

Universities and tweeting: a content analysis of collegiate tweets

by

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Abstract

Universities promote themselves on Twitter for a number of reasons: increase enrollment, promote the institution's programs, and more. However, while research has dictated what universities tweet about, research has not yet determined what the most popular topical frames are that universities tweet. This study utilizes a content analysis to determine the most popular topical frames, the correlation between engagements and engaging elements on university Twitter accounts, and what the "balancing act" is that universities perform in tweeting about controlled and uncontrolled events such as a new facility opening, vs something such as the COVID-19 pandemic. Results indicate that tweets are monologic, most likely to post about academics such as research projects (without naming the researcher(s) in the tweets) and controlled subjects such as research, rather than uncontrolled subjects like scandals. In addition, the engaging elements such as visuals, hashtags, and polls do not appear to uphold traditions of driving engagements, instead only user comments on university tweets appear to be boosting engagements.

Table of Contents

List of Figures	v
List of Tables	vi
Acknowledgements	vii
Dedication	viii
Chapter 1 - Introduction.....	1
Chapter 2 - I Tweet, Therefore I am: A Review of Twitter Literature	4
Chapter 3 - Method	12
Chapter 4 - Results.....	17
Chapter 5 - Discussion	25
Chapter 6 - Conclusion	30
References	32
Appendix A - List of Universities Coded for Tweets Sample	39
Appendix B - Codebook	40

List of Figures

Figure 1: First Tweet from Yale University	18
Figure 2: Tweet from University of Pennsylvania.....	20
Figure 3: Tweet from Cornell University	23
Figure 4: Second Tweet from Yale University	24
Figure 5: Tweet from Rice University	28

List of Tables

Table 1	14
Table 2	18
Table 3	19
Table 4	20

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Dedication

This research is dedicated to the many professors, teachers, and friends I've had over the years who have worked tirelessly and consistently to implement a love of learning in my sometimes-nonfunctional caffeine-fueled brain. I know it was a huge undertaking and I apologize it took a quarter of a century to make it happen.

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Chapter 1 - Introduction

Social media can be defined as “a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0 and allow the creation and exchange of user-generated content” (Kaplan & Haenlein, 2010, p. 61). As one of the most popular social media sites, Twitter with over 300 million active users worldwide (Lin, 2020) and 260 million in the USA (Omnicores, 2020) is used as a promotional tool by almost every university in North America (Motta & Barbosa, 2018). Twitter offers a limited amount of characters per post, known as a “Tweet” and can attach multimedia to the tweets; a user can share their content with someone else through a function called “retweeting” (O’ Connor, Jackson, Goldsmith, & Skirton, 2014). Twitter defines engagements as the “total number of times a user interacted with a Tweet. Clicks anywhere on the Tweet, including Retweets, replies, follows, likes, links, cards, hashtags, embedded media, username, profile photo, or Tweet expansion” (Twitter Inc., 2020).

Universities, much like a business, promote on Twitter, although universities use a much more monologic approach, as opposed to a dialogue, which means only the university Twitter account “speaks”—the account does not respond to other Twitter accounts creating a one-way line of communication (Wang, 2016; Linvill, McGee & Hicks, 2012). This promotes universities very similar to that of businesses, but universities remain separated from businesses in previous research showing that more research on universities Twitter accounts is needed. Universities use social media to communicate with their target audiences to be potential new students (Barreto, 2013).

Maintaining a positive and active presence on Twitter is an important action for universities to take to reinforce their corporate image online (Duque & del Moral Pérez, 2013). Universities do not post controversial or community outreach type tweets, instead opting for

more informational tweets to showcase their institution positively (Kimmons, Veletsianos, & Woodward, 2017). Universities and businesses share many similarities on Twitter: both must understand their target audience and optimal times to publish tweets to reach their target audiences (Malroux & Tripp, 2008) this suggests that research can be explored dealing with university Twitter accounts, treating them similarly to businesses. Previous research on universities and how they utilize Twitter states that tweets are meant to be announcements rather than any other form of communication, with much of previous literature exclusively detailing how universities can improve their Twitter presence and how to better utilize Twitter for promotion (Kimmons, Veletsianos, & Woodward, 2017). This shows that there is much room to improve for university twitter accounts.

Twitter engagements are the metrics used to determine the popularity or effectiveness of the tweet—for example, if a tweet has high engagements, the tweet can be considered successful (Madrigal, Jiang & Roy-Chowdhuri, 2017). Engagements are important to promote the use of Twitter as a whole, showing the importance of Twitter through interactivity (Sundstrom & Levenshus, 2017).

Notably, many universities tweet to entice students to attend or offer some sort of news about the institution (Kimmons, Veletsianos & Woodward, 2017, Barnes & Lescault, 2013). Previous research indicates tweets from universities can be considered monologic communication, (Linvill, McGee & Hicks, 2012) and questions whether the target audience is truly engaged with this one-way communication approach (Wang, 2016). The purpose of this study is to understand how universities utilize Twitter to promote themselves, which is important for universities to determine what to post and how to show their institutions on Twitter, hoping to have high levels of engagement per tweet, and to be examined through the use of framing

theory. This study also investigates the relationship between tweets as one-way communications and engagement levels of university tweets. In addition, this study will be addressing whether or not engaging elements such as images, links, and hashtags have any correlation to the engagements of a tweet in terms of likes or retweets use a more representative sample of tweets across multiple universities than a convenience sample of tweets from four departments of a single school from previous research (Oglesby, 2020). Ideally, this study will allow for universities to build new promotional plans through Tweets with both reconfirming old findings and developing new information for a modern-day tweet.

In addition, this study also offers to expand the theoretical framework's relevance and development for framing theory in a social media setting. Based on a content analysis, this study hopes to better understand universities and their communications on Twitter.

Chapter 2 - I Tweet, Therefore I am: A Review of Twitter Literature

Framing Theory

Framing means “to select some aspect of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation” and frames typically perform at least one of four functions: to outline problems, identify causes, make moral judgements, and advise remedies (Entman, 1993 p. 52). Framing messages has become the dominant form of media effects research (Price & Tewksbury, 1997) and this study is no exception. Framing allows audiences to build a representation of their own thoughts by finding, understanding, and identifying information in the setting (Goffman, 1974) and often to create a sensation of control (Entman, 1993). A great example of framing theory in everyday personal life is provided by Bullock & Shulman: (2021) “an individual’s attitude about outdoor tanning might be composed of weak, negative beliefs about negative health effects, and strong, positive beliefs about one’s tanned appearance” (p. 3). This shows that framing can have negative and positive effects on a single ideal or action: in this case, tanning.

Much research in advertising and media uses framing theory and examines framing effects noting that the framing can sway audience opinions (Mason & Wright, 2011). Frames are defined as “mental schemas that help people make sense of their experiences, and organize them by classifying, labeling, and interpreting them” (Kayam, 2020 p. 157) which is consistent if frames can help to sway audience opinions. Arguably, this is because promoting parties want to increase the salience of their product or service, and by increasing the salience, they increase the chances those receiving their information will process and store it (Fiske & Taylor, 1991).

Framing is noted on Twitter through functions like hashtags (which are a means to index a thought, topic, or conversation on Twitter (La Rocca, 2020)), creating frames of opinion through ending a tweet with an overarching phrase, summarizing the idea in the creator's own opinion. Hashtags allow users to connect their tweet with a specific subject (Hodder & Houghton, 2015). This offers the opportunity for other like-minded individuals to build a community, (Ince, Rojas & Davis, 2017) or a movement (Moscato, 2016) using the same hashtag. Hashtags allow ideas and opinions to circulate on Twitter and thus also circulate frames on the platform.

Overall, framing theory becomes a useful theoretical framework for this study, with frames dictated by the topic of the tweet but also by examining framing tweets in a monologic or a dialogic manner. Additionally, framing theory offers predetermined concepts for university tweeting in a topical way, allowing investigations into the popular topics universities already tweet about.

Universities and Framing Theory

Framing theory is often used in university settings, sometimes without the user's knowledge. Students will often frame their college choices, with frames such as criteria to attend a certain school, when preparing to attend college for the first time (Holland, 2020). Other times students frame their college experiences through the relationships they make, whether it be professional, such as with a teacher, or interpersonal such as a roommate. Numerous other frames exist for students and engagements in their university setting including culture, amenities, and academics, just to name a few (Kahu, 2013).

Other times, framing can be used on the college circuit to frame messages dealing with health measures like outdoor tanning (Bullock & Shulman, 2021) or social injustices such as the

#MeToo movement on college campuses (O'Boyle & Li, 2019). Framing also occurs in university professors' Twitter accounts, such as creating personal tweet (a daily life update or emotionally charged post) or a professional tweet (such as their research or latest academic accomplishments) and sometimes misinterpreted by the viewers resulting in problems for the professors and university they teach at (Bowman, 2015). In short, framing at the university/college level occurs daily, both in person, and in cyberspace.

Promoting on Twitter

Twitter is a means of communication, (Chen, 2011) promotion, (Alansari & Velikova, 2018) and a wildly popular social media site (Browning & Sanderson, 2012). Additionally, Twitter data is often publicly available, making Twitter an ideal social media platform for researchers to study (Hodder & Houghton, 2015). Twitter promotions are more effective when intended to engage the target audience (Hodder & Houghton, 2015). Engaging the audience is often done through the use engaging elements (i.e., hashtags, imagery, and links) (Oglesby, 2020).

Promoting on social media is an important action for any businesses to take for the maintenance of the business-consumer relationship (Han, Hong, Lee, & Kim, 2017) especially with social media becoming inescapable in American daily lives (Perrin, 2015). The strategy businesses employ for Twitter is overwhelmingly one-way for sharing content (Zhang, Gosselt, & de Jong, 2020). Businesses use Twitter to promote themselves through various means such as promoting their agencies or company values. Previous research indicates a positive correlation between a company's tweets and their market value (Majumdar & Bose, 2019) and has an impact on the investments of a company as well by attracting attention of investors (Prokofieva, 2015).

Customers, on the other hand, follow businesses on Twitter for a multitude of reasons, such as to gain information, search for entertainment from the company's Twitter account, find rewards such as a promo code or prizes to win, (Azar, Machado, Vacas-de-Carvalho, & Mendes, 2016) or because users personally identify with a company's values or complimentary branding to their own lifestyle, (Gao & Feng, 2016) and lastly, to be connected to the company in some way such as the company retweeting what a user has posted (Zhao, Su, & Hua, 2016). In addition, when a consumer has a positive attitude towards a tweet, then they will likely have a positive attitude towards the Twitter account and again in turn, likely have a positive attitude toward the company of the account, creating a pattern (Alansari & Velikova, 2018).

Further research dictated that tweets with graphics (almost exclusively photos or infographics) and engaging elements such as links or hashtags are incredibly common and used to share information, as well as draw attention to the tweet (Zhang, Gosselt, & de Jong, 2020). Emojis however, were often left out (Zhang, Gosselt, & de Jong, 2020) with speculation that they were perceived as unprofessional for business postings which is consistent with previous literature (Danesi, 2016).

Promoting Universities on Twitter

Most universities in North America promote themselves on social media (Motta & Barbosa, 2018) which is a must if students, or potential students, spend at least, if not more than three hours a day on social media (Raacke & Bonds-Raacke, 2008). Because of the popularity of Twitter, it is important to understand how universities use and promote themselves on the platform (Kimmons, Veletsianos & Woodward, 2017). For example, previous research indicates that universities must post on social media to garner attention, rather than other forms of social media advertising, such as banner ads which are often simply ignored to focus in on the search or

interpersonal use of the social media platform (Barreto, 2013). When using Twitter, universities primarily consider it a means to convey information to their audience (Linvill, McGee & Hicks, 2012), with previous research showing that Twitter has been used as an announcement platform for university news and events (Kimmons, Veletsianos & Woodward, 2017) and using Twitter as a recruitment tool to entice incoming students to boost enrollment (Barnes & Lescault, 2013). It is already known that universities use social media to communicate with a target audience, which is often potential students (Barreto, 2013). Notably, there is no current research showing any correlation between enrollment and an educational institute's tweets (Wang, 2016) instead dictating that university accounts tweet more when they have more online followers, rather than students attending the institution, and Twitter cannot be used as a means to determine quality of an educational institution (Duque & del Moral Pérez, 2013).

Engaging Elements Example

A great example of previous university Twitter literature comes from Kimmons, Veletsianos, and Woodward (2017.) In their study, an investigation between universities posting monologic vs dialogic tweets was performed, showing that the majority of university tweets are monologic, consistent with numerous other publications on the topic of university tweets (Wang, 2016; Linvill, McGee & Hicks, 2012).

In addition to this, this study also investigated engaging elements, specifically URL links on university tweets, finding that one-third of their sample ($n = 2411$ university accounts, $n = 5.7$ million tweets) or 2.1 million tweets contained a link. 63.5% of these links took users to other social networking platforms, as opposed to news sources or the university of origin's website. However, this study did not investigate any correlation between links as engaging elements and engagements (such as likes and retweets) on the tweets studied.

Lastly, Kimmons, Veletsianos, and Woodward also investigated the topics of the tweets, (known as “topical frames” in this present study) showing that 85.4% were positive reflections of the university of origin. This case study, serves as a precursor to the present study, helping to create the following research questions/hypothesis and establish existing groundwork through this previous literature.

Research Questions

Even though previous research shows what universities tweet about, the most common tweeted topical frame has not been determined. The following research question was developed to discover what the most common topical frame used by universities is:

RQ₁: What is the most common topical frame used by university tweets?

With this, it could be determined what the most popular topic universities tweet about from predetermined frames.

However, while previous research has determined what universities often tweet about, and the intended goals of those tweets, it has yet to discuss the concept of universities tweeting about controlled actions, tweets that the university has control of, like an announcement about a new facility, and uncontrolled actions, things the university does not have control of, such as news on the COVID-19 pandemic. To determine what the “balancing act” universities might be performing while tweeting about internal and external affairs, the following two research questions were developed:

RQ_{2A}: To what extent do universities tweet about controlled actions?

RQ_{2B}: To what extent do universities tweet about uncontrolled actions?

Previous research indicates that universities do not utilize their official Twitter pages in a dialogic manner, instead only offering monologic tweets where the account does not

acknowledge the followers nor engage in a conversation with them (Gordon & Berhow, 2009) and similarly, universities overwhelmingly use a monologic approach to their tweets (Kimmons, Veletsianos & Woodward, 2017, Wang, 2016, Linvill, McGee & Hicks, 2012). Universities are overwhelmingly using a one-way (monologic) approach to tweeting, and it is important to reconfirm this before moving to the next research question, on the off-chance universities could have changed their approach to tweeting in the past several years. Assuming this study reconfirms the style of university tweets as monologic, the relationship between the style of tweeting and Twitter engagements has not yet been determined. To reconfirm the findings of previous literature and the relationship between the one-way communication approach of university tweets and engagements, previously speculated to not truly engage the audience by Wang (2016), the following hypothesis was developed:

H₁: University tweets will remain more monologic in style, than dialogic.

In addition, universities also have a higher level of engagement on social media when their post includes some sort of engaging element such as a link, hashtag, or image on Twitter, which notably has more use of these traits than Facebook (Oglesby, 2020). Additionally, while previous research indicates that engaging elements help raise engagements on tweets for businesses (Zhang, Gosselt, & de Jong, 2020), whether this also applies to tweets of universities still remains unknown. Thus, the following research questions are asked:

RQ_{3A}: Is there a relationship between the number of engaging elements and number of likes on university tweets?

RQ_{3B}: Is there a relationship between the number of engaging elements and number of retweets on university tweets?

These final research questions look to examine the following engaging elements: imagery, hashtags, replies, and polls. Current literature focuses mainly on elements like links, as seen from the case study, imagery, and hashtags, (Han, Gu, & Peng, 2019) but not as much on replies and polls. This study offers a chance to examine less studied elements.

Chapter 3 - Method

A quantitative content analysis, defined as “a research technique for the systematic, objective, and quantitative description of the manifest content in communication,” (Kaid & Wadsworth, 1989 p. 20) was chosen to allow for determination and differentiation of tweets through coding. A content analysis is a method by which the messages of a communication pattern, or the pattern itself are examined, making it ideal for this study, especially when looking for themes and strategies that make university promotions effective on Twitter. Twitter was selected for due to its popularity with universities and data is attainable as it is open to the public.

Sample and Procedure

Universities examined were determined by the Best National University Rankings from the *US News and World Report* for 2020 (with the only filter applied being the “national universities” option) in order to utilize the most recent data with well-known institutions, which not only guarantee these institutions will be on Twitter but also allows the researchers easy access to a predetermined list of universities. In addition, using the top twenty schools is using data to obtain information of the “best practices” of top universities in the country. This made tweets the unit of analysis. Tweets chosen were the most recent tweets from the official accounts of the universities from the fall semester of 2020 (August 1st-December 31st, of 2020), of the top 20 national universities in America with the highest “best school” rankings on the *US News and World Report* website (see Appendix A), from the aforementioned predetermined list of schools to collect data from. Tweets for coding were randomly selected for higher degrees of generalizability. Social media management and inspection platform Meltwater was employed for the capture, collection, and storage of tweets, allowing researchers to save the tweets for later and code as needed.

Codebook

The codebook is included in Appendix B. Coders first documented their name, and the tweet as a numbered item, followed by the university of origin and then track the number of likes and retweets. The Codebook then breaks into three sections, Frames, Monologue vs Dialogue, and Engaging Elements. The Frames section asks what frames universities were promoting on their Twitter accounts, searching to categorize their tweets into controlled (the university is in control of the news, such as boasting about an accomplishment), uncontrolled (the university is reacting to something that is out of its control such as the scandal of a university leader), both (some combination of the previous two categories), and undetermined (which is used if the tweet cannot be categorized into any of the three previous frames) frames. This section also categorizes tweets into commonplace types such as if the tweet was about academics or a new facility opening on campus and more. Should there be two topical frames in the tweet, the option exists for coders to select a secondary frame. The second section helps to categorize whether universities were tweeting in a dialogic (such as asking the audience to engage with the tweet in some way, like a contest) or monologic manner (such as just announcing the latest news from the university), and lastly the third section investigates the engaging elements by measuring the number of likes and retweets, replies and asking if the tweet contained some sort of engaging element like an image, hashtag and poll, and recording the number of hashtags and poll options.

Coding

A total of 13,160 tweets were collected. 10% of each school's tweets collected were coded, collected via random selection, via Microsoft Excel's random function. Tweets were displayed in a spreadsheet, with the random function being applied to another column, and then sorted from the least numerical value to the greatest numerical value from the random number,

newly applied. The top 10% was separated from the other tweets, resulting in 1,324 ($N = 1324$) tweets being coded overall. 10% of the overall sample was set aside to be coded by both coders for intercoder reliability, which equated to 132 tweets ($N = 132$) leaving the remainder of the tweets to be coded later ($N = 1179$).

Table 1

University Tweets Collected and Coded ($N = 1324$ Collected, $N = 1179$ Coded)

<i>University</i>	<i>N Collected</i>	<i>N Coded</i>
Brown University	601	60
California Institute of Technology	351	35
Columbia University	1487	149
Cornell University	590	59
Dartmouth University	248	25
Duke University	810	81
Harvard University	688	69
Johns Hopkins	846	85
Massachusetts Institute of Technology	699	70
Northwest University	406	69
Princeton University	1337	134
Rice University	362	36
Stanford University	252	25
University of California—Los Angeles	794	79
University of Chicago	590	59
Norte Dame	465	47
University of Pennsylvania	1150	115
Vanderbilt University	394	39
Washington University	441	44
Yale University	649	65

Coder training utilized tweets from Kansas State University's Twitter account to practice learning the codebook and to become familiar with the definitions for the variables for both coders, prior to coding through the dataset. Almost all variables reached .8 or higher agreement for intercoder reliability, utilizing Krippendorff's Alpha. Tweets were coded, looking for the number of likes ($\alpha = .99$), number of retweets ($\alpha = .99$), hashtags and number of hashtags ($\alpha = .98$, .94 respectively) and comments and number of comments ($\alpha = 1.0$, 1.0 respectively) each post had, plus any visuals the tweet contained such as an animation, photo, video, or graphic (note, emojis were not considered graphics) or if the tweet was solely text ($\alpha = .97$). Tweets were also coded for polls and number of options available in the poll, but not a single tweet in the dataset contained a Twitter poll ($\alpha = 1.0$). In addition, tweets were coded looking if they were considered controlled, meaning the post appeared the school had prepared or planned for the tweet (things such as staff/faculty retirements, new building announcements, or institutional research) vs uncontrolled, where the school was unprepared and perhaps surprised to be posting the tweet (such as shutdowns from the COVID-19 pandemic, scandals from staff/faculty, or other emergencies) ($\alpha = .88$).

Coders also identified tweets if they were monologic, meaning the tweet does not respond to a previous tweet and "ignores" the audience, or dialogic meaning if the tweet was a response to some other kind to another tweet ($\alpha = .86$).

Other objectives coders sought were the topical frames of the tweet. Frames were determined from prior research, dictating that universities highlight students and staff/faculty as well as their achievements, research or activities on their Twitter accounts, their athletic programs such as games, players, and coaches, new buildings, renovations or famous campus landmarks, promotional tweets dealing with enrollment or enticing enrollment at their institution,

and academics as a broad option in the event that universities tweeted about research or programs without citing the responsible party in the tweet, or if it could not be determined if the named party was faculty/staff or a student. An “other” option was included to code miscellaneous tweets about topics such as the COVID-19 pandemic and the school’s response to it ($\alpha = .88$). An option was presented for the instance that tweets may contain more than one topical frame ($\alpha = .39$), and what it could be from the list above ($\alpha = .39$). These final two variables have low intercoder reliability scores, probably due to conflicting opinions and lack of secondary frames in the tweets.

Chapter 4 - Results

The first research question asked what the most common topical frame used by universities is. The most common frame to appear was universities using an academic frame, mostly detailing research projects taking part in their institution without naming the researcher in the tweet (29%, $n = 342$). This was closely followed by miscellaneous other tweets, such as responses to the COVID-19 pandemic (23.7%, $n = 279$) and tweets detailing faculty and staff by highlighting their achievements or specific research (23.2%, $n = 273$). To test this, a chi-square goodness of fit test was performed, $X^2(6) = 656.005$, $p < .001$. This suggested that there was statistical significance between the frames, with the most popular frame being academics.

Table 2 gives the full breakdown for topical framing of tweets most commonly used by universities from options in this study.



Figure 1: First Tweet from Yale University

This tweet shows an academic frame, monologic in style, with a lack of hashtags but included a visual. This is also a controlled tweet.

Table 2

Topical Frames of University Tweets (N = 1179)

<i>Category</i>	<i>N</i>	<i>Percent</i>
Academics	342	29%
Athletics	28	2.3%
Buildings	54	4.5%

Students	189	16%
Faculty/Staff	273	23.2%
Enrollment	14	1.2%
Other	279	24%

RQs 2A and 2B asked to what extent do universities tweet about controlled and uncontrolled actions. The vast majority of tweets were controlled actions, allowing the university to plan the tweet (98.4%, $n = 1160$) rather than uncontrolled tweets (1.1%, $n = 13$) or being both controlled and uncontrolled (.09%, $n = 1$) or undeterminable (.42%, $n = 5$). To test this, a second chi-square goodness of fit test was performed, $X^2(3) = 361.672$, $p < .001$, finding statistical significance with universities posting more controlled tweets.

Table 3

Control vs Uncontrolled Tweets (N = 1179)

Category	N	Percent
Controlled	1160	98.4%
Uncontrolled	13	1.1%
Both	1	.09%
Undetermined	5	.42%

The sole hypothesis of this study posed that tweets would remain monologic rather than dialogic in style, consistent with previous literature (Kimmons, Veletsianos & Woodward, 2017, Wang, 2016, Linvill, McGee & Hicks, 2012). This study remained constant with past findings with the vast majority of tweets styled as monologic (98.3%, $n = 1159$) rather than dialogic (1.4%, $n = 16$) or having traits of both dialogic and monologic (.34%, $n = 4$). A third chi-square goodness of fit test was performed, $X^2(1) = 127.031$, $p < .001$, finding statistical significance

with monologic tweets predominantly flooding Twitter. Table 4 shows the breakdown of monologic vs dialogic university tweets.

Table 4

Monologic vs Dialogic Tweets (N = 1179)

<i>Category</i>	<i>N</i>	<i>Percent</i>
Monologic	1159	98.3%
Dialogic	16	1.4%
Both	4	.34%



Figure 2: Tweet from University of Pennsylvania

This tweet shows a member of the faculty in a positive message, framing it in the Faculty/Staff category. This is also monologic in style, a controlled tweet and incorporated a visual but no hashtags.

Research questions 3A and 3B investigated engaging elements and their potential relationship to the number of likes and retweets respectively. To examine this, an independent samples t-test was utilized for each engaging element coded for (visuals, hashtags, replies, and polls), and the number of likes and retweets on a post. There was no significant difference between the number of likes the tweet received and the tweet having visuals ($M = 71.2$, $SD = 307.1$) or not having visuals ($M = 83.2$, $SD = 748.3$), $t(1177) = -.369$, $p = .71$. These results suggest that visuals do not increase likes on university Twitter accounts.

Similarly, the same occurred for visuals with no significant difference between a tweet having a visual ($M = 16.2$, $SD = 62.4$) and not having visuals ($M = 22$, $SD = 196.6$) and retweets $t(1177) = -.769$, $p = .442$. These results suggest that visuals do not increase retweets on university Twitter accounts.

There was also no significant difference for tweets having hashtags ($M = 58.8$, $SD = 171.3$) or not having hashtags ($M = 80.7$, $SD = 494.1$) in regards to the number of likes on a tweet $t(1177) = -.867$, $p = .39$. This suggests that hashtags do not produce higher engagements in terms of likes in university tweets.

Likewise, there was no significant difference between tweets having hashtags ($M = 14$, $SD = 34.1$) and tweets not having hashtags ($M = 18.8$, $SD = 118.3$) in terms of number of retweets $t(1177) = -.793$, $p = .43$. This suggests that hashtags do not produce higher engagements in terms of retweets in university tweets either.

Replies on the other hand, yielded statistical significance for boosting engagements on university tweets. A tweet with replies ($M = 124.9$, $SD = 574.5$) vs a tweet without replies ($M = 50.8$, $SD = 316.1$) statistically increased the likes a tweet would receive $t(1177) = 2.842$, $p < .01$. This suggests that replies increase the number of likes on university tweets.

Likewise, a tweet with replies ($M = 27.9$, $SD = 146.9$) vs a tweet without any replies ($M = 12.5$, $SD = 65.9$) statistically increasing the retweets a tweet would receive $t(1177) = 2.483$, $p < .05$. This suggests that replies increase the number of retweets on university tweets. These findings suggest that the true engaging element is actually replies on tweets, rather than previously thought elements such as hashtags and visuals.



Figure 3: Tweet from Cornell University

This tweet from Cornell emphasizes sanitization measures through the use of this visual for the campus community during the COVID-19 pandemic, which places it into the Other category for frames, as no COVID-19 frame was prepared. This is also a controlled tweet.



Figure 4: Second Tweet from Yale University

This tweet from Yale University is a response to a previous tweet, making it dialogic, as well as uncontrolled; the tweet is attempting to mend the reputation of Yale's research and scientists.

Because no polls were given in the dataset, this engaging element was not tested as planned.

Chapter 5 - Discussion

Overall, this study had the opportunity to address what universities do to promote themselves on Twitter. The outcomes were speculated to confirm and update the findings of past research: university tweets were anticipated to be monologic, and engaging elements such as images, hashtags, replies, and polls were expected to increase engagements on the tweets, specifically likes and retweets.

Findings conflict with this original notion: while tweets were overwhelmingly monologic as predicted, engaging elements of visuals and hashtags were not determined to actually increase engagements of a university tweet. This conflicts with previous research (Oglesby, 2020) suggesting that only replies to a tweet actually drive engagements. It is speculated that comments, unlike hashtags and visuals, reflect the user's views and thus offering something to further engage user thinking, leading to things such as feuds on Twitter posts. This suggests that comments may reframe a tweet, and allow users different ways to interpret the post based on further information and differing opinions of thoughts and frames.

This study differed by retesting variables in a human coded study rather a computer coded modality, offering no chances for computer calculating or programming errors. Additionally, this study had a larger and more representative sample with tweets from multiple university Twitter accounts, rather than at an "in-house" level of the only top five tweets from a single university's four departments. This study also determined the relationships between engagements and engaging elements on universities' Twitter accounts.

However, the potentially most important finding was be what extent universities tweet about their controlled versus any uncontrolled affairs and identifying what these may be in the prementioned conceptual "balancing act" universities may be performing, and what the most

popular topical frame universities tweet about could be. Overwhelmingly, tweets were considered controlled, with universities not publicizing negative news as often as positive news, likely to showcase their institution in a positive way and influence potential students, stakeholders, and retain a positive public image.

The most popular frame was academics, showing that universities often post about research or programs without naming the authors or researchers behind the projects—researchers speculate that due to the limited number of characters available to use in a tweet, universities opt out of adding names or other identifying factors in favor of a link to a blog post of similar. Universities could use this data in the future to build marketing plans knowing what the most popular topic tweeted about is in a general setting on Twitter.

Notably, this study took place during the height of the COVID-19 pandemic, without studying the crisis specifically, in an effort to focus solely on university Twitter accounts, and with forethought that the pandemic was only temporary. The pandemic may have altered results from what could be considered “normal” on university tweets, due to universities tweeting about the disease and global crisis to their communities.

Theoretically, the findings of this study can potentially strengthen and expand the framing theory by investigating Twitter promotions through framing knowledge, namely framing tweets and potentially reframing tweets upon further information becoming available through commenting. Practically, the outcomes of the study signify what universities do to promote themselves on Twitter and identifies trends to offer insight to recurring patterns in university tweets. In addition, this study could be used for universities’ social media managers or PR staff to develop better and more effective marketing and PR plans for universities who use Twitter,

noting that comments drive engagements rather than hashtags, visuals, or polls, and thusly recommending that universities use more methods to promote commenting on their tweets.

Limitations

One of the major limitations of this paper is the lack of diversity in the sample size. The sample is only the top twenty schools in America, most of which are private institutions such as the Ivy Leagues. Future research can examine other types of universities such as state universities, community colleges, or trade schools. This was done to examine the “best practices” of the top twenty schools in America.

In addition, the codebook lacked ideas for unknown topical frames at the time, such as things like world or student life events. The codebook lacked these options and as a result, “Other” was often used when tweets dealt with the COVID-19 pandemic, and “Academics” or “Students” were used depending on the event in student life. Lastly, polls were coded for as an engaging element, but not a single tweet in the dataset contained a poll, therefore no additional testing was done.

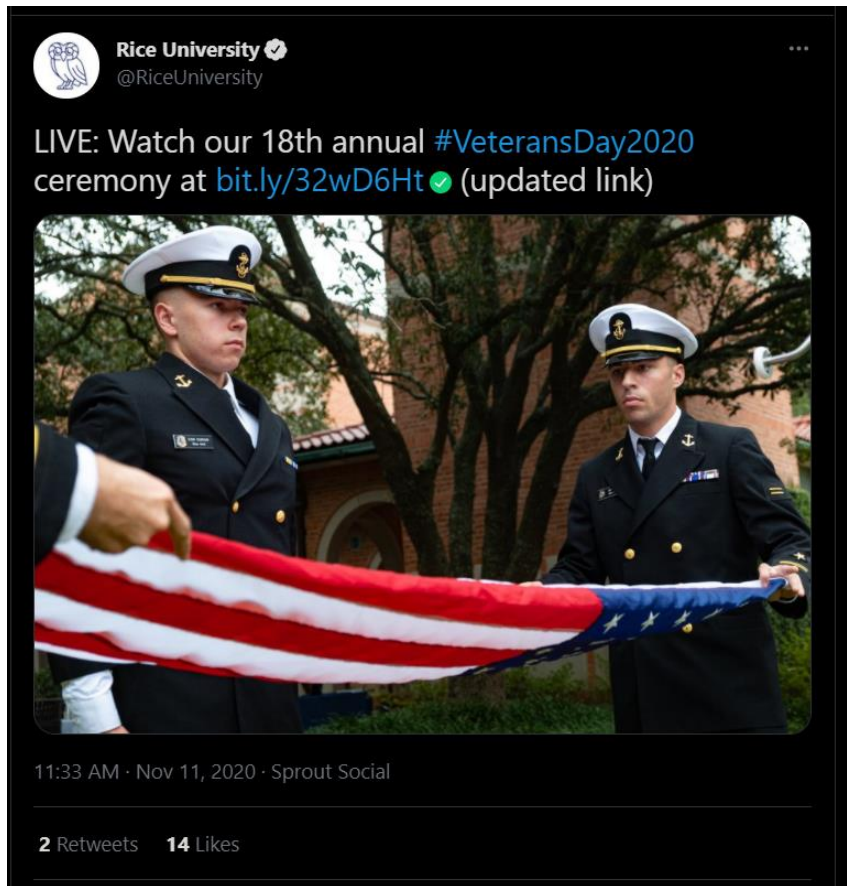


Figure 5: Tweet from Rice University

This tweet details a holiday and university tradition, both of which were excluded from the codebook.

Another limitation was responses to some tweets, and sometimes the tweet itself, were deleted between the time their initial posting and being coded. As a result, they are unavailable and uncoded in this study.

Notably this study had two low results from Krippendorff's Alpha in the intercoder reliability, both dealing with the concept of a second topical frame within the tweets. Low reliability is likely due to differing opinions of the potential presence of second topical frames, conflicting opinions on what the second frame could be identified as, and of the Twitter character

limit, preventing space to write a second frame in a tweet accounting for a low number of tweets having second frames in general.

Lastly, the final limitation of the study pertains to the COVID-19 pandemic, potentially skewing the results due to universities posting frequently about the world crisis to spread information to their communities.

Future Research

Future research could break the tweets down via departments of universities, rather than the universities themselves, to further examine what and how universities tweet similar to previous research performed by Oglesby (2020). In addition, future research should examine more diverse selection of universities, including junior colleges and trade schools, from all over the country or world, as well as offering more options in the codebook detailing student life events and opportunities. For example, holidays were entirely overlooked and messages about student holiday experiences, university traditions, encouraging students to take action such as voting on election day and posts about merchandise the university was promoting were added to the Other category in place of a category more consistent with the topic, like “University Life.”

Simultaneously, polls were not used in this study because no tweet collected contained one. Future research should search for university Twitter polls and examine if they can be considered an engaging element in regard to likes and retweets, similar to this study.

Casual observations also noted that many of the tweets featured use of emojis, which is inconsistent with previous literature from businesses (Zhang, Gosselt, & de Jong, 2020), but might be future research to determine if university tweets could have higher engagements if emojis are considered engaging elements.

Chapter 6 - Conclusion

To conclude this study, the research presented here has the opportunity to influence future marketing decisions for university promotions on Twitter. As previously stated, findings conflict with preceding literature about engaging elements such as images previously thought to help raise engagements on tweets (Zhang, Gosselt, & de Jong, 2020). The confliction with university tweets shows that traditional engaging elements like hashtags, polls, and imagery do not raise engagements, instead suggesting that replies on tweets are the true engaging element of university tweets. For future use, universities could post more tweets on their Twitter accounts to raise replies rather than any other engaging element to drive up their engagements, and thus produce a more popular and successful tweet.

In addition, universities often promote the academics of their institution, but other frames, such as buildings and enrollment were not as popular. Promoting other frames could lead to diverse Twitter postings on university accounts and offer insight to the students and faculty/staff who attend or work at their institutions. This could offer competitive advantage over other universities who promote more academics, by offering a different frame for casual Twitter users to see. This study could lay the framework for future research on university tweets and how to develop more engaged and thought-out marketing plans that universities can use in the future as an updated set of “best practices.”

The concept of controlled vs uncontrolled tweets was also investigated in this study. The results suggest that universities promote themselves in an overwhelmingly controlled, but positive and monologic way, likely to lure potential students, and employees to their institution, with short simple posts rather than long detailed tweets, likely due to the Twitter character limit. This suggests that universities could lose students, employees, or assets if a controlled positive

reputation is not maintained on Twitter (or potentially other social media platforms.) This would be consistent with previous literature as well: universities face constant budget strains with expenses increasing (Peetz, 2011) and to increase enrollment, universities must understand their target audience, students (Malroux & Tripp, 2008), thus posting controlled positive information on twitter rather than uncontrolled or negative information makes sense to maintain this positive reputation and entice potential newcomers to the institution.

Lastly, this study investigated the concept of monologic vs dialogic university tweets. Findings were significant in that they reconfirmed previous research that universities post mostly monologic tweets as opposed to dialogic tweets (Wang, 2016; Linvill, McGee & Hicks, 2012) or both a combination of monologic and dialogic, or completely undeterminable which were also additional options to select during coding in this study.

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Appendix A - List of Universities Coded for Tweets Sample

Top 20 universities based on the 2020 US News and World Report rankings.

1. Princeton University
2. Harvard University
3. Columbia University
4. Massachusetts Institute of Technology
5. Yale University
6. Stanford University
7. University of Chicago
8. University of Pennsylvania
9. California Institute of Technology
10. Johns Hopkins University
11. Northwestern University
12. Duke University
13. Dartmouth College
14. Brown University
15. Vanderbilt University
16. Rice University
17. Washington University in St. Louis
18. Cornell University
19. University of Notre Dame
20. University of California—Los Angeles

Appendix B - Codebook

Basic Information

Name of Coder:

Tweet Number:

University of the Tweet:

Number of likes:

Likes: _____

Number of retweets:

Retweets: _____

Frames

Is this Tweet controlled by a University, or uncontrolled by a University? Is this tweet considered to be both, or completely undeterminable?

Tweet	Description	Example
Controlled	This tweet is controlled by the university and deals with university affairs such as new employees or new facilities.	The university is excited to open the new library on campus.
Uncontrolled	This tweet is uncontrolled by the university and deals with things the university cannot control such as a mass exodus of employees or the COVID-19 pandemic.	Professor Smith has unexpectedly resigned as President of the University. An interim president will be announced shortly.
Both	The tweet is considered both controlled and uncontrolled by the university.	The pandemic is spreading to students and staff of the university. Here's our plan to defend our campus from COVID-19.
Undetermined	Tweet is shared from a different user or screenshot, possibly uploaded my mistake.	Proof the university isn't doing their job #problems [IMAGE]

What the primary topical frame of this tweet?

Frames	Description	Example Tweet Text
Academics	The text of the tweet focused on the research or a statistic about the school's scholarly record. This is something about the academics of the school, but not specifically a single student.	"The university is excited to announce that over 3,000 graduates will be walking the stage this spring."
Athletics	This tweet focused on athletics, showing that the school had a "worthy" athletic program or an update on the sports of the school.	"University football will be going to the bowl game."
Buildings	This tweet focused on the buildings of the campus such as a fire in a building or a new construction project.	"After the fire, the library will be back and running in one year."
Students	This tweet selected and showcased student(s) specifically at the school doing something nonathletic.	"Students competed in a contest to determine the winner of the state technology fair's biggest competition."

Faculty/Staff	This tweet showed faculty/staff such as an appreciation post or an announcement for retirement.	“We are so happy for Dr. Smith’s retirement after serving for 30 years in this position.”
Enrollment	This tweet entirely focuses on trying to recruit students to campus.	“Schedule your campus visit today!”
Other	This tweet does not fall into any other category, and themes such as the COVID-19 pandemic can be entered into this.	“You probably have some face masks, but what about a custom one? This Friday, join for a free virtual mask making event.”

Is there a secondary topical frame to this Tweet?

- ☐ Yes
☐ No

If yes, what the secondary topical frame of this tweet?

Frames	Description	Example Tweet Text
Academics	The text of the tweet focused on the research or a statistic about the school’s scholarly record. This is something about the academics of the school, but not specifically a single student.	“The university is excited to announce that over 3,000 graduates will be walking the stage this spring.”

Athletics	This tweet focused on athletics, showing that the school had a “worthy” athletic program or an update on the sports of the school.	“University football will be going to the bowl game.”
Buildings	This tweet focused on the buildings of the campus such as a fire in a building or a new construction project.	“After the fire, the library will be back and running in one year.”
Students	This tweet selected and showcased student(s) specifically at the school doing something nonathletic.	“Students competed in a contest to determine the winner of the state technology fair’s biggest competition.”
Faculty/Staff	This tweet showed faculty/staff such as an appreciation post or an announcement for retirement.	“We are so happy for Dr. Smith’s retirement after serving for 30 years in this position.”
Enrollment	This tweet entirely focuses on trying to recruit students to campus.	“Schedule your campus visit today!”
Other	This tweet does not fall into any other category, and themes such	“You probably have some face masks, but what about a custom one? This Friday, join

	as the COVID-19 pandemic can be entered into this.	for a free virtual mask making event.”
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Monologue vs Dialogue

Was this tweet:

Type	Description	Example
Monologic	Tweet does not invite the audience to communicate with them in some capacity such as sharing their thoughts.	Thank you to all Wildcats for your flexibility and hard work this semester. Have a great winter break and stay healthy. We'll see you in January!
Dialogic	Tweet invites the audience to participate such as communicating with the Twitter host/account.	What do you think Wildcats? Share your thoughts in the comments below!
Both	Tweet utilizes both monologic and dialogic tactics: it engages the audience while simultaneously hosting monologic elements such as a one-way conversation.	Thank you to all Wildcats for your flexibility and hard work this semester. What is your plan for the holidays?

Engaging Elements

Did this tweet use any visuals, or was it purely text?:

- ☐ Visuals were used in this tweet
- ☐ This tweet is purely text

This tweet used hashtags of some kind?

- ☐ Yes, this tweet used hashtags, how many? _____
- ☐ No, this tweet did not

Does this tweet have any replies?

- ☐ Yes, this tweet had replies, how many? _____
- ☐ No

Does this tweet feature a poll?

- ☐ Yes, this tweet used polls, how many options? _____
- ☐ No, this tweet did not