THESIS

CONTINUE PLAYING: EXAMINING LANGUAGE CHANGE IN DISCOURSE

ABOUT BINGE-WATCHING ON TWITTER

Submitted by

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ABSTRACT

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Utilizing data from Twitter, this study characterized the change in the use of the term binge and its variants from 2009-2019. While there is a significant amount of literature looking at either language change or digital media, this research considered the two as inextricable forces on each other. To examine this and the proposed research questions, a textual analysis was conducted of tweets containing the word *binge*.

Overall, the findings suggest that the December 2013 press release published by Netflix deeming *binge-watching* as the "new normal" in media consumption, may have pushed binge-watching into the mainstream lexicon. Language use about binge-watching was typically positively connotated in contrast to the negative connotations associated with binge-eating and binge-drinking. The connotative change appears to align with a widening of the definition of "watch" to account for the normality of binge-watching. As the use of binge-watching spread throughout the United States, the pattern of the geographic diffusion of binge-watching did not follow traditional theories of the diffusion of language change. The difference in spread may derive from the corporate origins of the term. Lastly, Twitter enabled and reinforced the spread of binge-watching through the facilitation of the social aspect of binge-watching. The findings of this study provide rich ground for future study.

ACKNOWLEDGEMENTS

I began my master's degree program in the fall of 2018, newly graduated from an engineering undergraduate degree. I knew two things walking into this master's program: I was not meant to be an engineer and I loved language. Sitting in JTC500, I felt so at home and often like I was in a movie about grad school. We would walk to class deep in discussion about the topic for the day and I found myself never wanting class to end (a feeling totally foreign to me at the time).

Oddly (or perhaps fittingly) the topic for this thesis was born at the CSU climbing gym. My love of language fully emerged as I talked with my friend Chaz Callendar about potential thesis topics. From that day on, I became utterly fixated on understanding binge-watching. With generous guidance, my advisor Dr. Michael Humphrey helped to develop this fixation from a barely formed thought into this thesis. I am deeply grateful for long conversations with Dr. Humphrey and my cohort, his office often so filled with all of us we spilled into the hallway. These conversations, and the generous feedback received from my two committee members, Dr. Hughes and Dr. Champ, positively shaped my experience of grad school and fostered my dream to pursue a Ph.D. and continue on in academia.

Outside the beige walls of Clark C223, my friends and family patiently endured long monologues about media and linguistic theories. For their patience, I am forever grateful and already apologetic for how much worse this will be in a Ph.D. program. There are too many friends to list, but a handful were constant lights and sources of encouragement when I was sure I would not make it through my thesis. Andrew, thank you for your seemingly endless amounts of compassion and willingness to engage in hours of conversation about language. Katrina and

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CHAPTER 1. INTRODUCTION

Overviews and Rationales

"Binge watching Orange is the New Black because my life is Netflix now" (Tweet posted in 2013)

Twitter studies have yielded rich contributions to numerous fields including media studies, linguistics, sociology, and computer science. In particular, both media scholars and linguists use Twitter for research purposes in part because of its orientation as a public-facing conversational platform. While language change is a central component of how both of these disciplines study Twitter, few researchers have looked solely at language use, and its subsequent change, on Twitter.

Through the use of language, people construct their realities and identities. As people's identities change, their language use tends to also change. These language changes are reflected in digital discourse and bring with them the same impact on people's understanding of the world as offline discourse (McCulloch, 2019). The way language changes in digital space, specifically on Twitter, was of central concern in this study. How does language change on Twitter reflect offline processes of language change? Understanding the nuances of language change on Twitter may help predict future changes within digital discourse.

Ultimately, this quest to understand language change is inseparable from understanding digital communication technologies. In 2004, Walther argued that

> *the study of new communication technology is at its center the study of how language is used ...* The use of language... is systematically fluid and accommodative. It changes in response to shifts in speakers, their goals, and their salient social identities. Language is no less accommodative and fluid in response to the potential interaction effects of technological capacities, identities, and goals. Perhaps it is more vulnerable to these

interaction effects than even speech is. Such notions about the flexibility and capacity of language are not, in some circles of CMC research, even yet understood to be true. In other circles, they have become commonplace understandings. *The precise questions of how this fluidity and accommodation of language manifest themselves via communication technology—how they are prompted by it, modified by it, or robust to it in personal and professional settings—are, in fact, the questions of the day* (p. 394, emphasis added)

Walther's "questions of the day" are still important 17 years later. In pursuit of answers for these questions, I looked at the processes of language change in Twitter discourse, highlighting the importance of not separating Twitter from the study of language. To reiterate Walther, language and communication technologies are not separate entities but rather one and the same.

Rationale and Significance of Research

This study utilized linguistic theories of language change applied to digital discourse (Fairclough, 1992) to further the understanding of language change. The origin of linguistic innovations has been a historical problem faced in the study of language change. The archival nature of digital media presents new opportunities to investigate these origins. For these reasons, this study specifically looked at whether language change can be correlated with a social phenomenon as a potential origin of language change.

Like linguists, media scholars investigate language change. However, media scholars tend to study the impacts of language change on people, instead of the language itself. Media scholars study platforms and messages, often neglecting the linguistic elements of the message itself and the changes within the language. This distinction, however, is nearly impossible to make. People's identities and language are not separable. Studies suggest that Twitter can change the way we think about the world, but fewer studies have investigated the role Twitter plays in changing the way we use language.

Utilizing data from Twitter, this study traced a word with new uses, *binge*, to tease out its change on Twitter. More specifically, this study looked at the process of semantic, or

connotative, change of *binge* when combined with -eating, -drinking, -watching, and other behaviors. These combinations were chosen due to their association with an interesting linguistic phenomenon: *binge-watching* is often regarded as a positive behavior, in contrast to other binging behaviors like *binge-eating* or *binge-drinking.* By tracking how the use of *binge* in Twitter discourse changed, I investigated the applicability of several theories of language change to digital spaces. In addition, the study of Twitter as both the place of change and part of the change, rather than merely the accelerator of language change reaffirmed a potential new lens with which to view the influence of digital spaces on the language change process.

Summary of method. To narrow the scope of this study, American Twitter was chosen as the sample space. Tweets containing the word *binge* from 2009 - 2019 were obtained resulting in a dataset of n = 131,307 tweets. A random sample of n = 2,545 tweets were then pulled for textual analysis. This time frame was chosen mainly to ensure the emergence and proliferation of the term binge-watching could be fully observed. In addition, the time frame was centered around a 2013 press release from Netflix deeming binge-watching the new normal in content consumption on its platform (Netflix, 2013). This textual analysis involved open-coding, which allowed the text to dictate the analysis process instead of applying a pre-developed coding scheme to the text. Given the exploratory nature of this research, open-coding was deemed the most appropriate coding method.

Goal and Research Question(s)

The overall goal of this thesis was to further our understanding of the processes of language change in digital space. This work built off of existing linguistic theories of language change to consider digital space, specifically Twitter, as a meaningful contributor to language change.

Overarching Research Question: How does the interaction of Twitter and language facilitate the change in usage of specific terms?

Guided by the overarching research question, this study investigated the following research questions:

RQ1: Can the acceleration of language change in Twitter discourse be correlated to a cultural phenomenon?

> **RQ1a:** Within language change on Twitter, are there indicators that might allow for the prediction of future changes?

RQ2: What lexical innovation processes can be observed in the usage of *binge* on Twitter?

> **RQ2a:** Does the geographical movement of an emergent use of *binge* in Twitter discourse follow linguistic theories of diffusion?

> **RQ2b:** What connotation change has occurred with the usage of *binge* on Twitter?

> **RQ2c:** What context is associated with this change in connotation?

Organization of Thesis

This thesis is organized as follows: Chapter 2 provides relevant background context. Chapter 3 provides the theoretical framework of the study by describing pertinent language change theories and how these apply to digital language use. Chapter 4 is the methods section, which includes the background of the method and procedures. Chapter 5 explains how the analysis was conducted. Chapter 6 discusses the findings of the study, limitations of the study, and suggestions for future research. Finally, Chapter 7 discusses theoretical implications within the context of the overarching research question.

CHAPTER 2. RELEVANT CONTEXT

The Etymology of *Binge*

The word *binge* was first recorded in 1848 meaning a heavily-sodden ship and was later

extended to mean a drinking bout or a period of heavy drinking ("Binge"). Binge was further

extended around World War I to include both excessive drinking and eating ("Binge"). Binge is

now commonly used in conjunction with both binge-drinking and binge-eating.

Binge-eating was first identified as a diagnosable disorder in 1959 (Stunkard) and

included in the Diagnostic and Statistical Manual of Mental Disorders (DSM) published by the

American Psychological Association in 1987 (Berkman, et al., 2015). Binge-eating disorder

involves consuming more food than necessary, especially when the client is no longer hungry

(Marx, 2015). People who suffer from binge-eating disorder will typically feel a sense of guilt or

self-hatred after a binge-eating episode (Berkman, et al., 2015).

From its origin, *binge* has been surrounded by a negative connotation. Inarguably, binge-

drinking and binge-eating can greatly disrupt a person's life as both involve consumption to the

point of losing oneself and are often associated with negative feelings.

Netflix and Binge-Watching

Today, Netflix is largely synonymous with watching television or movies. The company

started in 1997 as an online-based DVD service (Jenner, 2016). Subscribers could order DVDs to

be delivered to their homes and return them after watching. In 2007, Netflix published 10,000

titles online for subscribers to "Watch Instantly" (Cunningham & Silver, 2012). Then in 2010,

the company made the switch from physical DVD rentals to a monthly subscription-based

streaming service which provided instant access to the entire Netflix library (Cunningham & Silver, 2012).

Netflix shook up the traditional television market by providing users the chance to time-shift while consuming their media. This model completely upended the more traditional serial schedule of releasing television shows (Shim, Lim, Jung, & Shin, 2018). Netflix continued this trend of bulk-releasing with the release of its own shows House of Cards and Orange is the New Black (Shim et al., 2018). Netflix currently has over 158 million members in over 190 countries who watch more than 140 million hours of television and movies per day (Netflix, 2020).

This new form of releasing shows allows audiences to watch television for unprecedented amounts of time, facilitating "binge-watching" (Pittman & Sheehan, 2015). In December 2013, Netflix, adopting this term, published a study deeming binge-watching as the new normal in media consumption. Due to the relative newness of the phenomenon, the definition of binge-watching is not yet solidified (c.f. Shim et al., 2018). Netflix (2018) has defined a binge as completing at least one season of a show in seven days. The results of this study found that more than 90% of Netflix users have participated in binge-watching behaviors (Netflix, 2018).

Pertinent research has focused on what motivates people to binge-watch. One study found that people become completely immersed in the content and enjoy the process of losing themselves in order to escape life around them (Sung, Kang, & Lee, 2015). Other researchers have found that people who participate in binge-watching have both negative and positive feelings towards the activity, similarly to binge-eating and binge-drinking. For example, some people feel guilt towards the action, but the satisfaction of finishing a show can outweigh those negative feelings (Shim et al., 2018). In addition, binge behaviors are often associated with other

mental illnesses like anxiety and depression (Sung, Kang & Lee, 2015). It is likely binge-watchers have similar experiences to those who suffer from other binging disorders.

Binge-watching is a very effective financial model. The more people watch, the less likely they are to cancel their monthly subscription. This is likely the reason Netflix has published several press releases acting as normalization agents (Netflix, 2016; 2018). If they can convince people binge-watching is normal, people will likely feel more comfortable with the action and continue binging. Additionally, as Netflix continues to increase the amount of content on its service the more people will have to watch, in turn providing better data in order to refine offerings, leading to even more watching. This cycle is often referred to as the "Binge Factory" (Adalian, 2018). Notably, Netflix has recently started to distance itself from the word binge-watching, encouraging some actors to not use this phrase in interviews (Lynch, 2018). There is currently little information about why the company has started to disassociate itself with the phenomenon it helped to develop.

CHAPTER 3. LITERATURE REVIEW

Language and Twitter

Twitter is studied by researchers in varying fields. It has been investigated through the

lens of performance (e.g., Florini, 2014; Papacharissi, 2012), framing (e.g., Burch, Frederick, &

Pegoraro, 2015), community creation (e.g., Gurman & Ellenberger, 2015), and interpersonal

connection (e.g., Chen, 2010) among others. Tweets have been analyzed for their communicative

functions (Laucuka, 2018) and the potential to influence minds and behaviors (Lee & Shin,

2014). Notably, while language plays a pivotal role in all of these studies, language is rarely the

sole object of research. The absence of Twitter research focused solely on language is notable, as

language presents a potentially valuable frame for research as "an element of social life which is

closely interconnected with other elements" (Fairclough, 2003:3). This interconnection enabled

Fairclough (1992) to conceive of discourse as a three-dimensional model, bringing together three

analytical traditions that rely on discourse analysis (72). The three analytical traditions included

textual analysis used by linguists, the analysis of macro-social structures, and the analysis of

micro-social practices (Fairclough, 1992:72). The combination of these three analytical traditions

requires that when considering discourse, one must simultaneously hold the event as "a piece of

text, an instance of discursive practice, and an instance of social practice" (Fairclough, 1992: 4).

This conceptualization of discourse allows the study of it to be productive simultaneously at a

micro-level (i.e., the structure of a sentence, the connotation of a word) and macro-level (i.e., its

meaning in the larger context of society).

As a result, discourse enables the formation of communities bound together by shared

language and extralinguistic features (Borg, 398). Communicative needs change to match social

demands. However, it is important to note that although language change is an area of study, languages don't change on their own. The different ways people use language is the driver of language change (Croft 1990:257). Ultimately, language is not a fixed entity, rather it is a flexible resource constantly being molded and shaped by those who use it.

As previously mentioned, discourse enables the formation of communities. These communities are as present within digital spaces as they are in offline spaces. Within Twitter specifically, researchers have looked at communities formed through the use of a single hashtag (e.g., Lachmar, Wittenborn, Bogen, & McCauley, 2017) or to fulfill social needs (e.g., Chen, 2011). These communities are facilitated by the structure of Twitter which enables conversation through the use of short posts, or tweets. These conversations can be sorted by the use of hashtags (e.g., Laucuka, 2018). Within Twitter at large, sub-communities form with unique discourse markers and community traits (e.g., Jones, 2015). These communities themselves are subject of much academic interest. Yet, the function these sub-communities play in changing the "dominant" discourse on Twitter (i.e., what is "trending") is not as frequently studied. Some scholars have investigated the impact of emergent language on Twitter on the larger discourse (Grieve, Nini, & Guo, 2018) finding similar patterns of language change occurring in digital space as offline space.

Informal Language Use

The structure of Twitter facilitates informal language use. Informal language use refers to the variety of language which is unplanned and oftentimes casual. A prepared lecture is not usually representative of informal language use, while a conversation with friends over coffee is. The difference is often in the level of formality. Informal language use on Twitter is well-documented, with tweets frequently analyzed for consumer's sentiment regarding a product or a

service (e.g., Saif, He, Fernandez, & Alani, 2016; Bae & Lee, 2012). The prevalence of informal language is facilitated by Twitter's primary function as a conversational platform, allowing users to interact in real-time via retweets and likes.

Language change occurs most readily in these informal language exchanges (the mechanics of language change will be discussed later). One important method of encouraging change on Twitter specifically is by restricting users to a certain number of characters per tweet. This restriction drives users to become innovative with their language in order to fully communicate their ideas. It emphasizes abbreviations and acronyms and leads users to use hashtags as more than just sorting tools. In addition, when another user says something you agree with or want others to know it is common to rely on the structures of re-tweeting, essentially a way of emphasizing certain parts of another user's speech (boyd, Golder, & Lotan, 2015).

Demographics of Twitter

Beyond the conversational aspect of Twitter, the demographics of Twitter users provides a rich snapshot into daily life. In 2012, Pew Internet and American Life found that 15% of American internet users were using Twitter (Smith & Brenner, 2012). In addition, the same study showed that Black internet users were on Twitter at high rates, with "more than one quarter of online African-Americans (28%) [using] Twitter, with 13% doing so on a typical day" (Smith & Brenner, 2012). Finally, the population using Twitter tended to be more highly educated, younger, and more liberally leaning than the general population (Smith & Brenner, 2012). Women were also found to be slightly more likely than men to use Twitter (Smith & Brenner, 2012).

In 2019, these demographics were fairly similar. The population using Twitter is still younger than the general population: the median age of U.S. adult Twitter users is 40, while the

median U.S. adult is 47 years old (Wojcik & Hughes, 2019). Twitter users still tend to have higher levels of household income and education relative to the general adult population (Wojcik & Hughes, 2019). One notable difference is that Black (11% of U.S. adult Twitter users), Hispanic (17%) and White (60%) U.S. adults now use Twitter at percentages that more closely reflect the makeup of the overall U.S. population (Wojcik & Hughes, 2019).

Since the demographics of Twitter users now more closely reflect the U.S. population, Twitter is a more accurate proxy for studying informal language use in real time. Since many language changes emerge from people using informal language (to be discussed in the next section), Twitter data provides a valuable resource.

Language Change

The study of language change is a robust field. To situate this research, it is important to provide relevant information on the language change process. The following review of language change theories will be comprehensive, yet not exhaustive.

The traditional view of language change suggests that the only changes of any consequence are ones with *structural* impacts on the language. This results in a focus on phonetic, morphologic, and syntactic changes (i.e. if a language loses a distinction between two sounds over time). In other words, if the change did not involve the way people pronounced words or structured sentences it was not significant enough to warrant study. Some linguists have regarded the study of the emergence and spread of new words as merely the study of the "diffusion of catchphrases" (Chambers, 1993: 138-140). In other words, studying catchphrases results in work that quickly becomes "outdated" and has limited bearing on the language at large. However, regarding lexical innovations in this way eliminates the chance to study a widely rich type of language change, especially within the digital realm (Sayers, 2014). In particular, if

language change occurs in informal language exchanges, we must place value on the way that people speak in informal settings. By understanding the unplanned, casual language use associated with digital space "we can understand more about our language in general" (McCulloch, 2019:4). These are not catchphrases at all, this *is* language use.

Theories of the Diffusion of Language Change

The most traditional view of language change attempts to account for the diffusion of change through the creation of family-trees (Wardhaugh & Fuller, 2015). This method focuses on the consequences of language change and implies change can only be observed after it has happened.

Three other relevant models of language change diffusion have been more recently developed. The wave model, gravity model, and cascade model all require interpersonal interactions between speakers in order for language change to occur (Bailey, 1973; Sankoff, 1982; Trudgill, 1974; Labov, 1965). Importantly, this requirement vastly diminishes the impact of one-to-many communication that frequently occurs on Twitter. One important similarity between these three models is the understanding that the more different people come in contact the more likely language is to change. This naturally leads to the assumption that urban centers are most frequently associated with language change, with changes slowly trickling out to rural areas.

One major drawback of all four of these models is their inability to really pin down where linguistic innovations start. Each of these models mainly functions as a record of change which has already happened and are limited in their ability to model change as it happens. Because of this focus on consequences, these models are primarily interested in the result of language change and not the process itself.

In addition, it is worthwhile to consider how these models hold up when applied to digital discourse. No longer are populations confined by geographic or population constraints. Rather, these innovations can move easily throughout digital spaces where geographic space and time are collapsed. One potential way to view digital spaces is to consider

> digital media not as containers that determine the language they contain, but as resources for social practices, which do constrain, but do not determine the shapes and styles of network writing. This way, the elaboration of vernacular writing can be viewed as a process of change facilitated and enabled by digital media, but materialised and performed by networked writers in late-modern, post-standardised societies (Androutsopoulos, 2011:13).

Some scholars have already begun to apply these different models of language change diffusion to digital spaces like Twitter (e.g., Grieve, Nini, & Guo, 2018). Using maps of geo-tagged Tweets, they have found urban centers continue to be hubs of linguistic change even within digital discourse.

Mechanics of Language Change

While much work on language change has primarily focused on phonological changes, this study investigated change at the semantic and lexical levels.

Semantic change. Semantics is a subfield of linguistics that focuses on how meaning is encoded in language (Widdowson, 1996:53). The meaning of words extends beyond their syllables and morphemes that create them. Semantics aims to understand this meaning, looking at how words are used in a sentence. One method of identifying change is if other people have adopted this change (Traugott, 2017). If in fact, change has occurred, there are traditional categories with which to operationalize semantic change. The relevant categories for this work are as follows (all definitions from Traugott, 2017):

　　　1. Pejoration: a word becomes associated with a negative meaning

　　　2. Amelioration: a word becomes associated with a positive meaning

3. Narrowing: the definition of a word becomes more exclusive

4. Generalization: the definition of a word becomes more inclusive

These categories are not mutually exclusive, nor unidirectional, and often occur at the same time, flipping between old and new meanings. One limitation of categorization, however, is that it does not further the understanding of semantic change (Litty et al., 2016). Some scholars have argued stopping at categorization limits the analysis of why these words change or what these changes mean in a larger context (Anttila, 2009). For this study, these categories were used to initially analyze the connotative change of *binge*. In line with concerns about the sole reliance on categories, a discussion about the context of the Tweet itself was crucial to create a full picture of the semantic change.

Lexical innovation. In addition to semantic change, this study attempted to deepen the understanding of lexical innovations within Twitter discourse. These innovations refer to "the manipulation of word-formation strategies... Lexical innovations are novel words, coined specifically to refer to an object or event that has no name, or for cases in which the speaker cannot recall a conventional term" (Swan, 2000:188). The presence of these innovations have been studied at the individual speaker level (e.g., Swan, 2000), within newspaper corpora (e.g., Baayen and Renouf, 1996), and more recently within digital media such as Twitter (Eisenstein, O'Connor, Smith, & Xing, 2014; Grieve, Nini, & Guo, 2018; Huang, Guo, Kasakoff, & Grieve, 2015; Bamman, Eisenstein, & Schnoebelen, 2014).

An important aspect of lexical innovation includes the creation of neologisms. This process can involve "(i) novel constructs (e.g. webisode for web x episode), (ii) existing words with new meanings, and (iii) new category functions like the verb (to) google from the noun

Google" (Miller, 2014: 83). Lexical innovations happen frequently within digital spaces, yet they do not always undergo meaning change.

Media and Language Change? Two Approaches

What role do media play in the language change process? This question is answered differently by linguists and media scholars, with both answers providing a valuable lens into the question. I will first discuss how linguists regard the influence of media on the language change process followed by a discussion of the view of language within media studies.

The traditional view of language change required interpersonal communication for change to occur (Stuart-Smith, 2013). Additionally, these language change models consider only deep structural changes (i.e., phonological, morphological, syntactical) and not ones that can be "taken off the shelf" (Eckert, 2003:395). "Off the shelf changes" are considered a more superficial type of change not reflective of a substantial change to a language such as the process of borrowing words from one language into another.

Many sociolinguists consider any changes from media as "off-the-shelf" changes and therefore hesitate to consider media as a place of real linguistic change. The reasons for this are two-fold. First, traditional media (newspapers, broadcast media, etc.) were not typically considered a form of interpersonal communication and therefore could not participate in the language change process. Therefore, mediated language was not considered a location of deep structural changes as it simply reflected off-the-shelf changes for audiences. An important distinction is that these scholars do not claim language is not affected by media, but rather that the ways language is affected by media, like the transmission of new vocabulary and phrases, is not typically reflective of substantive language change (Rice & Woodsmall, 1988; Charkova, 2007).

These assumptions were developed in a media environment that was not dominated by social media. Social media platforms provide users a way to interact on the personal level in real-time, spanning time zones and geographic distance. Given the collapse of geographic distances provided by present-day media, one can no longer disregard the influence of media on language change (Sayers, 2014). Through media, especially social media, communities that are geographically separate can interact in real-time. Does the mediated nature of this interaction outweigh the synchronicity with which it is happening? If not, and I believe it does not, then the impacts of media on language change must be reconsidered.

However, linguists continue to regard media in a similar way to Milroy (2007) as a "kind of accelerant that may function alongside other processes carrying forward language change" (Stuart-Smith, 2013: 531). Despite the presence of newer forms of media, media are still conceptualized as limited components of language change, responsible for only off-the-shelf changes rather than deep structural changes.

The view of language change within media studies is even more limited with the most relevant study of the impact of media and technology on language change coming from the field of digital media studies. Digital media research on language change has looked at many facets of online communication including how the emergence of collaborative documents changed workplaces, how anonymity changed disclosure and how turn-taking was affected by limited conversational cues (Walthier, 2004). To study the impacts of digital media on language, researchers often look at framing language and observe resulting attitudinal or behavioral changes (e.g., Hamdy & Gomaa, 2012). Yet, the overall focus of media studies centers heavily around the impacts on people, not the impacts on the language itself. This distinction, however is nearly impossible to make as people's identities and language are not separable. Media scholars

often think about platforms and messages, yet often neglect the linguistic elements of the message itself and the changes within the language. We have evidence from this field that Twitter can change the way we think about the world, but few people have asked how Twitter is changing *language.*

Now enters the root of the problem: Linguists view the impact of media on language as insignificant, while media scholars rarely consider the broader linguistic impacts of media. This study aimed to extend the study of language change by regarding media as a powerful agent of change instead of a mere accelerator while simultaneously studying the impact of specific lexical items on the language at large.

Case Study: Binge

Discourse on Twitter is conversational, innovative, and flexible. Much work on emergent language on Twitter has approached it from a high-level point of view (Grieve, Nini, & Guo, 2018). Although studying emergent words, they stop short of tracing how this word has emerged, and the potential language change processes associated. This previous work edged the line of regarding the study of "catchphrases" as meaningful, and the present study has stepped fully over the line. As previously mentioned, *binge* historically referred to behaviors that negatively impacted people's lives. *Binge-eating* and *binge-drinking* likely were not considered part of the average person's lexicon as they referred to "abnormal" behaviors. After the release of *House of Cards* in 2013, however, a new binging behavior emerged as the new normal in media consumption (Netflix, 2013; Feeney, 2014; Entis, 2015). Due to the prevalence of this behavior, and of the discourse of normalcy surrounding this phenomenon, *binge* made a perfect case-study. By orienting around the release of *House of Cards* in 2013, I was able to track how the use of *binge* in Twitter discourse has changed. This allowed me to consider the applicability of the

numerous theories of language change to digital spaces. In addition, the study of Twitter as the place of change rather than merely the accelerator of language change provided a new lens with which to view the influence of digital spaces on the language change process. In addition, *binge* also made a good case study to elevate semantic change and lexical innovations as a meaningful component of language change rather than as the study of "catchphrases."

Research Questions

The driving goal of this research is to begin to understand the processes of language change as they function in digital space, namely on Twitter.

Overarching Research Question: How does the interaction of Twitter and language facilitate the change of the usage of specific terms?

This work built on existing linguistic theories of language change to consider digital space as a meaningful contributor to language change. The digital space of interest for this work was Twitter, commonly used in linguistics work as a substantial corpus of informal-language use.

RQ1: Can the acceleration of language change in Twitter discourse be correlated to a cultural phenomenon?

RQ1a: Within language change on Twitter, are there indicators that might allow for the prediction of future changes?

RQ2: What lexical innovation processes can be observed in the usage of *binge* on Twitter?

RQ2a: Does the geographical movement of an emergent use of *binge* in Twitter discourse follow linguistic theories of diffusion?

RQ2b: What connotation change has occurred with the usage of *binge* on Twitter?

RQ2c: What context is associated with this change in connotation?

CHAPTER 4. METHODS

Netflix bulk-released House of Cards in February 2013, an event some consider the beginning of binge-watching as it is today (Jenner, 2017; Netflix, 2013). This study involved analyzing tweets containing the word *binge* from the years 2009-2019. Choosing this time period before and after the *House of Cards* release date increased the possibility that the language change surrounding *binge* could be observed, and thus afforded the opportunity to analyze mechanisms of language change in digital discourse. Using Twitter's API, 131,307 tweets containing the word *binge* were collected. Hashtags were also considered in this analysis. Retweets were not included due to their repetitive nature. This study is interested in new, emergent language and including retweets would have led to a study of repetitive tweets, likely muddying what is "new."

Once the data were collected and cleaned for erroneous tweets, large-scale geographic maps were created to demonstrate lexical innovation and diffusion at the regional scale (Grieve, Nini, & Guo, 2018). To complete the second level of analysis, the corpus was stratified by year and then randomly sampled. This stratification allowed for textual analysis of individual tweets and for emergent coding based on the research questions listed above.

Data Collection

The dataset for this study included tweets from 2009-2019 which included the word *binge*. This time period was chosen for numerous reasons. First, in order to ensure the tweets under analysis are from American Twitter, geotagging is required. Geotag tweets were first available in 2009. Second, the time period 2009-2019 was chosen to ensure the emergence of binge-watching as the new "normal" could be fully characterized within the larger use of *binge*.

#binge was accepted as part of the analysis because hashtags are an integral part of lexical innovation within Twitter.

Dataset and Sample

The data collection involved Twitter's Application Programming Interface (API) to query the platform's database of tweets. Given the limitations on obtaining historical tweets (beyond 7 days from the search day) it was necessary to use products provided by Twitter to access these historical tweets.

The total dataset ended up being n = 131,307 tweets (Table 1). To create the linguistic maps, tweets with faulty coordinates were removed, resulting in n = 112,503 tweets. Coordinates were considered faulty if they were missing either a latitude or longitude. For the textual analysis, I was particularly interested in the years directly surrounding the release of House of Cards in 2013, so I randomly sampled at a greater rate in the years 2011-2015 (see Table 2). This resulted in a sample size of n = 2,545.

Table 1.

Total number of tweets pulled per year.

Year	Number of Tweets
2009	399
2010	3,166
2011	5,906
2012	13,502
2013	20,612
2014	23,667
2015	18,306
2016	11,083
2017	11,289
2018	11,291
2019	12,086
Total	131,307

Table 2.

Sampling rate of tweets per year for textual analysis sample.

Year	Number of Tweets	Sampling Rate	Sample Size (Rounded)
2009	399	0.01	4
2010	3,166	0.01	32
2011	5,906	0.025	148
2012	13,502	0.025	338
2013	20,612	0.025	515
2014	23,667	0.025	592
2015	18,306	0.025	458
2016	11,083	0.01	111
2017	11,289	0.01	113
2018	11,291	0.01	113
2019	12,086	0.01	121
Total	131,307		2,545

Data Collection Procedures

Twitter API. Twitter restricts access to historical tweets (tweets beyond 7 days old from the time of the search). In order to obtain these tweets in line with their Terms of Service, you have to apply for access to a certain number of tweets and then develop a script to pull these tweets. The option most appropriate for this project was the Premium package (https://developer.twitter.com/en/pricing/search-fullarchive). This package includes access to all of Twitter's historical data and allows you to query up to 250,000 tweets.

It is important to note that Twitter allows users to pull tweets from a month in reverse chronological order. For example, to retrieve tweets from December 2010, the API will start grabbing tweets from December 31, 11:59:59 p.m. and work backwards in time until it pulls as many tweets as you requested. To account for this, I pulled data from three points in the month, starting from the last day of the month, 10 days before the last day of the month, and 20 days

before the last day of the month. This became very important in the later years of the study

period as Twitter increased in popularity. This popularity results in a large number of Tweets

being posted every minute, which meant that in the later years of the study period the requested

number of tweets could be filled within the same day or even the same hour. This was less

important in the early years of Twitter, when fewer people were using the platform, and therefore

fewer people were tweeting about binging.

Data management and confidentiality. The entire dataset was organized into an Excel

sheet, with separate columns for the pertinent information about the tweets (i.e., the text of the

tweet and the date it was posted). Similarly, the sample was stored in an Excel sheet with

additional columns added for coding. Although Twitter is considered a public sphere and anyone

can access the site without having a Twitter account, the Twitter handles of each user were not

included during the coding process. Lastly, the data was stored in a password-protected file on

the author's personal computer as well as the author's personal Google Drive account.

<p align="center">**Framework of the Method**</p>

Geographic Mapping

This study was specifically interested in how the language changing process is facilitated

by the structure of Twitter. Language changes most rapidly in informal language use. Informal

language use refers to the variety of language which is unplanned and most often used in casual

settings (Wardhaugh & Fuller, 2015). Researchers increasingly regard Twitter as an appropriate

way to obtain large-scale samples of informal language use (e.g., Grieve, Nini, & Guo, 2018).

Historically, linguists have studied lexical variation by mapping different speech patterns

regionally (Kurath, 1949; Carver, 1987). These dialect surveys focused mostly on well-

established words and less on how language changes over time. The limitations of previous work

were due in large part to a lack of available data reflecting language change in informal-use language. Researchers interested in the emergence of new words (lexicographers) focused their energies on written corpora, such as newspapers (e.g., Baayen & Renouf, 1996).

Both methods are limited in their ability to observe the spread of innovations, relying on the impressions left after change has occurred. This made it nearly impossible for researchers to fully understand *where* language changes come from (Walkden, 2014). It was also difficult to understand what motivates the language to change and who is responsible for actuating, or beginning, the change process. Some researchers have classified these previous questions as some of the major ones facing the study of language change (Labov, 2001; Croft, 2000).

Digital media have provided a potential avenue for understanding this problem in language change studies. Twitter, in particular, has been used to analyze large amounts of geo-coded and time-stamped data in an effort to understand regional patterns of language variation and change (Grieve, Nini, & Guo, 2018; Huang, Guo, Kasakoff, & Grieve, 2015). These analyses have involved collecting immense amounts of data and identifying lexical patterns by tracking the emergence of new words (Grieve, Nini, & Guo, 2018). These maps are often used in conjunction with the theories of language change diffusion as discussed previously. This present study utilized the method of mapping geographic patterns of lexical innovation. In contrast to other studies, I did not look at widespread trends in lexical innovation but rather focused on the change of only one word, *binge*. This allowed me to analyze the language change at a finer scale in an attempt to see more clearly how people play a role in language change.

The geographic analysis conducted for this study was similar to the process detailed by Grieve, Nini, & Guo (2018). Grieve, Nini, & Guo (2018) created maps for 54 emerging words on Twitter. They used the frequency of a specific word relative to the whole dataset over a period of

time (Grieve, Nini, & Guo, 2018: 300). This method of mapping allowed for the control of regional variations in sample sizes.

The geographic maps created for this current study did not use the relative frequency of binge-watch, instead using mentions of binge-eating, binge-drinking, or binge-watching. This decision was made due to the smaller dataset in comparison to Grieve, Nini, and Guo (2018).

Mapping process. About 14% of tweets had faulty coordinates so they were removed resulting in a reduction from 131,307 tweets to 112,503 tweets. Coordinates were considered faulty if they were missing either a latitude or longitude. The latitude, longitude, year and month were then extracted from each tweet. Lastly, the tweets were marked as either "eating/drinking" or "watching". To be categorized as "eating/drinking" the tweet had to contain the words *eat, eating, drink,* or *drinking.* To be categorized as "watching" the tweet had to contain the words *watch, watching,* or *Netflix.*

Due to the small size of the sample used for textual analysis, the main mapping process used the entire dataset. Using the entire dataset resulted in some limitations. For example, the concepts of binge-watching, binge-eating, and binge-drinking were identified by searching for certain words in the tweets. This method of identifying context had limitations, mainly in the fact that it did not allow for the identification of tweets that refer to binging behaviors without using the exact phrase (i.e., "I'm so excited to binge Game of Thrones"). This limitation was accepted in order to have a more robust map, since using the sample would have resulted in only 2,545 tweets mapped over a 10-year range. Another limitation was due to limited geographic data provided by the user. If the user provided only the state they lived in, Twitter automatically assigned the tweet's location to the middle of the state. This is an important limitation because it can appear that many people are tweeting from the geographic middle of a state, when they could

have been located somewhere else when they tweeted. Since few urban areas are located in the geographic middle of a state, this limitation potentially complicates the urban/rural divide that is conceptualized in theories of linguistic diffusion. In other words, by defaulting to the middle of a state (typically a rural area) these maps may overestimate the number of Twitter users located in rural areas.

Textual Analysis

The second layer of analysis involved a textual analysis of a sample of the larger corpus. The analysis of tweets spans many disciplines such as linguistics (e.g., Laucuka, 2018), sports communications (e.g., Rodriguez, 2017), and health communications (e.g., Gurman & Ellenberger, 2015). Previous research has also considered various structural components on Twitter, such as the communicative functions of hashtags (Laucuka, 2018) and the lifecycle of a retweet (boyd, Golder, & Lotan, 2015).

Two methods of textual analysis are commonly used with Twitter data. One method, content analysis, requires a codebook to be developed and tested prior to analyzing the corpus (Veltri & Atanasova, 2017; Gurman & Ellenberger, 2015). This form of analysis "breaks down the components of a text into units that you can then count" (McKee, 2003:127). The counting is based on theoretically informed predetermined codes. Content analysis is particularly useful when there are well-founded expectations of what will exist in a given text.

The second form of textual analysis is open coding, often known as emergent coding. Researchers bent towards linguistics often use this form of textual analysis (Rodriguez, 2017; Jones, 2015). This allows the researchers to reduce the raw data based on various similarities allowing the data to dictate the themes.

Due to the exploratory nature of this work and its use of relatively new methods of linguistic analysis, open coding was deemed more appropriate because of its flexibility in determining themes from the text itself rather than applying developed codes to the text (Strauss & Corbin, 1998). This form of coding allowed the raw data to dictate analysis which was more appropriate for this level of exploratory work.

Textual analysis procedure. Rodriguez (2017) analyzed Tweets by first identifying themes within the subsamples, then conducting "another round of analysis...to determine whether the resulting themes needed to be expanded or whether themes could be combined into a loftier theme" (Rodriguez, 2017:718).

In this vein, the textual analysis process followed for this study was as follows:

1. Randomly sample tweets from a given year based on the sampling percentages identified for each year (see previous section for more information on sampling)
2. Organize these tweets into a cumulative Excel sheet.
3. Read through a single tweet and classify its use of binge (binge-watch, binge-eat, etc.) and connotation (positive, negative, neutral, unknown)
4. Continue analysis by:
    1. Creating a new category if several tweets exhibit similar characteristics
        a. To understand this, I took notes when I thought I started to see similar themes emerging.
    2. Classify using an existing theme, if applicable.
    3. Collapse themes down into a "loftier" theme as appropriate.
5. Repeat these steps for the entire sample.
    1. If a new theme emerges that would have fit a previous tweet, re-analysis is permitted and encouraged.

In addition to coding, I took notes throughout the coding process. These notes helped me to identify potentially recurring trends in the data, as well as potential tweets that would be useful during data analysis as good representatives of the trend.

Peer examination. These data sheets were stored on the author's personal Google Drive. To ensure that the coding process was reflective of the data, I shared half of the sample from the

year 2012 with a peer researcher. I chose the year 2012 to ensure that we were able to discuss both binge-watching behaviors and other binging behaviors (post-2013 tended to be primarily only binge-watching). The decision to use peer examination follows after Krefting's (1991: 219-220) discussion as one technique of increasing rigor in qualitative work. Peer examination is similar to a member check. Peer examination, however, involves a discussion between the lead researcher and a colleague who is not involved with the research project.

I sat with my peer researcher while they worked through coding half of the 2012 data and answered questions they had. Through this process, I further refined my definitions for the binging triggers code and whether or not food, drink, drugs, or content were mentioned. Overall, the peer researcher coded very similarly to what I did and when we differed, we discussed what their thinking was, further helping me refine my coding process.

Validity/Consistency and Reliability of the Proposed Study

Internal Validity

Internal validity is a crucial consideration for qualitative work, requiring the minimization of possible confounding variables and the unaccounted-for influence of bias. To try to account for potential bias in coding, I had another researcher look at a small percentage of the sample and compare their findings to my own. This check included a discussion with the other researcher to receive feedback about some of the definitions used in the coding.

External Validity

External validity, or transferability, refers to the ability for this work to be applicable outside of this sample. Given the nature of digital media, and Twitter more specifically, there is no expectation that the findings of Twitter research apply to other social media like Facebook or Reddit. Each of these platforms have their own culture which complicates the transfer of one set

of findings to another platform. Twitter remains a valuable resource due to its reflection of

informal language use in offline discourse.

CHAPTER 5. RESULTS

This study examined discourse on Twitter to illuminate how language change processes

work in digital space. This thesis was driven by the overarching question: **How does the**

interaction of Twitter and language facilitate the change of the usage of specific terms? In

that vein, this thesis investigated the following research questions:

RQ1: Can the acceleration of language change in Twitter discourse be correlated to a
cultural phenomenon?

> **RQ1a:** Within language change on Twitter, are there indicators that might allow
> for the prediction of future changes?

RQ2: What lexical innovation processes can be observed in the usage of *binge* on
Twitter?

> **RQ2a:** Does the geographical movement of an emergent use of *binge* in Twitter
> discourse follow linguistic theories of diffusion?

> **RQ2b:** What connotation change has occurred with the usage of *binge* on
> Twitter?

> **RQ2c:** What context is associated with this change in connotation?


These research questions were answered using two methods: first, the creation of maps as

is the practice in linguistic work, and second, a textual analysis of the sampled tweets. RQ1 was

addressed using both the maps and textual analysis.

Maps

RQ1: Can the acceleration of language change in Twitter discourse be correlated to a cultural phenomenon?

To answer this research question, the maps created were immensely useful. Below, Figure 1 shows the general trends in the number of mentions as more users began tweeting about binge-watching (red dots). Figure 1 shows six maps from the years 2012 - 2015 and 2018 - 2019. These maps represent the total number of tweets that year that mentioned binge-watch or binge-eat/drink. Binge-watch is marked with a red dot and binge-eat/drink with a blue dot. In 2012 and 2013, tweets including binge-eat/drink dominated binging discourse. There were some tweets throughout the year of binge-watching, but primarily binge-eating/drinking were the focus. From Figure 1, it is evident that a switch in the usage of binge happens between the years 2013 and 2014, with the proportion of mentions of binge-watching (red dots) increasing.

To home in on this switch, Figure 2 shows maps from November 2013 through December 2014. Figure 2, perhaps not surprisingly, is oriented around when Netflix publishing a press release on December 13, 2013 titled "Netflix Declares Binge Watching is the New Normal" (Netflix, 2013). Given the increase in the number of red dots, or mentions of binge-watching, after December 2013, it appears that there likely is a positive correlation between the publication of this press release and the increase in number of mentions of binge-watching. This increase in the number of mentions of binge-watching remains steady after this switch, consistently outnumbering the number of other mentions of binging behavior. From Figure 1, it is visually evident that there was an event within this time period that led to an emergence of the use of binge-watching and its widespread usage. In other words, the acceleration of the use of binge-watching is evident.
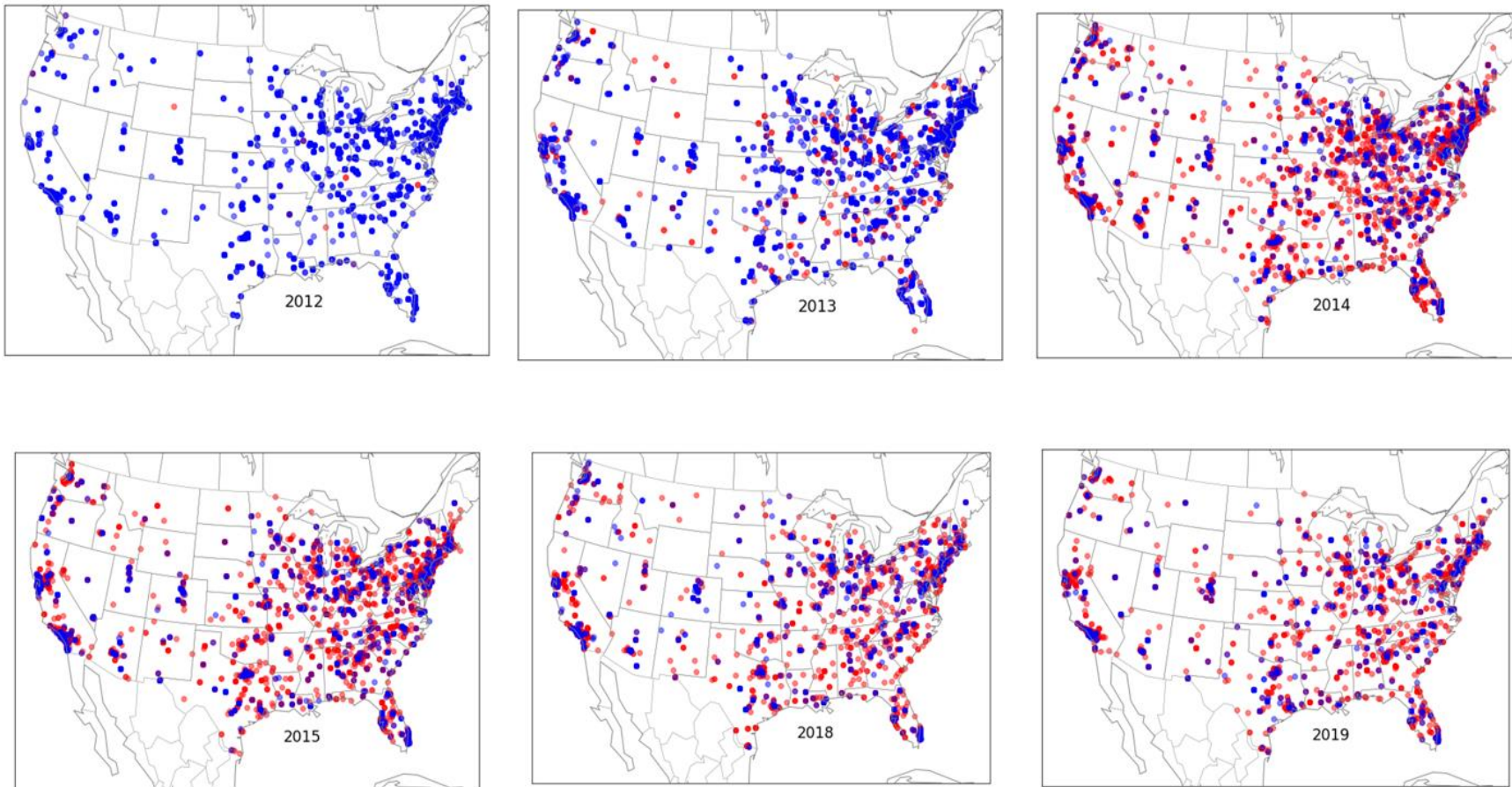
Figure 1.

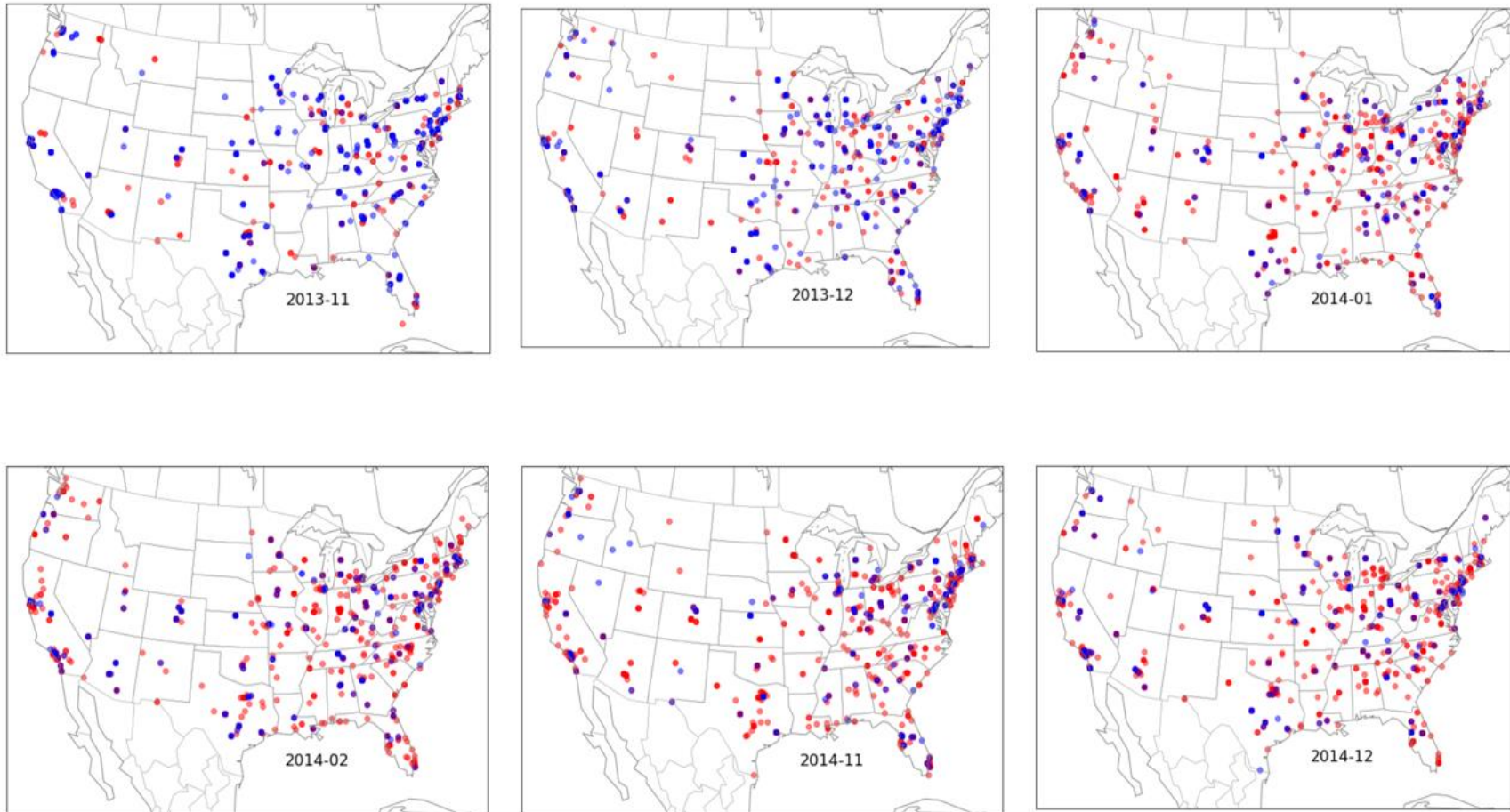*Maps of mentions of binge-watching and binge-eating/drinking from 2012-2019.*

Note. Blue dots represent mentions of binge-eating/drinking and red dots represent mentions of binge-watching.

Figure 2.

Maps of binge-watching and binge-eating/drinking at the end of 2013-beginning of 2014.

Note. Blue dots represent mentions of binge-eating/drinking and red dots represent mentions of binge-watching.

RQ2a: Does the geographical movement of an emergent use of binge in Twitter discourse follow linguistic theories of diffusion?

Traditionally, when linguists have created maps to show the diffusion of a new linguistic trend the results reflected and reinforced theories of diffusion. These theories hold that linguistic innovations emerge from urban centers and move to other urban centers. While previous studies dealt with primarily spoken language, recent studies have also found similar results when looking at digital discourse (Grieve, Nini, & Guo, 2018). These more recent findings suggested that even in digital space, with time and distance often considered collapsed, linguistic change still follows predictable geographic diffusion.

For this study, Figure 1 shows that the geographic distribution of tweets mentioning binge-watching in 2012 and 2013 are primarily a mirror of population density. There is a visible increase in density of tweets along the west coast and in the northeastern states, but this is likely due to an increase in the number of Twitter users between those years. This density is also evident in the maps created using the sample data (Appendix B).

In 2014, there is a clear emergence of binge-watching as the dominant focus of binging discourse on Twitter. Figure 2 shows a more detailed view of the diffusion when this switch happened. Again, as mentioned previously, even though binge-watch is clearly emerging into the discourse and is being widely used, there is no clear pattern of emergence. This is in contrast to the expectations laid out by traditional theories of linguistic diffusion. This pattern of widespread usage continues throughout the sampling period as reflected by the maps of 2015, 2018, and 2019.

The digital divide found in rural and urban areas is an important consideration for this research question. A data connection and a means of accessing the internet are required to use Twitter. Due to these prerequisites, Twitter does not provide a perfectly representative

understanding of how binge-watching diffused throughout the country. In addition, the term

binge-watching refers to people consuming content typically through a streaming service. These

two digital elements may have led to the inability to truly characterize how binge-watching

diffused throughout rural areas since those linguistic communities may not be accurately

represented on Twitter.

Textual Analysis

RQ1: Can the acceleration of language change in Twitter discourse be correlated to a cultural phenomenon?

Table 3.

Tweets representing the emergence of binge-watching discourse.

2010	Following Ariel on a TV binge with It's Always Sunny in Philadelphia. A season a day is about right. *(9/13/2010)*
2012	Hulu binge! *(1/23/2012)*
	Need a good tv series to pickup and binge on...any suggestions? *(4/15/2012)*
2013	#Damages was the show I used to replace the binge high I was getting from @HouseofCards, which replaced binge high of @BreakingBad_AMC. *(04/29/2013)*
	Such a binge culture the internet has made for us. *(09/29/2013)*
	Binge watching Orange is the New Black because my life is Netflix now *(10/08/2013)*
	Remember when the only thing I did was binge watch episodes of The Wire? That's what's happening now with Treme. *(11/11/2013)*
	i binge watch MIC like it's my job *(12/08/2013)*
	I have been Netflix binging all day *(12/12/2013)*
	Don't Feel Bad, Everyone Binge-Watches Netflix, Says Netflix - http://t.co/9w1F9fu007 *(12/14/2013)*
2014	What's spring break without a Netflix binge? #Scandal #cantstopwontstop *(03/25/2014)*
	if you need me, I'll be binging House of Cards for the rest of my life *(10/20/2014)*
2018	@user YES please binge watch! I love that show and everyone on there is gorgeous. *(08/10/2018)*
	I honestly can't wait to binge watch Star. I fell off a while ago because of my schedule. *(11/09/2018)*

As previously discussed, the acceleration of the change in language is visibly evident from Figure 2. To investigate the cultural phenomenon associated with this acceleration, it is most productive to look at the text itself.

The act of binge-watching was first discussed in the sample tweets in 2010 (Table 3). As the cultural phenomenon of binge-watching gained traction, discussion of binge-watching simultaneously increased. The phenomenon extended beyond the act of binge-watching, including the use of binge-watching as an identity and social behavior (this will be discussed further in the Discussion section).

RQ1a: Within language change on Twitter, are there indicators that might allow for the prediction of future changes?

The codes established from the emergent textual analysis process provided insight into this question. The final codes used for the coding process are listed in Appendix B. Of the codes used during the analysis process, only a few of them are productive for predicting future changes. These included connotative change, lexical components, the inclusion of others in the tweet, and the use of specific language. While the lexical components and connotative change are meaningful for answering RQ1a, they will be addressed in more detail when answering RQ2 and RQ2b respectively. For now, I will focus on the inclusion of others in binging discourse and the use of specific language.

The social component of binge watching was measured through the use of the "People" code. A tweet was coded "1" if it mentioned other people who were participating in the binging behavior and "2" if it mentioned other people in the tweet but not participating in binging behavior. Examples of both are shown in Table 4.

Table 4.

Example tweets for "People" code

1: Other people mentioned regarding binging	I've made @user go on a binge watching Awkward reruns with me the past two days. #truefriendship
	Time to chill and binge on the last couple of episodes of #TheOffice with the wife @user #Netflix
	what do [person] and I do when it's storming at the beach??? binge on Chinese food and sob while watching The Notebook.
	#homeland binge with @user has me so tense and we're only on season 2
2: Other people mentioned, not regarding binging	I really want to binge watch game of thrones today and just be cozy in my bed but no someone wants to go race go karts
	Binge eating at ikea after a hard session with the therapist #meatballs #hotdogs #lingonberries #stuffthefeelingsbackdown
	I accidentally just texted my dad about binge drinking #fml

Note. To protect the user's privacy, Twitter handles mentioned in the tweet have been replaced with @user and specific uses of other people's names have been replaced with [person].

The code for "people" emerged because binging behaviors range rather widely from being a solitary behavior to one shared with others. On average, binge-drinking was discussed in the context of social events (i.e., parties, Spring Break, etc.) while binge-eating was typically discussed as a solitary activity.

As seen in Tables 5 and 6, instances of binge-eating/drinking tweets with others participating in the binging were present before 2015 and then all but dropped off in the years after. In contrast, binge-watching remained steady in mentioning others participating in the binging behaviors. This potentially indicates a uniquely social component associated with binge-watching.

Table 5.

Number of binge-watching tweets by code.

Year	1: Other people mentioned regarding binging	2: Other people mentioned not regarding binging	99: Not applicable
2009	-	-	-
2010	0%	0%	100%
2011	18%	18%	64%
2012	-	-	100%
2013	7%	2%	91%
2014	8%	1%	92%
2015	6%	-	94%
2016	10%	2%	88%
2017	5%	1%	94%
2018	7%	-	93%
2019	4%	-	96%

Table 6.

Number of binge-eating/drinking tweets by code.

Year	1: Other people mentioned regarding binging	2: Other people mentioned not regarding binging	99: Not applicable
2009	-	-	100%
2010	13%	-	88%
2011	23%	5%	73%
2012	13%	4%	84%
2013	11%	2%	87%
2014	-	-	100%
2015	4%		96%
2016	-	-	100%
2017	-	-	100%
2018	-	-	100%
2019	-	-	100%

The second noteworthy component that emerged while coding the tweets dealt with the use of specifics. People tended to be very specific about their binging behaviors - detailing what

it was they were binging on whether it be food, drink, drugs, or media content. The different codes are shown through representative tweets in Table 7. Specifics were especially prevalent in tweets that mentioned binge-eating and binge-watching. The potential importance of this will be investigated in the discussion section.

Table 7.

Binging specifics mentioned in tweet

Code	Number of tweets	Example tweet
1: Food	192	New years resolution: stop binge eating carrots when I'm stressed
2: Drink	21	Having a moscato binge with [person] then maybe a margarita binge lol #winning
3: Drug	33	the fact that we only have one more week till summer is making me more stressed than relieved. let the adderall binge begin!
4: Media content	1231	On a how i met your mother binge..
5: Combination	11	I just wanna binge on Netflix and popcorn
99: N/A	945	@user I have been binge eating all day. Sigh

Note. To protect the user's privacy, Twitter handles mentioned in the tweet have been replaced with @user and specific uses of other people's names have been replaced with [person].

RQ2: What lexical innovation processes can be observed in the usage of binge on Twitter?

This research question did not result in meaningful findings. Specifically, I looked at the use of hashtag forms of binge (#binge, #bingeeat, etc.) Out of the 2544 tweets coded, only n = 37 (~1.5%) used binge in a hashtag form. Some example tweets are below with the year they were posted for context:

- On a #retweet #binge... Oh #twitter, you can be so #entertaining at times. (2012)

- #Random #Netflix #Binge: #TheClevelandShow (2014)

- @user OOOH! I smell a challenge! #rewatch #binge #disjointed (2017)

Note. To protect the user's privacy, Twitter handles mentioned in the tweet have been replaced with @user.

There were some tweets that used binge in this way, but the overwhelming majority of tweets did not use the hashtag form of the word. It appears that the hashtag form was used most frequently in the earlier days of Twitter, perhaps as people negotiated norms surrounding the use of hashtags.

RQ2b: What connotation change has occurred with the usage of binge on Twitter?
and *RQ2c: What context is associated with this change in connotation?*

To answer RQ2b and RQ2c, I will first discuss the change in connotation overtime. Figure 3 shows the change in connotation of binge-watching, -eating, and -drinking over time. The bottom right figure shows the total connotation of every context of binging overtime. I chose to not plot the neutral connotation with binge-eating and binge-drinking for clarity. However, the neutral connotation of binge-watching likely has bearing on its normalization, which will be discussed in the discussion section.

Figure 4 shows the context of binging overtime. "Other" refers to any mention of binging that was not used in the context of binge-eating, -drinking, or -watching. It was important to show what was happening throughout the rest of discourse about binging, and interestingly, it appears to follow similar trends to the -eating and -drinking, in that it is largely outnumbered by binge-watching after 2013.
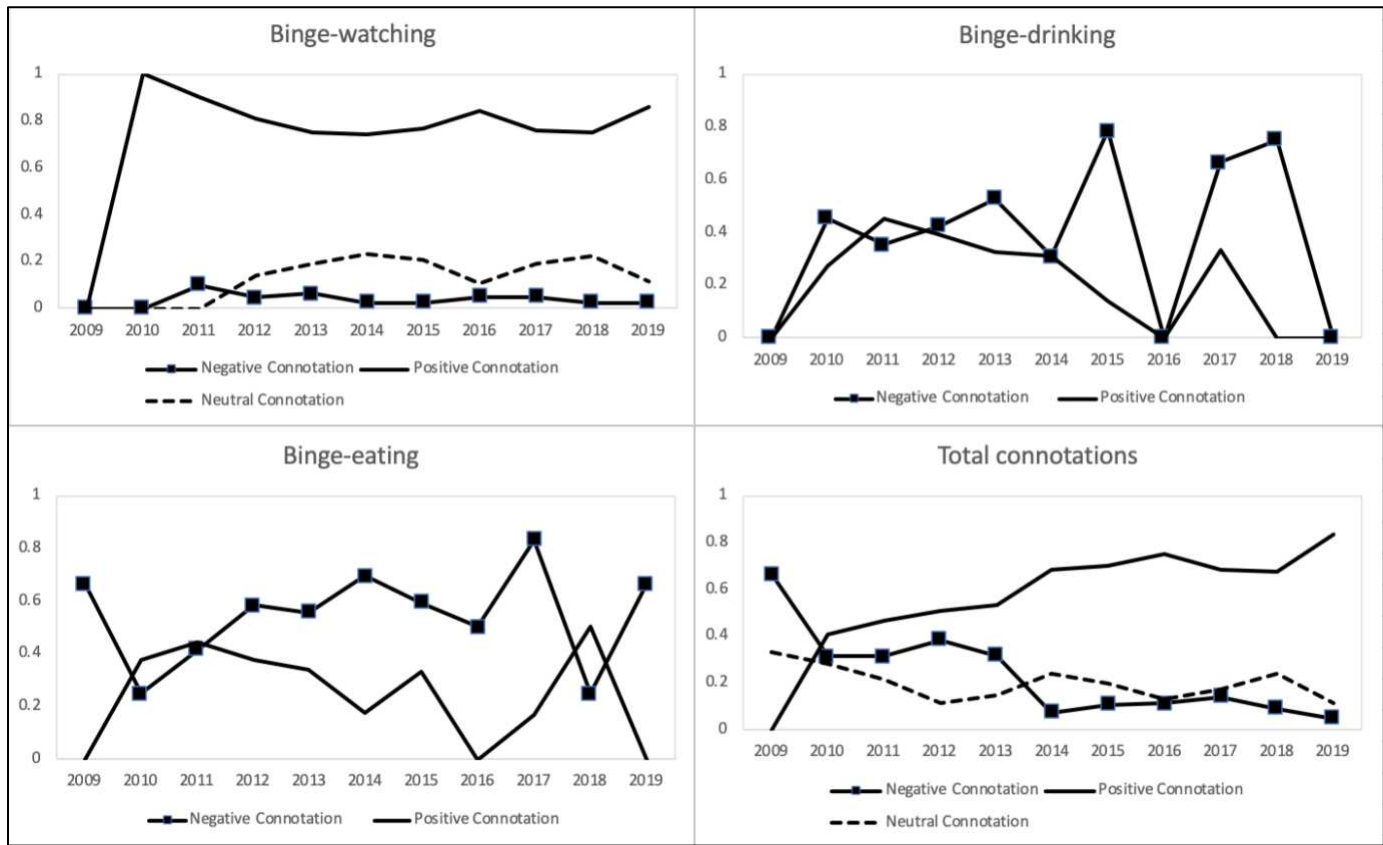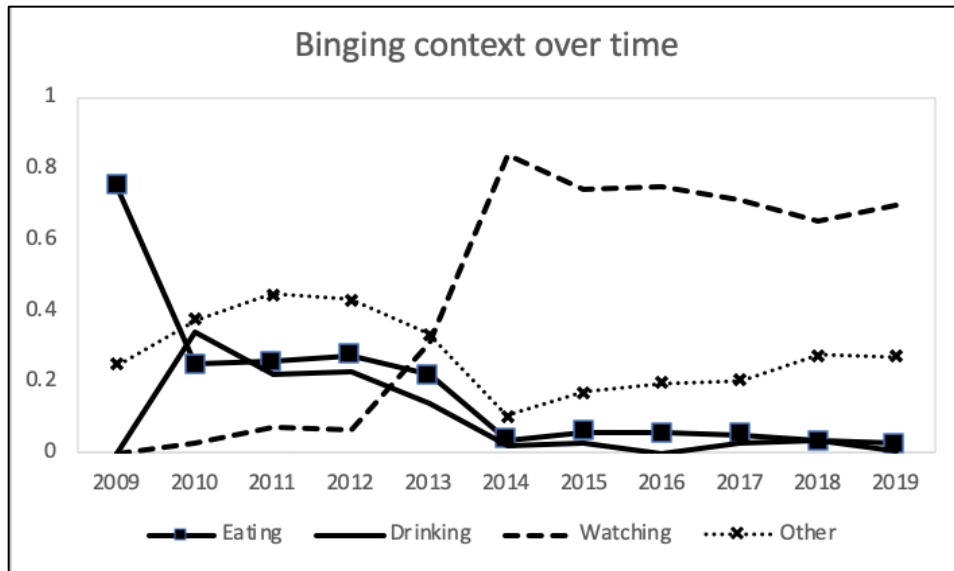
Figure 3.

Change in connotation per context over time.

Note. Neutral connotation was not included on binge-drinking and binge-eating to improve readability. The total connotations chart includes the connotation for every context of binging (not only binge-watching, -eating, -drinking).

Figure 4.

Change in context of binging over time.

Table 8.

Examples of tweets with negative connotation

Year	Context	
2012	eating	Stress pizza binge. (@ New York Pizza Company) http://t.co/ZcQs0oQP
2012	watching	productive day at the office followed by an unproductive Portillos, Bulls and Shameless binge
2012	eating	Binge eating #badhabits
2013	eating and drinking	After a week full of binge eating and drinking in NY, time to start working out again. This will be painful :(
2013	drinking	I feel like I may have went binge drinking lastnight #hungover
2014	watching	You'd think getting rid of cable would increase productivity, but instead I just became addicted to binge-watiching Scandal on @netflix.
2015	watching	I BINGE WATCHED ON NETFLIX ALL NIGHT UNTIL THE CRACK ASS OF DAWN AND JUST WOKE UP A FEW HOURS AGO AND STARTED WATCHING A MOVIE I JUST WHY
2016	watching	@user I want to catch up, but the idea of binge watching it exhausts me
2016	watching	Everyone is moving into their dorms doing cool stuff and I've been at home binge watching Catfish and TLC shows.

Table 9.

Examples of tweets with neutral connotation

Year	Context	
2010	drinking	@user So last night was a drive-thru drinking binge?
2012	drinking	@user how's Sisko, over his wine binge??
2014	watching	After binge watching grey's last night with @user I really really want to be a Doctor
2014	watching	@user Parenthood is on my 'binge-watch' list; but every time, I chicken out b/c I think its going to be too sad. How sad is it?
2015	watching	@user Yup... I've been on a strange #VampireDiaries binge.
2018	watching	@user Binge watch a show?
2019	watching	@user Hope you're ready to move on to binging Food Network show cause I got some real bad news for you, compadre

Table 10.

Examples of tweets with positive connotation

Year	Context	
2010	eating	binge eating fresh smoked salmon and peaches, respectively, from the Proctor Farmer's Market. being in Washington in so rough.
2011	eating	@user cheer up :-) get urself some chocolates and have a good old sugar binge lol
2011	watching	Been on an LA Ink binge this week! I love everything about Kat. I look up to her so much as an artist
2012	watching	Need a good tv series to pickup and binge on...any suggestions?
2012	eating	This weekend I'm going to McDonalds, Subway, pizza, and chips and salsa. Let the three day binge begin! #poshcorps
2012	drinking	Ah, yes. Binge drinking with good people.
2013	watching	@user thank you Kristen! Let the binge watching of The Office/all day nap session begin!
2013	watching	Hi, my name is Thomas and I am binging on #TheWalkingDead. #hooked
2013	watching	@user I will! Probably going to binge watch tomorrow
2013	eating and watching	The two things I binge on, food and vamp diaries
2013	drinking	I'm getting the feeling that my life was wayyyy better when I was binge drinking everyday
2014	watching	I need someone in my life to binge watch 30 Rock and Mad Men with
2014	watching	Spent my day binge watching season 1 of Game of Thrones. Best decision ever..
2016	watching	@user I'm only on the second episode but I'll be binging this one.
2016	watching	@user Thank you, appears that we will be binging TV all weekend.
2018	watching	@user Good list! Will have to take a full weekend to binge em all
2018	watching	@user My mood is reminiscent of your 2017 Seinfeld binge...return the favor, and say a little prayer for me?
2019	watching	@user I'm binging it all day tomorrow, can't wait
2019	reading	@user I just picked up volume 1! Let me go ahead and binge the series

Tables 8, 9, and 10 show example tweets for both negative, neutral, and positive

connotations respectively. There are fewer tweets pulled for the negative and neutral connotation

because there were fewer tweets that were connotated in this way. As shown in Figure 3, the

overwhelming connotation used in binging discourse was a positive connotation.

CHAPTER 6. DISCUSSION

This study looked at binging discourse on Twitter before and after the emergence of binge-watching, investigating the relationship between Twitter and language change. While there is a significant amount of literature looking at either language change or digital media, this research considered the two as inextricable forces on each other. To examine this and the proposed research questions, a textual analysis was conducted of tweets containing the word *binge* from 2009-2019.

Overall, the findings suggest that the December 2013 press release published by Netflix deeming *binge-watching* as the "new normal" in media consumption may have pushed binge-watching into the mainstream lexicon and led to the widespread dominance of binge-watching within binging discourse. Language use about binge-watching was typically positively connotated in contrast to the negative connotations associated with binge-eating and binge-drinking. As the use of binge-watching spread throughout the United States, the pattern of the geographic diffusion of binge-watching did not follow traditional theories of the diffusion of language change. Lastly, Twitter enabled and reinforced the spread of binge-watching through the facilitation of the social aspect of binge-watching.

Observing Language Change

The Role of Netflix in Changing Language

Netflix published a press release on December 13, 2013 declaring binge-watching as the new normal in media consumption. This press release came ten months after Netflix bulk-released *House of Cards*. The publication of this press-release appears to have reinforced the expectation that by December 2013 "everyone" was binging. It is important to note, however,

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that although Netflix popularized the term binge-watching, it did not *create* the term as there were mentions of binge-watching as early as 2010 (Table 3). Rather, Netflix capitalized on what its users were already doing and popularized the behavior by both making it accessible to subscribers and normalizing it.

The normalization power of this press release appears to lessen any existing stigmas potentially associated with the phrase. Netflix positioned binge-watching as lexically similar but connotatively different than binge-eating and binge-drinking. Binge-eating and binge-drinking are behaviors that can disrupt or even ruin a person's life. Binge-watching, in contrast, was cast as normal and quite accepted. As a result, while there were people binge-watching prior to December 2013, it seems that people found binge-watching to be a term that accurately reflected their relationship with media. "Binge-watchers" were able to openly discuss their behaviors in a way those who struggle with binge-eating and binge-drinking cannot necessarily do.

The Geography of Binge-watching and Twitter

Theories of language change suggest changes diffuse from one urban center to another with smaller population centers picking up the changes along the way (Bailey, 1973; Sankoff, 1982; Trudgill, 1974; Labov, 1965). These theories of language change have been expanded into digital space by mapping social media posts onto the user's geographic location at the time of posting (e.g., Grieve, Nini, & Guo, 2018)**.** These studies often rely on enormous datasets and have found language change in digital space following traditional theories of change, despite the lack of a particular geographic location attributed to digital space.

This present study, however, did not find a clear relationship between the diffusion of binge-watching and geographic space. Figure 1 shows the geographic location of binge-watching and binge-eating from 2012-2015, and 2018-2019. In 2012, there were very few mentions of

binge-watching appearing in areas of the country that are not urban centers. Following the

publication of the Netflix press release at the end of 2013, and into early 2014, increasing

mentions of binge-watching were not emerging solely from urban centers. By 2014, the entire

country was tweeting about binge-watching (Figure 2). Rather than emerging from a specific

place or community, binge-watching appeared everywhere at once. Binge-watching did not

emerge from traditional centers of digital lexical innovation, such as the Southeastern United

States (Grieve, Nini, & Guo, 2018) an area associated with speakers of African American

Vernacular English (AAVE) (Jones, 2015) and typically the source of digital linguistic trends.

These differences are perhaps a reflection of binge-watching's corporate origins instead

of emerging from a specific linguistic community. The origin of binge-watching also likely plays

a significant role in the positive connotation of the term (discussed in the next section). Binge-

watching was corporately washed of stigma and became a term that normalized audience's

media consumption. These findings may suggest that language change in digital space aligns

with non-digital theories of language change when investigating words that emerged from

"traditional" or well-studied sources of language change. Given the uniqueness of how binge-

watching emerged, these theories may need to be revisited to understand the impact of "non-

traditional" sources of language change.

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

Positive Connotation

Denotatively, the use of binge in binge-eating, binge-drinking, and binge-watching is

fairly similar. Binging indicates the consumption of large quantities in a certain period of time.

Despite similar denotations, binge-watching is connotated differently than binge-eating and

binge-drinking. Binge-watching was more frequently positively connotated (Figure 3) in

comparison to binge-eating and binge-drinking which were used more often with a negative

connotation (Figure 3). How and why do these words bear such different connotations?

The overall dominance of binge-watching as a positively connotated behavior appears to

align with the rise of binge-watching as a normalized activity. Those who mentioned binge-

watching were much more likely to be discussing binge-watching as something they found

enjoyment in:

"@user thank you Kristen! Let the binge watching of The Office/all day nap session

begin!" (Table 10)

This is in contrast to binge-eating and binge-drinking which were frequently mentioned within

the context of struggling with either behavior:

"Binge eating #badhabits" (Table 8)

Binge serves as an intensifier for all three actions. This intensification derives from the

denotative sense of the word. For example, to binge-drink is different than just drinking, and the

difference appears in the amount of drinking that is occurring. While this intensification applies

to all three instances, the intensification appears to be the main focal point of only tweets about

binge-eating and binge-drinking. In other words, it was common for tweets that mentioned

binge-eating/drinking to focus primarily on the binging behavior. This focus took many forms:

some tweets mentioned feeling guilty, others mentioned needing to "make up for binging", and

others expressed a desire to stop binging all together.

In contrast, tweets that mentioned binge-watching after 2013 tended to focus not on

binge-watching itself, but rather on the excitement around binge-watching or, more commonly,

the content that was being binge-watched. Watching a lot of TV appears to be less noteworthy

than the content being watched. This suggests that with binge-watching, the intensification of

binge morphs into watching, in many cases allowing binge-watch to be used as a synonym for watch. The positive connotation that surrounds binge-watching was likely propelled by the positive feelings associated with the content being discussed.

In even more detail, this shift in focus does not occur with binge-eating although syntactically many of the tweets are the same. For example, the following tweets are structured similarly, yet the apparent focus of the tweets are different:

"Spent my day binge watching season 1 of Game of Thrones. Best decision ever…" (Table 10)

"After a week full of binge eating and drinking in NY, time to start working out again. This will be painful :(" (Table 8)

While both tweets mention the longevity of their binging behaviors, the mention of binge-watching does not accompany a discussion of compensation. Rather, it appears that the mention of binge-watching allows the user to be more specific about what they are binge-watching. While binge-watching denotatively refers to consuming a lot of content, the focus of the word appears to be on what they are watching, rather than the act itself. It is little surprise then that a positive sense surrounds the act of binge-watching. Not only is a person binge-watching content they presumably enjoy, but they are also entering into a discourse community of other like-minded people that share their passion for binge-watching.

With the mention of specifics about binge-watching people are demonstrating a level of cultural capital. If a person is to binge-watch a show it may indicate that they are fully in the community surrounding this show. This opens the door to a discussion of fandom and the normalization of fandom that is outside of the scope of this work but will be discussed further in the future research section (e.g., Jenner, 2017). Likely due to the impacts on one's life and the

pathology surrounding binge-eating and binge-drinking, the mention of binge-eating and binge-drinking do not appear to act as a key into a similar community.

Binge-watching may bear a different connotation because of a generalizing, or widening, of the definition of "watch" to incorporate the intensification associated with binge. In other words, people are not binge-watching TV as much as they are just *watching* TV. This shift towards an expanded definition of watch may have facilitated the rise of an increase in binge-watch being used in a positive, and, more recently, a neutral connotation.

Neutral Connotation

A neutral sense of binge-watching was an unexpected finding (Table 9). While coding, a neutrally connotated tweet meant "binge" was used in the same sense one would refer to a "run-of-the-mill" activity (i.e. "Today I ran some errands"; "I tied my shoes", etc.). The use of neutral connotation was used primarily with binge-watching, especially following 2013: "@user Hope you're ready to move on to binging Food Network shows cause I got some real bad news for you, compadre" (Table 9). This tweet from 2019 demonstrates how users were using binge where perhaps they would have used watch before. It appears the positive connotation evolved into a neutral connotation where tweets mentioning binge-watching focused less on the action (because it was taken as a baseline assumption) and more on the content itself.

There are, however, important nuances to the use of binge-watch with a neutral connotation. The text reveals that one can say they are watching a lot of TV or binge-watching TV nearly synonymously. To watch a lot of TV/binge-watch TV implies a length of time or a continual nature to the act. For example, a person cannot say they are "binging" the basketball game in place of watching the basketball game. This is likely due to the fact that watching a

basketball game typically refers to a single instance, while binge-watching suggests continuity of watching content.

Using a neutral connotation with binge-eating and binge-drinking appears to be limited by the inability to substitute binge-eating/binge-drinking for eating/drinking. One cannot say they are "binging apples" with the same meaning as "eating apples." This may be associated with the fact that the sense around eating has not expanded to include binging as part of the expected nature of eating. Rather, binge continues to act as an intensifier for binge-eating and binge-drinking. This function of binge applies to other contexts found throughout the sample such as binge-reading, binge-tweeting, binge-cleaning, and binge-shopping. In each of these examples, binge continues to act as an intensifier, functioning to differentiate the binging behavior from "normal." This intensification does not allow for a neutral connotation.

Potential Indicators of Language Change

Another component of this study involved identifying potential indicators that a language change may be occurring. Two characteristics of binge-watching discourse emerged as possible indicators beyond the change in connotation: binge-watching as an identity and the social element of binge-watching. Both of these indicators are reflections of social television. While social television is not new, in the past decade the term has taken on a more technical sense, referring to the ways people use communication technologies to discuss TV (Harboe, 2009; Wohn & Na, 2011). Previous studies have analyzed the various ways people talk about a show online while simultaneously watching the show (e.g. Wohn & Na, 2011).

Perhaps the biggest role Twitter played in the emergence of binge-watching discourse is its facilitation of social television through discourse communities (Fairclough, 1992). These communities are formed through the use of specific markers aligning a tweet with a specific

community (i.e., hashtags, certain phrases, etc.). With binge-watching, users could enter into these media-specific discourse communities even when they were not watching content. For example, some users tweeted about how badly they wanted to be binge-watching instead of working, while others discussed plans to binge-watch an entire show over the weekend. Regardless of the motivation of these tweets, users were able to be connected with the right discourse community.

Binge-watching as an Identity

Social television was enacted in both synchronous and asynchronous formats through the use of specifics about media content (Table 7). The use of specifics facilitated social TV and ultimately led to what appears to be the use of binge-watching as an identity marker. This identity marker refers to both the general act of binge-watching and binge-watching a specific show. Example tweets included in Table 1 reflect users referring to Netflix as "being their life now" or questioning how a Spring Break can exist without binging Netflix. In other words, not only is binge-watching the way they watch content, but it is also the way they define how to spend their time. This type of language is not present within discourse about binge-eating and binge-drinking. This is likely due to the severity of the impacts of binge-eating/drinking on one's life. Binge-eating/drinking are components of one's life but not necessarily the defining characteristic. In fact, in many eating disorder recovery programs clients are taught that having an eating disorder is not the entirety of one's identity ("Who am I without my eating disorder?", 2020). Rather it is a thread in a fabric of who a person is, not the entire piece of fabric. This presents again another significant deviation in language use surrounding binge-watching when compared to binge-eating or drinking.

Binge-watching with Others

The widespread adoption of binge-watching likely derived from its ability to not only describe how people consumed media but also how they spent their time and bonded with others. Tweets that mentioned other people physically present were more likely to mention binge-watching rather than binge-eating/drinking (Table 5, Table 6). Each year in the sample period (except for 2012), people mentioned binge-watching with other people physically present. In contrast, after 2015, no tweets in the sample mentioned others being physically present with binge-eating/drinking. This may be another reflection of the social acceptability and normality of binge-watching in comparison to binge-eating/drinking.

Limitations

With any textual analysis, there are limitations. Though textual analysis allows for an intensive study of the language, it is not always possible to understand a person's motivations behind the text. In this way, textual analysis often stops short of being able to answer the "why" of a question. Textual analysis is a robust method for understanding the "how" and "what" of a research question which were the main focus of this study.

In addition, this study focused on a high-level view of the sample period, dropping into each year of the sample. This was productive in terms of suggestions for future research but limited my ability to really tease apart more nuanced changes that occurred at the peak of the language changing between 2013-2014. This higher-level approach to the dataset resulted in more generalized analyses than if I had dug in more deeply into the specific instance of change.

These findings are not generalizable to other platforms or to other language changes found on Twitter. The findings of this analysis are limited to these research questions and codes used in this analysis. In order to create a more generalizable understanding of these results,

future research will be needed asking similar questions and applying similar methods to other platforms and other instances of language change.

By looking solely at Twitter, it was not possible to fully characterize the ways in which other media may have been influencing the discourse on Twitter. In other words, Twitter discourse is often affected by language used off the platform and so the changes on Twitter may be a result of changes elsewhere.

Lastly, this study took note of, but did not analyze, the type of content being binge watched. This is an important limitation since the type of show (i.e., prestige TV, award-winning shows, etc.) may have acted as an additional factor of normalization for the use of binge-watching. By binge-watching acclaimed shows, a user may be indicating that they are both a fan and have "good" taste in content. Future research could investigate the types of shows being binge watched and if these shows correlate with prestige TV. This limitation reiterates the importance of future research considering these findings within the larger media context.

Implications for the Development of a Method/Future Research

This research focused on an already established change in language. The potential for developing a model to predict future language changes was one of the driving forces behind this research. This resulted in highlighting potential indicators of change. As previously mentioned, some possible indicators emerged through coding. These include the use of positive and neutral connotation, the specificity used with language about binge-watching, and the social aspect of binge-watching. Future research is needed to better understand whether or not these are meaningful indicators outside of this one instance. Suggestions for future research answering similar questions are outlined below.

First, it is important to continue identifying potential predictors of language change. This can happen primarily through investigating additional language changes. This can be done by focusing closely on the moment of change. This moment of change can be determined by investigating a change in the number of mentions and the geographic diffusion.

Once this point of change is identified, future studies should look more closely at the text immediately preceding the change. By zooming into this inflection point, future studies may be able to identify more specific indicators of change. Potential questions to ask when looking for indicators include how the language changes on a day-to-day or month-to-month basis and the determination of who and/or what is driving this change.

In addition, future research can contextualize these texts within the larger social context. The strongest indicators of change, those related to both individual identity and social identity, bear important connections to fandom literature. By studying language change on Twitter through a fandom-informed lens, these indicators of change may become more clearly defined.

As mentioned in the discussion section, Netflix appears to have played a role in de-pathologizing or de-stigmatizing binge-watching. Future research can look at other words that have a similar corporate "origin" to determine if there are similar patterns of geographic diffusion or other similarities in the word's emergence.

To further develop this method, it will be important to apply similar frameworks to discourse found on other platforms such as Facebook or Instagram. Users are bound by different cultural expectations unique to the platform itself. Do the different platforms impact the way language changes on those platforms? Are there different indicators of language change? Treating these platforms as unique media ecosystems will be necessary to develop a rich

understanding of how language changes in digital space. Additionally, future studies can continue understanding the role platforms play in the language changing process.

Lastly, more specifically to binge-watching itself, future studies could investigate the potential grammaticalization of binge when used with binge-watching. Grammaticalization refers to "the transformation of lexical items and phrases into grammatical forms" (Hopper, 1996). One mechanism of grammaticalization is through "semantic bleaching" which can be described as a word maintaining its lexical structure but losing the meaning within the word (Jones & Hall, 2015; Traugott, 1988). Future research could investigate whether binge is undergoing a form of semantic bleaching leading to a future use as a neutral prefix.

CHAPTER 7. CONCLUSION

This study examined how language change processes occur on Twitter using binge as a case study. The chosen method for the study, textual analysis, provided an in-depth view into the linguistic changes that occurred within binging discourse between 2009 - 2019. This analysis revealed that, firstly, binge-watch, binge-eat, and binge-drink, although lexically and denotatively similar, do in fact bear differing connotations. These connotative differences clearly emerged throughout the country at the end of 2013 following a press release from Netflix deeming binge-watching as the new normal in media consumption (Netflix, 2013). Geographically, the spread of the use of binge-watch did not follow traditional theories of language change. The difference in spread perhaps derives from the corporate origins of the term. Additionally, the connotative change appears to align with a widening of the definition of "watch." Watching television seems to have widened to encompass aspects of binge-watching. This is in stark contrast to an incongruence between binge-eating and eating. The nuances in the difference provide rich ground for future study.

What does this study mean for bridging the divide between media studies and linguistic studies? I think first and foremost that the findings were made richer through the use of two lenses. I was able to approach a largely media phenomenon - binge-watching - through a language lens which resulted in uncovering linguistic indicators of largely media phenomena, like social TV. Likewise, I was able to approach the linguistic side of this study through the lens of a media scholar, which allowed me to consider and analyze the role that Twitter plays in the language change process. This provided a more nuanced understanding of digital discourse on Twitter that may not have occurred had I only investigated the linguistic elements of the

connotative change of binge-watch. Overall, the bridging of these two fields yielded an

understanding of how language changes on digital platforms that is nuanced enough to

understand both the intricacies of language and digital culture and discourse. This study

ultimately reaffirms the idea that people and language are inseparable entities, both

simultaneously shaping and changing the other.

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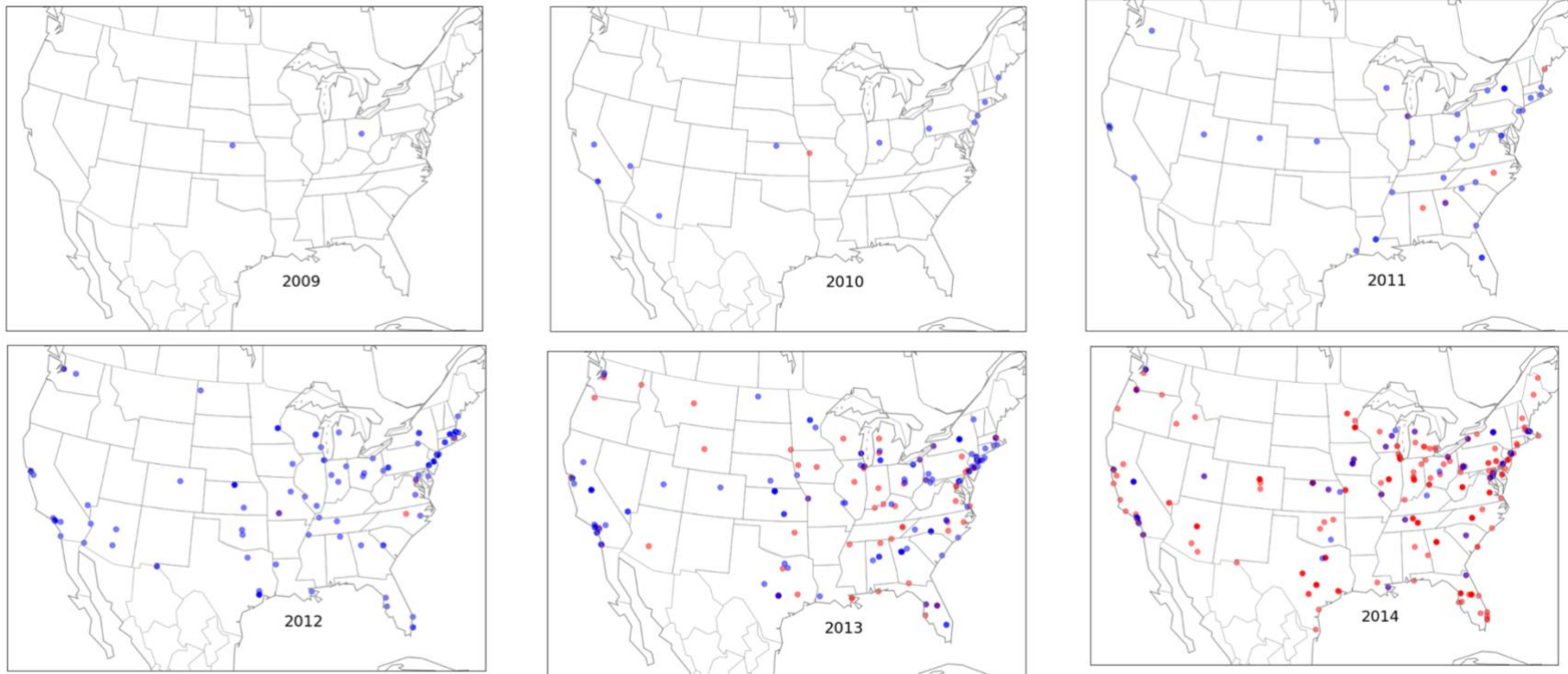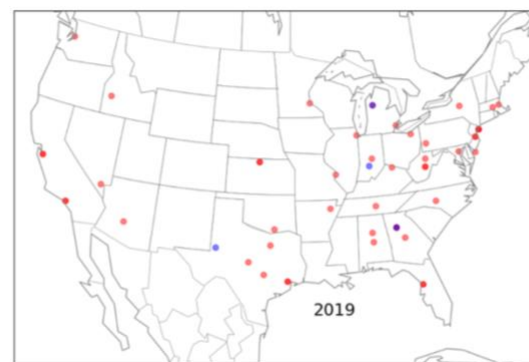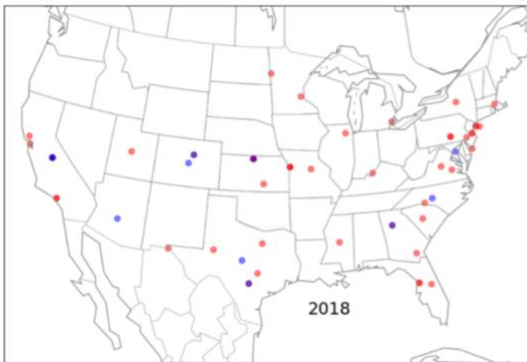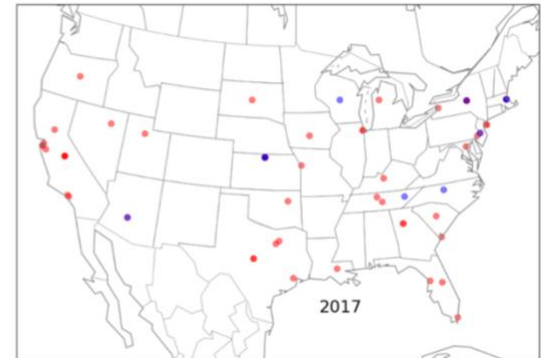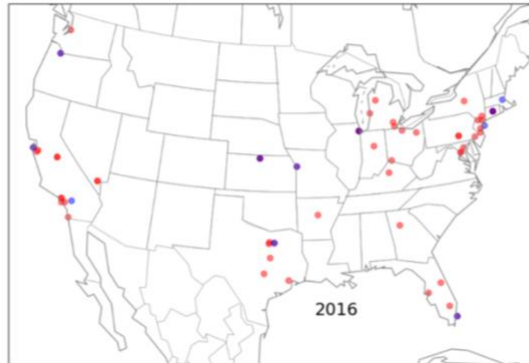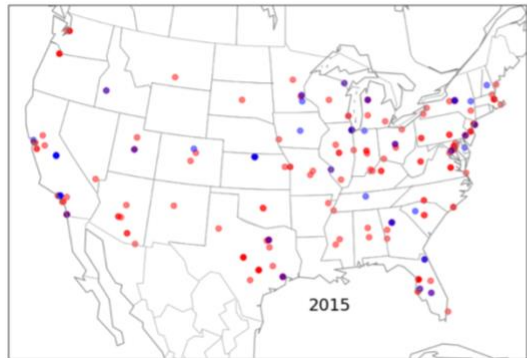
APPENDICES

A. Maps of Diffusion of Binge (Sample Only)

B. Textual Analysis: Final Codes

Appendix A

Maps of Diffusion of Binge (Sample Only)

Note: Blue dots represent binge-eating/drinking and red dots represent binge-watching. A total of 2,148 out of 2,544 tweets were used to create these maps due to faulty coordinates (missing latitude or longitude).

Appendix B

Textual Analysis: Final Codes

Context of binging

Options included:

- Book; building; buying;
- Caffeine; cleaning; computer and coffee;
- Deployment; downloading; **drinking**; drugs
- **Eating; eating and drinking**; editing
- Flying
- Hiring; hype
- Listening; LUSH
- Media; money; motivational; music
- Nail polish; napping; nethack
- Pad; partying; protein
- Reading
- Selling; sound-effect
- Ticketing; trading; tweeting; twitter
- Video game; vinyl; vitamin and nutrient
- **Watching**
- Work
- **Unknown was also a category

Connotation

Options included:

- Negative
- Neutral
- Positive
- Unknown

Lexical Components

- 1 = Tweet is a reply to someone
- 2 = Tweet is not a reply to someone
- 3 = Binge is used in a hashtag form (#binge, #binging, etc.)

People

- 1 = Other people are mentioned regarding binging behaviors
    - Must be specific; not "male", "female", but names, Twitter handles, etc.
- 2 = Other people are mentioned NOT regarding binging behaviors

- 99 = No other person is mentioned

Interaction with Binging
- 1 = Desire to stop binging
- 2 = Desire to start binging
- 3 = No mention of desire to either start or stop binging

Binging Triggers
- 1 = Something negative mentioned that "starts" binging
- 2 = Something positive mentioned that "starts" binging
- 3 = Something negative mentioned that "stops" binging
- 4 = Something positive mentioned that "stops" binging
- 99 = No binging triggers mentioned

Binging Specifics
- 1 = Specific food mentioned
    - Includes coffee, water, and other non-alcoholic drinks
- 2 = Specific drink mentioned
    - Alcoholic drinks only
- 3 = Specific drug mentioned
    - Includes caffeine if specifically mentioned outside of the context of coffee
- 4 = Specific media content mentioned
- 5 = Some combination of specifics mentioned
- 99 = No specifics mentioned