, stress, suicide, and OCD were not positively correlated with increasing cases of the disease or deaths. This may be because the stressors associated with trauma and depression are worsened by social isolation, whereas anxiety, stress, and OCD may be lessened if individuals feel that quarantine allows them safety from their stressors—be that the virus, social situations, or other environmental stressors. It is unclear why suicide was not found to be positively associated with COVID-19 cases or deaths; future research should investigate this. It could be that the results may be different later in the pandemic, after the impact of social isolation begins taking an even greater toll on mental health.

The analysis indicated that although the Twitter conversation was dominated by fear and anxiety, posts also prominently included themes of mental health support, indicating that the active public was willing to share hope and helpful resources. This type of response demonstrated problem recognition. Moreover, Twitter users provided advice from professionals (i.e., psychologists). As a result, it appeared that people were coping with the pandemic by posting more about meeting with psychologists or resources written by them. Thematic findings (i.e., mental health awareness, expert opinions, self-help resources, and social support) from the qualitative analysis suggest that the active and aware publics acknowledged the psychological difficulties surrounding the existence of the virus, while only the active public recognized the need for tools to combat the problem.

Twitter conversations also suggest that the active publics that engaged in conversations about mental health experienced low constraint and felt they were able to control problems related to mental health to some degree. By sharing resources, this public showed a belief that mental health issues during the COVID-19 pandemic could be addressed (Giustini et al., 2018; Lachmar et al., 2017). The situational theory of publics indicates that an active public is especially proactive in sharing information about emotionally charged topics (Aldoory & Austin, 2011); the results found support for this concept, indicating

that the active public in this instance was preoccupied with providing others with information about mental health. These research findings also mirror the presumption that an active public uses social media to become informed and to inform and influence others (Aldoory & Austin, 2011).

Personal involvement, or how personally involved the public was in the conversation about mental health, was demonstrated through the sharing of personal experiences and social support. This involvement may come as a result of their personal experiences with the topic, as those who are more invested in an issue have been found to be more active in discussing it online (Grunig & Grunig, 2007). As active publics encouraged and stood in solidarity with others who may have been experiencing declining mental health, they demonstrated a personal stake in the issue. Overall, the prevalence of mental health support indicates that U.S. Twitter users who participated in this conversation addressed mental health issues in the context of COVID-19 in a relatively uplifting way. In spite of the high level of fear associated with the virus, the results of this study suggest that the conversation regarding COVID-19 and mental health on Twitter may be more supportive than presumed.

This study supplements previous scholarship on the situational theory of publics by suggesting that Twitter may be a space where a public can become active during times of a global health crisis. Because large numbers of the U.S. population engaged in limited in-person interactions during the time frame studied, it is possible that without access to social networking sites it would have been more difficult for a public to coalesce around a niche topic such as mental health. This study demonstrates that Twitter users in the United States were able to connect during the COVID-19 pandemic and provide mental health support.

Implications for Practitioners

Communication practitioners can act as a bridge between health-care organizations and patients during crises, and as such should engage in strategic planning to effectively disseminate social media messages during these times. Practitioners can take an active role in using Twitter and other social media and online discussion platforms to help spread messages that will provide support to those struggling with mental health (Giustini et al., 2018). For mental health clinics, hospitals, and other such organizations to have a strong voice in mental health during a health crisis, such as a pandemic, they should consider including personalized experiences and targeting laypeople and influencers who can spread their messages, uplifting and supporting those in need.

This research shows that practitioners should focus their messaging on active publics, particularly when seeking to reach people suffering from isolation, uncertainty, and fear. This public has the ability to change health-related attitudes and behaviors among those who need support (Wirtz et al., 2011). Because the conversation about COVID-19 and mental health appeared to taper off mid-March 2020, it is important that PR practitioners and other communication professionals have a media campaign strategy in place to respond to health crises that involve isolation and social distancing. If a communication plan is not already in place, the active public may decline or lose interest in the topic by the time practitioners are ready to post content. Furthermore, posting content too late may mean practitioners' content might not see as much circulation.

In addition, health communicators should construct messages in such a way that they balance out the fear online and involve messages of social support and solidarity. Continued messaging over time should also emphasize professional opinions from psychologists or experts. Because active publics are willing to disseminate professional and expert advice and resources, such posts could improve organizational reputation and build trust with the public. Messages should not rely solely on supportive messages, however, as research indicates that more positive and solution-based messages are most engaging (Guidry et al., 2017).

As has been suggested in previous research, practitioners may have the most success when targeting laypeople, also known as hidden influencers, and influencers who can spread their content (Liang et al., 2019). Because the active public in this study included many laypeople, or non-influencers, it shows that micro-influencers (i.e., between 1,000 and 1 million followers) may be effective targets for strategic messaging. Additionally, the aware public may have the potential to become an active public as they begin to post more about the solutions; thus, practitioners may target the aware public to increase the size of the active public that will spread solutions to the problem.

This study is limited in generalizability, however, as it provides insights into how only an active public discusses concerns about a communicable disease on Twitter. Future research should further investigate the existence of different types of publics on other social media platforms as demographics and uses of platforms vary and may influence the way different publics communicate while using them.

The results of this study demonstrate the uses of Twitter in times of crisis—as a space for mental health resources and social support—and illustrate that people are sensitive to how health crises such as pandemics influence mental health. This study can inform the field of health communications by providing a context for how mental health information is discussed online by active publics.

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