

Digital Goodbyes... Or the Lack Thereof

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“We fall silent in unison: crowding of two voids.”

- *A Lover's Discourse: Fragments*
(Barthes, 1978, p.115)

Introduction

It's one week before your one-year anniversary with your boyfriend. You're in love, and you hope this past year is the first of many more. However, the current text conversation you're having with him isn't going too well.

"I don't understand why you're being this way," you write.

"Because I don't love you anymore and I never will again," he replies.

And the messages end there.

According to a post made on January 30, 2016 on the popular Tumblr blog "The Last Message Received," this scenario actually happened (Trunko, 2015-2016). This conversation, like all the rest on that blog, marked the beginning of a digital silence for two people, and this silence translated to real life as well.

"The Last Message Received" began collecting user submissions of last messages between ex-friends and ex-significant others in November 2015 (Trunko, 2015-2016). By the next month, the blog had accumulated around 40,000 followers (Cocoza, 2015). A typical post on "The Last Message Received" includes the last message or messages in image or text form, and a submitter's description underneath. The description can include context for the message or relationship, or even contain some sort of unsent or intended reply. The creator of this blog, a 16-year-old named Emily Trunko, also owns other blogs such as "Dear My Blank," which posts unsent letters, and "Closed the Distance," which posts stories of relationships that have survived long distances (Trunko, 2015-2016). Her blogs join a league of confession-related websites, including Frank Warren's gallery of postcard secrets, PostSecret (Kaleem, 2015). The idea of collecting personal correspondences is also not new. *Hell Hath No Fury: Women's Letters From the End of*

the Affair is a similar concept in book form, publishing eight centuries' worth of breakups (Van Boven, 2002).

With the rising popularity of electronic communication, conversations don't always have the support of face-to-face interactions (Greene et al., 2006). People are forced to shout their feelings into a technological void, in hopes of getting a shout of feelings in return. Or, they receive a shout of feelings from someone and determine that those feelings are not worth a reply. These interactions are evident in the messages seen on "The Last Message Received." One reader said in a comment that had over 30 up votes, or positive ratings by other users, "Some are really sad, and some reveal a shocking lack of basic manners" (GreatLizard, 2015). Reddit users agreed that an "ugly breakup text" deserves no response at all, with one commenter saying, "Silence can be deafening" (ThreeFatKittens, 2015). Just as technology has eased communication, it has also eased avoidance; ignoring a received message has fewer immediate repercussions than suddenly turning around and departing from a conversation in real life.

Users are aware of the power that digital communication has entrusted into the sending and receiving ends of each message. As a result, goodbyes, which tend involve a struggle of expressing emotions and ideas between two contrasting parties, aim to reach an understanding that is already difficult in real life and only more so in short messages. As an indicator of how people work around these barriers, word choice becomes significant in these situations.

For this paper, I applied computational tools on posts in "The Last Message Received," in order to identify and measure trends that provide insight into the ways people communicate during near-ending friendships and relationships. I focused on

investigating messages unrelated to family members or death. To understand whether my results were typical of digital communication, I created a “control” dataset using my own text and Facebook messages with four current friends. With the messages from Tumblr, I wanted to compare how people say goodbye between platonic breakups and romantic ones, and how people talk depending whether they’re the person leaving or the person being left behind. I looked for positivity and negativity of words, the popularity of words, and their likelihoods depending on the type of message. Overall, the data suggests that these last messages emphasize expressing and understanding emotional and personal thoughts, but the deteriorating relationship and method of communication act as barriers.

Methods

In natural language processing, sentiment analysis wishes to extract subjective information from large amounts of text (Jurafsky, 2016; Potts, 2011b). Computational linguists have studied different characteristics of language to gain an understanding of how people communicate online, such as using word choice to predict Yelp restaurant reviews’ price categories (Jurafsky et al., 2014). To apply some basic natural language processing to “The Last Message Received,” I calculated word counts, scaled likelihoods, and positivity and negativity of different sets of messages (see appendix for code). Since most texters and Tumblr users rarely have ease of data analysis in mind when they document and submit their digital lives, “The Last Message Received” is very unstructured. As a result, most of my methods involved organizing this data.

First, I collected 175 messages and descriptions from the November 2015 and January-February 2016 archives, which correspond to the earliest and latest posts on “The Last Message Received,” and entered them into an Excel spreadsheet. I

occasionally fixed spelling errors and converted screenshots of messages to text using Google Drive's optical character recognition feature. Each post contains the conclusion of a relationship's story, yet most posts are fairly short and cryptic, rarely containing more than four messages between two people and sometimes not including a description at all. Because of this, I struggled with labeling each conversation as romantic or platonic and labeling each speaker as someone leaving or someone left behind. Some posts were labeled "unknown" for these characteristics.

Next, I converted the Excel spreadsheet into a tab-delimited file that would act as input to my computer program. Additionally, I copy-pasted messages from my own texts and Facebook into a separate file that would be the control input for the program. Unfortunately, due to the length of these messages, I was unable to account for non-common-chatspeak spelling errors. Using my own messages was not the most ideal control, since they would be biased to my own style of communication, but they were my most accessible source of digital messages. In Python, all of the data was tokenized after converting text to lowercase, removing punctuation, accounting for chatspeak, and removing white space characters.

Scaled likelihoods of words, and positivity/negativity for these different groups were then calculated. Likelihood refers to how often a word appears in a category of messages, which means it is the frequency of a word in a category over the summed frequency of all words in that category. These likelihoods were scaled, which means they were then divided by the probability of the word appearing in general, so that these values could be comparable between words (Jurafsky, 2016). For positivity and negativity measurements, I pulled a list of pre-categorized words from the Harvard

General Inquirer and counted the number of times those words appeared in different categories of messages (Hurwitz, 2002).

Results and Discussion

I read every post that I analyzed, so simply examining them using a human perspective was startling. Last messages are already cryptic to the receiver, and when they're submitted without an informative description, it leaves the blog's readers even more in the dark. As I mentioned before, it was difficult determine which speaker was the one initiating the goodbye in these messages. Sometimes the separation is mutual, and only the submitter's side of the situation could have some provided explanation, so one cannot know if each speaker blames the other for the breakup. Fortunately, it has been shown that exes usually agree on who had control in a breakup (Sprecher, 1994).

Additionally, is someone really "leaving" someone else if the latter person allows them to go (see likelihood of "ok" in Figure 4)? The line between platonic and romantic also blurred in these messages, as people hesitated around or transitioned in and out the friend zone, or when losing a significant other also equated losing a best friend. "After 5 years of friendship, I always thought he was going to be the one I ended up with, but I guess things just didn't turn out that way," a post submitter said on November 26, 2015 (Trunko, 2015-2016).

The diversity of permutations of "goodbye" within these messages is astonishing. Some are the Dear Johns of the 21st century, and others are poetically succinct. "The most colorful sunset and the highest snow capped mountains can't begin to compare to you," one particularly ornate last message said, posted on November 16, 2015. "You got too attached," another said, posted on January 29, 2016. And most unsettling, there are those

that give no warning at all of a disappearance: “Let’s grab late night burgers again soon,” said a message posted on February 5, 2016. Surprisingly, the word “goodbye” showed up only 6 times, and “bye” only 3 times in the Tumblr dataset. When looking at the most popular words, it is then important to keep in mind that those don’t necessarily capture the variety within these conversation and relationship endings. Note that the pool of platonic messages is the smallest one with only 599 words (Table 1), so few conclusions can be confidently drawn from the results related to that category.

	“Control” (10,362)	Tumblr (all) (4,393)	Romantic (2,702)	Platonic (599)	Leaving (1,663)	Left (1,023)
1	yes (85)	just (57)	just (39)	know (8)	just (23)	want (15)
2	ok (81)	know (40)	sorry (26)	want (8)	sorry (17)	just (13)
3	can (75)	sorry (39)	know (21)	just (7)	will (12)	ok (10)
4	just (74)	want (31)	love (20)	sorry (5)	think (10)	love (10)
5	come (66)	like (30)	like (19)	get (4)	time (10)	know (9)

Table 1: Ignoring stopwords such as “the” (using the default list in “Stopword Lists”, n.d.), the top five words in each category of messages with word count in parentheses.

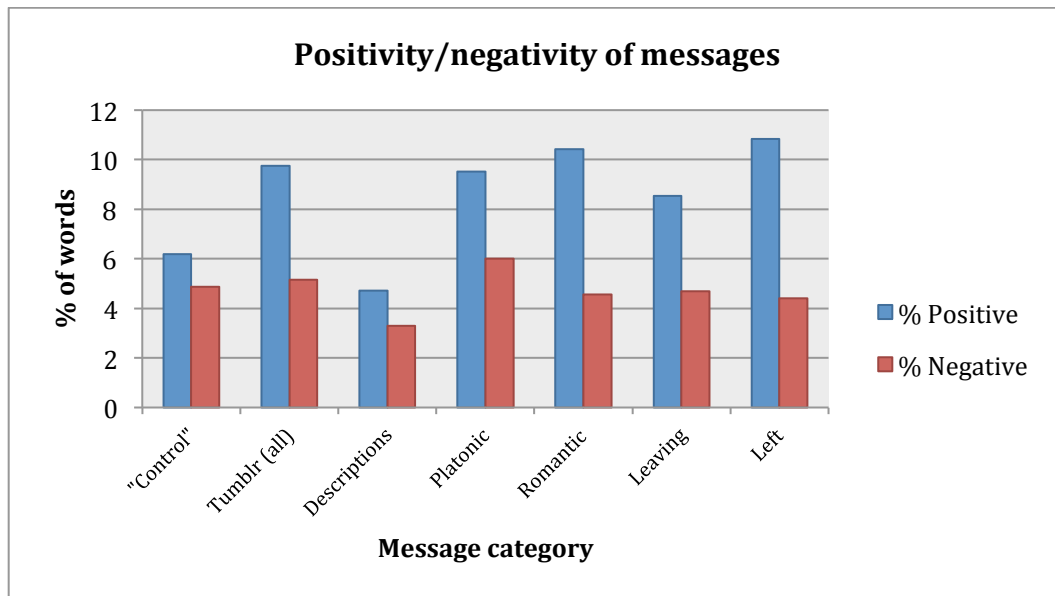


Figure 1: Positivity and negativity percentages of different types of messages based on the General Inquirer's word labels. All categories except "Control" are from "The Last Message Received."

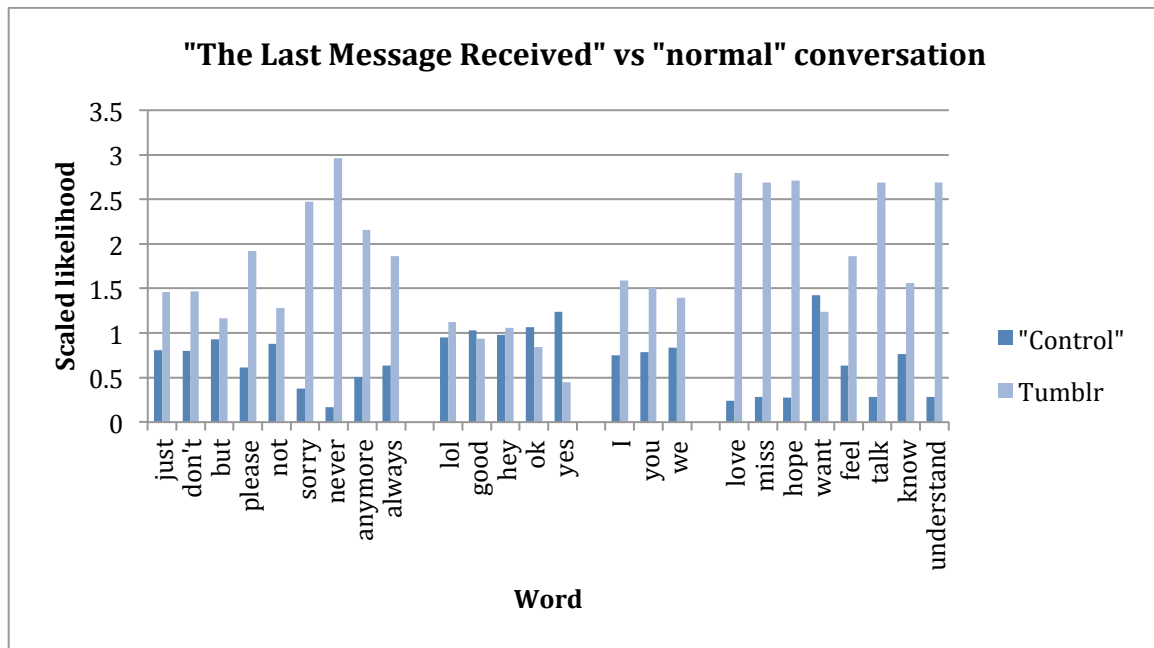


Figure 2: Scaled likelihoods (the probability of a word being a set of messages divided by its overall probability) of select words in my own messages and the Tumblr blog's.

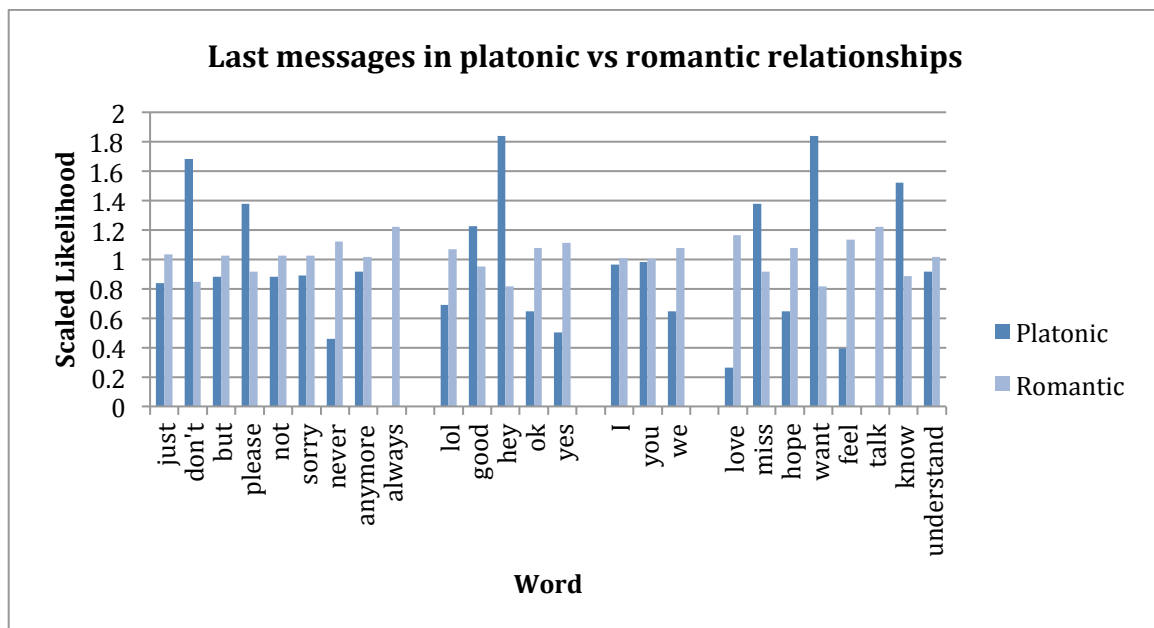


Figure 3: Scaled likelihoods of select words in messages hand-categorized as platonic those hand-categorized as romantic.

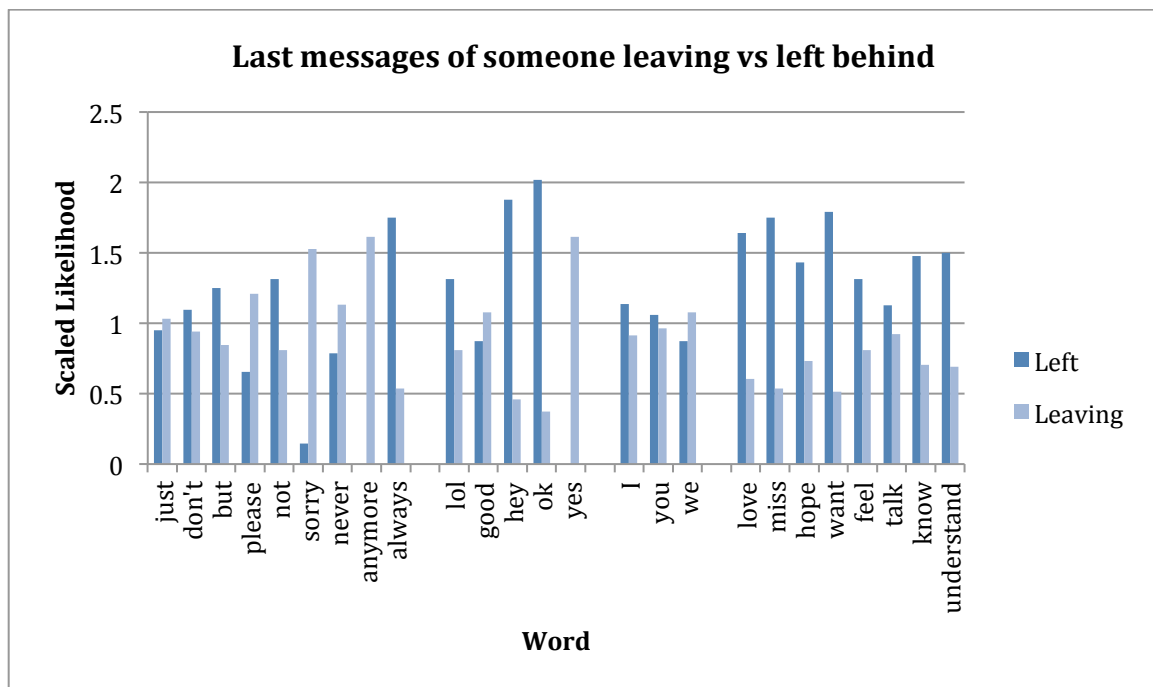


Figure 4: Scaled likelihoods of select words in messages of a person hand-categorized as leaving a relationship in comparison of a person hand-categorized as being left behind.

All of the messages, no matter the category, favored positive words, with the Tumblr ones often producing a bigger difference between positivity and negativity percentages (Figure 1). It may be a stretch to say this suggests optimism, since reading each message suggests the opposite. However, since “love” is a common word in the Tumblr dataset (Table 1) and it’s labeled as positive in the Harvard General Inquirer, there are likely other common words such as “friend/s” and “like” that end up pushing the percentages higher for positivity. On the other hand, my data also shows that “not,” “never,” and “don’t” are also more likely to show up in last messages while “yes” is less likely, and a greater number of negation terms correlates with more negative sentences in general (Potts, 2011a).

The words that I selected to examine in Figures 2-4 tend to be ones that are significant for analyzing how people communicate or are significant to relationships. It’s

no surprise that “love,” “miss,” and “sorry” are more likely to show up in last messages than my own messages, since breakups inherently involve these terms (Figure 2). The use of pronouns correlates with a speaker’s attentions (Tausczik & Pennebaker, 2010). In general, there was more use of “I,” “you”, and “we” in the last messages than in my messages, which is probably due to last messages focusing on the actions or thoughts of the two speakers in the relationship (Figure 2). Words such as “know” are insight words that have been known to be used by people as an emotion regulation strategy, such as when participants described a breakup and post-breakup in a psychological study (Tausczik & Pennebaker, 2010). This may relate to how “understand” and “know” are both more likely to show up in last messages than my “control” set.

“Always,” “anymore,” and “never” are extreme words that show certainty or generalization, and the more likely usage of these terms in last messages suggests that a lot of these people wish to express some kind of finality or summary to their thoughts (Figure 2). Additionally, the high likelihoods of “understand” and “talk” in the last messages support the idea that communication is significant in these final conversations, especially for those who are left behind (Figure 2, Figure 4). The word “just” shows up pretty prominently in both my own messages and Tumblr, though more likely in the latter (Table 1, Figure 2). This word is mostly used in contexts where someone wants to distill their thoughts or feelings down a single statement: “I just wanted u to be my friend and be able to talk to,” a message posted on November 26, 2016 said.

It’s ironic how words such as “just,” “always,” and “understand” show up so much in the last messages, because as people tried their hardest to express their feelings in a concise way, much of these messages were still obscured by confusion, frustration,

and for some, a search for what's not explicitly there. "I want you to say what you want with this," one person said in a post on January 28, 2016, to which the final response was, "Well I think I've made it clear." Self-disclosure, or the revealing of personal information, between partners is linked with better relationship quality, and a breakdown in communication has been rated by ex-couples as important to the breakup of a relationship (Sprecher & Hendrick, 2004; Sprecher, 1994). This interaction between expressing and failing to express ideas is clouded by both the conflict hidden in these ending relationships, and the difficult nature of communicating digitally. When the submitted messages were in image form, they were usually screenshots or partial screenshots of a phone. The interface of texting, unlike that of paper letters or email, discourages verbose monologues (Greene et al., 2006). Because of this, the average length of a message in my "The Last Message Received" dataset was 16.77 words, taking in account that a message may arrive in multiple consecutive parts or "speech bubbles". Unlike with actual goodbye letters, these speakers are often immersed in a back and forth conversation, are required to fit their thoughts into a small window, and/or lack the intention to formally bid farewell.

Though the concentration of emotions is high in these last messages, the amount of apathy can be intense as well. Many messages contained contrasts of level of care one person had for the other. "I cared too much and you didn't care at all and that's all there is to it," one message said on February 5, 2016, to which the final reply was, "How could anyone care about someone who's as fucked in the head as you are." Examining these contrasts between two conversing people shows that a breakup involves two people who not only see a relationship in different ways but also talk to each other in different ways.

Someone leaving would be more likely to say “anymore,” “please,” “sorry,” and “never,” while someone left behind would be more likely to say “hey” and “ok,” or try to “know,” “understand,” “hope,” “feel,” “love,” “want,” or basically, make sense of the situation and have their thoughts reach the leaver (Figure 3). The difference in word choice between the two sides illustrates the dynamic between an action and a response. It also suggests that the deterioration of a relationship follows a situation where one person puts in less effort into furthering communication than the other, before the silence has even begun.

Limitations

All of the data was self-reported by users and filtered by the owner of the Tumblr blog, so that may skew my results. Also, the significance of difference between values in my results was not rigorously determined using statistics.

There are unlimited possibilities of further investigation for this project, aside from analyzing an expanded dataset. Accuracy and precision of sentiment analysis can definitely be improved from what I have so far. I treated messages as bags of words instead of accounting for context. For example, a sentence such as *I don't like you* should be analyzed as *I don't NEG_like NEG_you*, which would better reflect how *like* and *you* are intended to be used by the speaker (Jurafsky, 2016). Additionally, since I picked up most of my tools fairly recently, there is still a chance that I made some mistake in my analysis, considering I've never written my own program without instructions from a class and I had to use my own code checking skills to ensure that my outputs were accurate. It would be interesting to see how this research could be improved once I develop better coding and linguistics skills in the future.

Conclusion

Stepping back from the technicalities, it is the human side of these words that drives this research. One can describe “The Last Message Received” as a collection of digital goodbyes, but the actual word “goodbye” shows up in barely any of the messages. Instead, other words, such as “just” and “know,” pop up as less obvious components of a relationship’s decrescendo towards silence. This isn’t meant to imply that using those words causes a breakup, but they correlate with one. Although there are examples where little effort is put into the conversation from both sides, those are the exception. My analysis shows that there is usually at least one person putting in effort to convey their thoughts in an emotionally invested manner. As a result, in these last messages, the power play of personal relationships entwine with the advantages and disadvantages of digital communication. These attempts at staying on the same page for both sides involved a significant chance of failing, ultimately, leaving few submitters to the blog fulfilled with how the digital goodbye played out. Even though our thoughts are intensely experienced within us, we cannot be ensured that we have the ability to wrap those ideas in words and have them reach the other person with all of the intentions and connotations intact. The success of “The Last Message Received” suggests that readers use it as an outlet for the dissatisfaction of how both a relationship and conversation ended, and shows how the struggles of “real life” can be reduced to words on a screen.

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