Time Spent on Twitter and General Anxiety: A Survey of Daytona State College Students

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Abstract

Twitter is one of the most popular news-focused social media platforms today. Previous researchers have found that time spent on social media has been connected to symptoms of depression and anxiety (Thorisdottir et al., 2019). However, there is limited research that has explored the intersections between the high influx of concentrated news available to Twitter users and the possible effects on generalized anxiety. The purpose of this study is to explore how time spent on specific Twitter topics (news and pop culture) may relate to generalized anxiety among Daytona State College students. To explore this connection, the researchers created a survey derived from the GAD-7 Anxiety Scale (Spitzer et al., 2006). The researchers then surveyed 34 students split into two groups based on their self-reported most-viewed Twitter topic within the survey. Data from the study suggested that those who view news topics self-report higher levels of symptoms associated with generalized anxiety symptoms compared to those who primarily view pop culture topics. While the results were limited by the small sample of participants, future researchers should consider gathering multiple points of data for each survey participant over a longer period of time to further understand the connection between Twitter and generalized anxiety.

Introduction

1.1 Social Media

We are currently living in an age where a social media presence is highly prevalent, "an ever-increasing phenomenon of the 21st century" (Bekalu et al., 2019). Users around the world now have immediate access to world news, current events, political updates, and the ability to interact with other people from multiple different countries. "Social media can provide individuals with a platform that overcomes barriers of distance and time to connect and reconnect with others and thereby expand and strengthen their offline networks and interactions" (Antoci et al., 2015; Hall, Kearney, & Xing, 2018; Subrahmanyam, Reich, Waechter, & Espinoza, 2008). The majority of our society uses some form of social media on a regular basis; according to a study, "most adolescents use social media regularly (90 percent in the United States)" (Thorisdottir et al., 2019).

1.2 Twitter

The social media platform Twitter is used internationally, but it is especially popular in the United States: "Twitter was chosen over other microblogging based on the worldwide popularity, it currently ranks as the most visited microblogging platform with the most active users (50 million users)" (Robillard, Johnson, Hennessey, Beattie, & Illes, 2013). Twitter remains one of the most news-focused social media platforms available, with around one in five U.S adults reporting Twitter usage. The population consists primarily of people under the age of 50, who contain some form of higher education (Hughes & Wojcik, 2019). The users who frequent the social media site are typically met with an influx of opinions, discussions, debates, and views in the form of short burst "tweets," which come from a minority of people who produce the majority of tweets (Hughes & Wojcik, 2019). One of the defining features of Twitter

is its content format, which provides relative information to each of its individual users. Aside from the personal accounts that one would interact with, Twitter created specific "topics," which are customizable and can be adjusted based on the user's interests.

1.3 Topics on Twitter

Some of the most viewed topics on Twitter are news, pop culture, health and wellness, sports, memes, and art (Zhao & Jiang, 2011). Therefore, the researchers chose to focus on the viewership of these topics for the purpose of their study. When a user first joins Twitter they will be prompted to "follow" topics, and as the algorithm begins to cater to the individual user, their timelines will, in turn, show more of the topics they have selected.

1.3.1 News and Pop Culture

In a recent study by Rosenstiel et al., it was discovered that "Nearly 9 in 10 Twitter users in the study (86%) say they use Twitter for news, and the vast majority of those (74%) do so daily" (2015). The news topic is primarily used to keep users up to date with many current events, whether political or otherwise. An analysis conducted by the Pew Research Center on political activity found on Twitter illustrates that "97% of tweets from U.S. adults that mentioned national politics over the study period came from just 10% of users" (2019). That is, a minority of users who discussed politics on the Twitter platform were producing the majority of tweets. Pop culture was also chosen to fall under the news topic because many pop culture influencers use the platform to share updates, release dates, and conduct "questions and answers" sessions, which allows them to interact with their fans in a more personalized way.

1.3.2 Health, Wellness, and Sports

Some influencers also use their Twitter platform to promote and encourage users to follow the latest health trends. An article published by Twitter made a statement saying, "Health

is happening on Twitter. Conversations about wellness on Twitter have increased by nearly 400

percent over the past four years" (2021). Like the topic of health and wellness keeping users

updated, the sports topic also updates its pages with accurate scores, plays, and even allows

athletes to communicate with their fans. An article by Greg Murphy that was also featured on

Twitter's site goes over this specific interaction, "Fans uniquely turn to Twitter during live

events as their second — and primary — screen to learn what's happening in real-time" (2018).

Twitter is also one of the most sports-centered social media platforms available, "During the

2017 Super Bowl, Twitter saw a +19% lift in unique visitors (versus average Sunday traffic)

while other social platforms, in aggregate, saw a decline in unique visitors" (Murphy, 2018).

1.3.3 Memes and Art

Another trending topic found on Twitter is "memes." Users may tweet memes to help

convey their emotions, such as rage, joy, frustration, and many more expressions through social

media. For example, "Trendy, timely, and fun, memes are one of the most popular ways to

communicate on Twitter. The right meme at the right time can surprise and delight your

followers, drive engagement, and broaden brand appeal — with the added bonus of being an

easy piece of content to create" (Reese). Another key aspect of the platform is that many

entrepreneurs look to Twitter as a tool in which they can advertise and hopefully sell their

artwork; using their timeline as an online portfolio allows for an easy and accessible look into the

artist's work and style. An article on Twitter itself describes this idea with, "Artists are coming to

Twitter for more than connections — they want to create a livelihood and get compensated and

recognized" (Simpson & Smith, 2021).

1.4 Generalized Anxiety

Throughout the survey, the researchers used a definition of generalized anxiety from an analysis by Giulio Perrotta. In the study, Perrotta describes anxiety saying, "Anxiety is defined by the American Psychiatric Association as 'the anticipated anticipation of impending danger or bad occurrence, accompanied by emotions of dysphoria or bodily manifestations of tension'" (2019). According to the study, "Fear, agony, panic, phobia, fear, terror, and stress are all symptoms that are commonly misunderstood and overlapped in everyday parlance" (2019). The researchers chose to focus on the correlation between generalized anxiety and Twitter because of the platform's high concentration of instantaneous news and its possible effects on one's mental health. A recent study result illustrated that "Time spent on social media has been connected to poor psychological well-being and symptoms of depression and anxiety" (Thorisdottir et al., 2019).

1.5 Gap

Limited research has been conducted that directly focuses on the connection between Twitter, college students, and generalized anxiety. Carruthers et al. covered whether there was a measurable difference in those exhibiting symptoms of social anxiety and those without social anxiety. By analyzing the participants' comfortability, they were further able to determine whether their anxiousness was correlated with Facebook usage or preexisting social anxiety. Their study focused on "… FB use and not on other forms of social media" (2019). This would prove important as current research concerning generalized anxiety and the specific Twitter is lacking. Also, a correlation between research on social media and post intensity while measured in Carruthers et al., was done in a more controlled environment. The researchers will instead take a measure of user-submitted responses, providing a less rigid, and more relaxed testing environment. Additionally, in the Coyne et al. study, they conducted it longitudinally over an

eight-year period, hoping to study the correlation between social-media use and well-being. They found "that time spent using SNSs (Social Networking Sites) was moderately related to anxiety and depression" (Coyne et al., 2019). While these studies measured different aspects of well-being, including social anxiety and depression, few have taken a magnified look at how Twitter use might affect generalized anxiety.

1.6 Purpose of the Present Study

The purpose of the study is to explore the question "Among Daytona State College students, how does time spent on Twitter topics affect generalized anxiety?" With the rise in time spent on social media apps due to external events, and the rise of Twitter users within the past few years. These points led the researchers to question how the specific factors listed may have affected users' general anxiety. According to Laura Turner (2017), Twitter users are often worried about how they are perceived online and that the sense of need for external approval has led to an increased sense of anxiety on social media apps. With the lack of data on this research topic, the researchers hope to focus on the correlation between an extended amount of time on Twitter and its potential negative or positive effects on general anxiety. This present study focused on the correlation between general anxiety and time spent on Twitter topics, as well as the difference of means between the Twitter topics news and pop culture. This would help close the gap in the research concerning general anxiety and Twitter.

Methods
2.1 Gad-7 Anxiety Scale

When creating the research instrument, the researchers first looked to the GAD-7 Anxiety scale (Spitzer et al., 2006) for the foundation of their Likert scale survey questions. However, upon further review, the researchers decided to adjust the wording of the Likert scale questions

to allow for the nuances of anxiety to be included and to steer away from the more clinical language provided within the GAD-7 scale. These changes included rewording the Likert scale questions to soften the directness and in doing so, simple adjustments like adding "often" or "sometimes" were made, and also adjusting the questions from a 4-point to a 5-point Likert scale.

2.2 Sample

When the study was conducted, every participant was required to be enrolled in at least one Daytona State College class and was over the age of 18. Ages ranged from 18 to 42 (N=34), where the majority of participants reported their age range to be between 18-22 years (76.5%). Participants were asked to identify their current gender identity and 52.7% reported "Cisgender female"; 21.6% reported "Cisgender male," and 10.8% reported that the gender identities given did not describe them. 10.8% of participants also reported that they did not prefer to answer their current gender identity. The researchers included the races: American Indian or Alaska Native, Asian or Asian American, Black or African American, Latino, Native Hawaiian or Other Pacific Islander, White, "None of these apply to me," and "I prefer not to say." The majority of participants reported their race was White which was 47%. 21% reported "Latino", 15% reported Black or African American, 12% reported Asian or Asian American, and 6% reported American Indian or Alaska Native.

2.3 Research Instrument

The researchers created and utilized an online survey which consisted of fourteen questions that recruited information regarding the demographics of the participants; whether or not the participant has used Twitter within the past six months, and the seven derived GAD-7 Anxiety Scale questions. The timeline of using Twitter in the past six months was specifically

chosen to connect the DSM-5 definition of generalized anxiety to the usage of Twitter. According to the DSM-5 definition, symptoms that are linked with generalized anxiety must be present for more days than not for the past six months (Center for Behavioral Health Statistics and Quality, 2016). The survey was then distributed through the researchers' instructors to Daytona State College's Quanta Honors Program students, as well as the professors with whom the researchers had mentoring relationships. Their professors then sent the survey out to their online course shells in order to reach a larger sample of participants.

2.4 Statistical Analysis

A hypothesis test was conducted on two topic groups: those who primarily view news and those who primarily view pop culture. The researchers needed to flip several Likert scale values from descending order to ascending order to improve clarity. After the results were gathered, they were organized based on the primary topic viewed. The mean and standard deviations were then found for the Likert scale anxiety levels. A difference of means test was then conducted to test for the validity of their claim.

2.5 Tested Hypotheses

Two hypotheses were formulated by the researchers, based on the review of previous research studies which showed the need for more specific data regarding how time spent on certain Twitter topics and how the differences of topics that users view may affect anxiety levels. Figure 1 illustrates the hypotheses that the researchers tested and their possible connections with symptoms related to general anxiety.

Figure 1

Tested Hypotheses
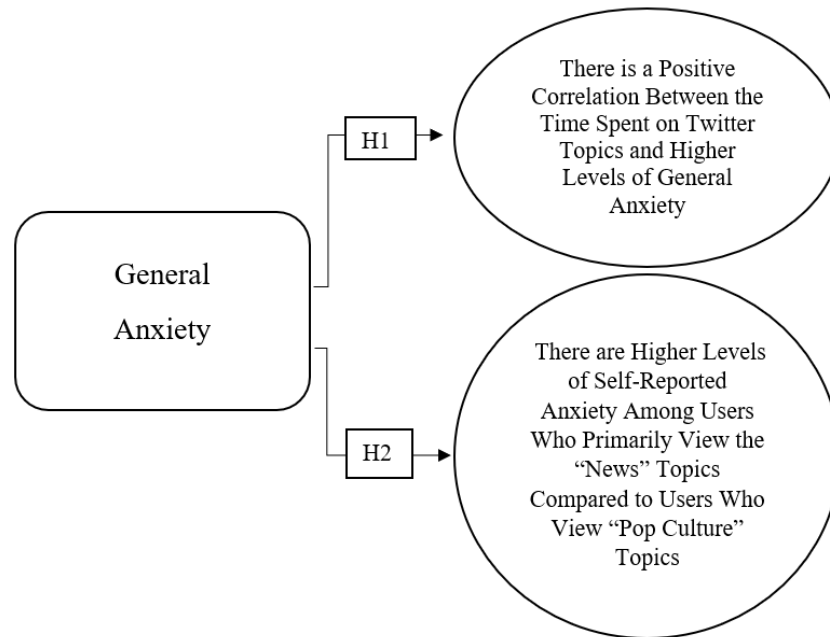
2.5.1 Hypothesis 1 - There is a Positive Correlation Between the Time Spent on Twitter

Topics and Higher Levels of General Anxiety

The researchers' first hypothesis is that there is a positive correlation between time spent on Twitter topics and general anxiety. The researchers believed that with the increase in time spent on Twitter topics, users may be more likely to experience higher levels of general anxiety symptoms and traits. To conduct the experiment for hypothesis one, the researchers chose to have the participants answer the questions of how much time they spend on Twitter per day and were then prompted to answer the seven derived GAD-7 anxiety scale survey questions.

2.5.2 Hypothesis 2 -   There are Higher Levels of Self-Reported Anxiety Among Users

Who Primarily View the News Topics Compared to Users Who View Pop Culture Topics.

The researcher's second hypothesis is that there will be higher levels of anxiety reported among users who primarily view the news topics on Twitter, versus the users who primarily view the pop culture topics. When creating the survey, the researchers posed questions such as, "Which Twitter topic do you view the most?" and the users were then given the choices between, news, pop culture, health and wellness, sports, art, and memes. The researchers then combined the topics that were not news into one grouping which they then labeled as pop culture. After providing an answer to the topic question, the instrument led the surveyor to a variety of Likert scale questions which could indicate possible symptoms that may relate to general anxiety.

<div align="center">**Results**</div>

3.1 Summary of Results

The researcher's first hypothesis states that there was a relationship between Twitter use and anxiety, but was not supported by the statistical research conducted. However, their data did support and provided statistical significance to their second hypothesis, which states that those who read the news topic section on Twitter may have higher levels of general anxiety, rather than those who view and read pop culture topics. This data was illustrated in the results of the Likert scale question, "I often feel nervous, anxious, or on edge". The researchers concluded that their analysis did not reach statistical significance for their other Likert scale survey questions.

Table 1
GAD-7 Survey Questions

| I often...	N	$\underline{x}$ (News)	Sx (News)	$\underline{x}$ (Pop Culture)	Sx (Pop Culture)	P-Value
Feel nervous, anxious, or on edge	34	3.42	1.73	2.33	1.53	0.05
Fear the unknown	34	3.33	1.67	2.67	1.32	0.14
Have trouble relaxing	34	3.25	1.71	2.48	1.21	1.00
Worry about things that I can't control	34	3.33	1.78	3.14	1.59	0.38
Feel restless	34	3.75	1.42	3	1.45	0.09
Struggle to control my worries	34	3.58	1.62	2.76	1.37	0.08
Feel easily annoyed or irritated	34	3.75	1.42	2.95	1.60	0.08

Note. N = 34

Table 1 shows that while there was a lack of significant statistical data cumulatively, there was significant statistical data for the GAD-7 question stating "I often feel nervous, anxious, or on edge". This question's news group had a mean anxiety level of 3.52 while the pop

culture group had a mean anxiety level of 2.33. The standard deviations were 1.73 for news and 1.53 for pop culture, with a P-value of 0.05. Furthermore, the lower P-values for the questions of "feel restless", "struggle to control my worries", and "feel easily annoyed or irritated" could imply that with more participants the P-values would be more statistically significant. Oppositely, the high P-values in the questions "having trouble relaxing" (1.00) and "worry about things that I can't control" (0.38) provided the least useful results possibly due to the small sample size, diversity, and the generalness of these two questions.

Figure 2

Hours Spent on Twitter Topic Per Day
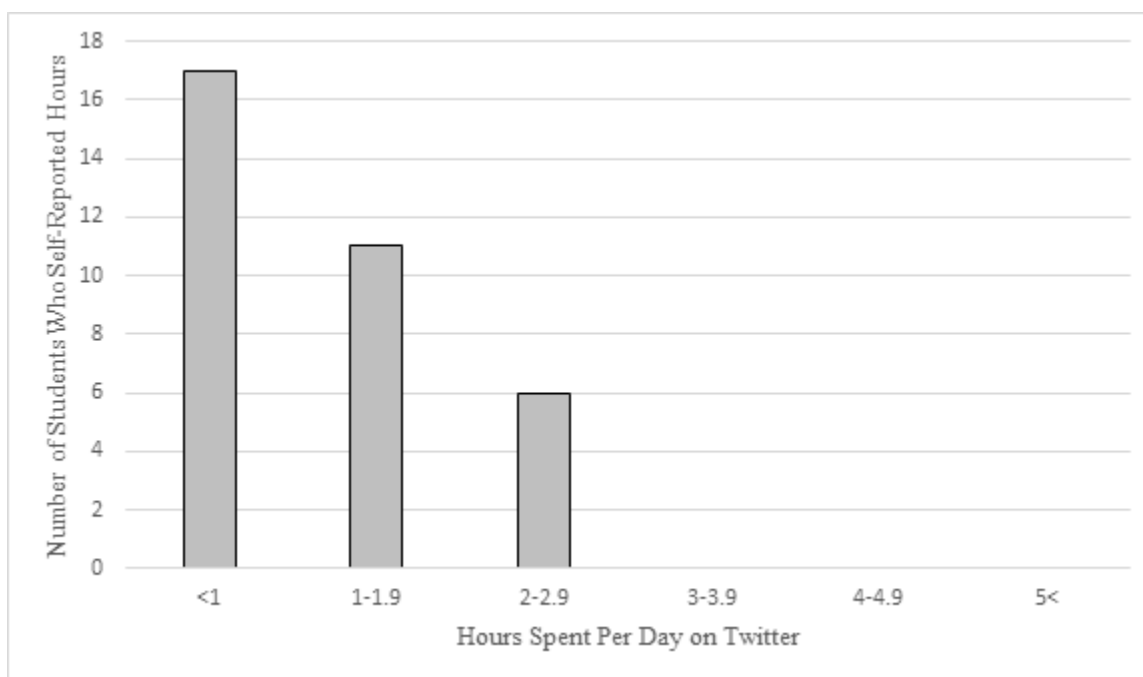
Note. N=34

Figure 2 demonstrates that out of the 34 participants surveyed, the majority self-reported using Twitter less than an hour per day. The number relative to this is 17 respondents which would represent 50% of the population of the participants. Next, in the 1-1.9 hour range, the

table shows a number of 11 respondents which represent 32.4% of the total participant

population. From the 2-2.9 hour mark, the respondents hold 17.6% of the population of

participants or 6 which would be the least amount besides 0. Lastly, in the 3 to 5-hour sections,

the table shows that no participants reported these three choices, making it represent 0% of the

population of participants.

Table 2
Twitter Topics Viewed

	Participants	
Twitter Topics	N	%
News	12	35.3
Pop Culture	15	44.1
Health and Wellness	2	5.9
Sports	1	2.9
Memes	2	5.9
Art	2	5.9

Note. N =34

Table 2 illustrates that the majority of participants predominately view pop culture topics

on Twitter. The researchers had a total of 34 responses which ranged from news, pop culture,

health and wellness, sports, memes, and art. Pop culture received the most responses (44.1%) out

of the topics provided in the researcher's survey; the news topic followed closely behind with

(35.3%). The least popular topics included in the survey among the sample were health and

wellness (2.9%), memes (5.9%), and art (5.9%). The findings contradict the researcher's

anticipated response of news being the predominant topic viewed among the surveyed Daytona

State College students.

Table 3
Mean Anxiety Depending on Primary Topic Viewed

	Participants		
Twitter Topics	$\underline{x}$	Sx	N
News	3.49	1.57	11
Pop Culture	2.86	1.48	23

Note. N = 34, P = .14, and $\overline{x}$ of all participants = 3.08

Table 3 exhibits that out of the 34 participants, 11 indicated news was their primary topic

of interest on Twitter while the remaining 23 participants indicated their primarily viewed topic

was pop culture. The researchers integrated the topics of health and wellness, sports, memes, and

art into one main topic of pop culture. With the news topic having a higher mean than the pop

culture topic, it shows that those who viewed news the most showed more signs of general

anxiety than those who viewed pop culture. Additionally, the mean for news was slightly above

the sample mean of all participants while the mean for pop culture was slightly below the mean.

This might suggest that those who use Twitter mostly for news-related posts may have a higher

level of general anxiety while those who view pop-culture related posts may have a lower level of general anxiety.

Discussion

4.1 Summary of Research Study

The aim of the present study was to determine whether an increase in time spent on specific Twitter topics would also increase users' anxiety, and how the individual Twitter topics may vary in effect on the user's anxiety. Upon completion of the study, reviewing hypothesis one, which focuses on the time spent on Twitter topics, the researchers found that there was a lack of significant statistical evidence to support this claim. A p-value of 0.14 was found when calculating the correlation between time spent on Twitter topics and the user's self-reported anxiety levels, demonstrating the lack of statistical significance. The trends of previous research found within the literature review were not consistent with the researchers' findings. For instance, "Time spent on social media has been connected to poor psychological well-being and symptoms of depression and anxiety" (Thorisdottir et al., 2019), based on the results of the study, there was not a positive correlation between time spent on Twitter topics and the user's anxiety levels.

In response to the second hypothesis, there was also a lack of significant statistical evidence to support the researchers' claim that there were higher levels of self-reported anxiety among users who primarily view the news topics compared to users who view pop culture topics. Keeping in mind that the sample size surveyed was small (N=34), the majority of participants in the sample who selected the news topic as their primary viewership on Twitter did have a slightly higher level of possible anxiety traits, however, there was not a significant difference found to support that the population who view news topics have higher levels of anxiety.

Previous studies led the researchers to anticipate a response from the participants stating that they utilized Twitter primarily for news-related updates and information (Hughes & Wojcik, 2019), however, the results illustrated that pop culture was in fact the predominant topic in comparison to the others provided.

This study suggests that while there could be a correlation between time spent on Twitter topics and general anxiety for Daytona State College students, additional research to clarify the researcher's claim is needed. Depending on the different topics such as news, pop culture, health and wellness, sports, memes, and other sub-topics that fall under these categories that are primarily viewed on Twitter, this study suggests that the participants who used Twitter and viewed the news topic reported higher levels of feeling more nervous, anxious, or on edge.

4.2 Limitations of the Study

Although this study contributes to the understanding between usage of Twitter and its relationship to general anxiety, there were several limitations that presented themselves throughout the process. To begin, the researchers had a total of 74 Daytona State College student participants start their survey but only 34 participants' submissions were applicable to the research. This was due to the question "Have you utilized Twitter within the last six months?" This factor resulted in there not being a substantial enough population to understand the relationship between time spent on Twitter topics and higher levels of self-reported anxiety. Therefore, the researcher's primary question; does an increased usage of Twitter leads to a higher sense of general anxiety remains not fully answered.

Additionally, with the unexpectedly small sample size, the grouping of Twitter topics had to be adjusted by the researchers. Originally, the Twitter topics were separated into the specific categories listed in the introduction and were going to be calculated individually.

However, upon reviewing the data received, the researchers decided to join the categories into two primary groups: news (which stood alone) and pop culture (which included sports, health and wellness, arts, and memes) for a clearer breakdown of the results.

This particular study also did not take into account circumstantial factors that could distort the validity of correlation studies. Whereas a survey of one's socioeconomic, personal, or other external life factors influences the outcome, according to the student's current psychology. The researchers did not have access to participants' life factors or other factors that may have influenced their responses to the survey questions. Due to the sensitivity of the psychological effects, a single-time self-reported survey failed to consider such external variables. For example, a study where the researchers took multiple points of data over a certain period of time would have provided the opportunity to filter these variables, however, the researchers did not have the time or resources to conduct the study in that way.

There were limitations with researching a larger population of students due to the global COVID-19 pandemic. Therefore, the sample size was restricted in its distribution to only students who utilized an online format of their class. The research instrument was administered via the researcher's instructors, which also limited the sample size, rather than reaching Daytona State College students as a whole.

Another constraint to account for was the unknown accuracy of the information provided by the participant's responses in the survey. For example, participants may not have accurately distinguished between news and pop culture categories. Because the survey was formulated to receive "self-reported" data, the recollection, perception, and understanding of the question could lead to intentional, or unintentional faulty interpretation. These effects remain reassessed, and the information unverified. For example, memes themselves could be interpreted as political and

may even convey news. It is dependent on the individual's own perceptions if they feel these types of memes are classified as a category of news or pop culture, which may diminish the validity of the responses.

4.3 Recommendations for Future Research

To allow for a more successful study in the future, some of the following recommendations should be considered. The first is the format of the study; the researchers believe that it would be more beneficial for future researchers to take this study and focus on the collection of data to obtain a greater sample size and collect this data for longer than a week. A larger sample size would provide the opportunity to cross-examine changing factors and it would allow for a deeper understanding of the changing levels of anxiety, based on how often users are active on Twitter. In addition to following the same population of students throughout a long-term study, there could also be a study carried out on a new population of Daytona State College students as the incoming enrollees sweep in.

Another recommendation for future researchers who are specifically reviewing the relationship between time spent on Twitter topics and higher levels of self-reported anxiety would be that they should first start by targeting a larger population to gather more data regarding this topic. Surveying multiple colleges and universities would provide a more diverse and inclusive group, allowing for a better representation of the college student population.

Future researchers should also consider a way to verify the information gathered by examining the Twitter pages of each participant. Examining the tweets of the participants and verifying their content, provides a more reliable result in the formation of the research. It also allows participants to be transparent in measuring their overall anxiety level based on their recent

Twitter content usage. Due to privacy concerns, this intention should be clearly communicated to each participant prior to their agreement to participate.

Keeping in mind that everyone may experience unpredictable anxiety to one degree or another, especially in the past two years regarding the COVID-19 pandemic, future researchers should consider this variable and how it may have an impactful effect on Twitter users and their levels of anxiety. Perhaps, filtering the research to look at how COVID-19 related news in particular effects anxiety would provide clearer and more interesting information and data. According to Lwin et al, the COVID-19 pandemic has impacted main public mental well-being, due to an unexpected crisis that has affected public well-being in regards to negative emotions such as anger and sadness (2020), therefore there is a need for further research to specifically review the effects related to COVID-19 and Twitter.

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