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Autocorrect Awareness: Categorizing Autocorrect Changes and Measuring Authorial Perceptions

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Abstract:
(AutoCorrect, authorial perception, iPhone)

This thesis studies changes made by Autocorrect software and authorial awareness and perceptions of those changes through analysis of case studies conducted on five volunteers aged 19 to 22. The study consisted of two phases: 1. three writing tasks, and 2. a post-writing survey given to the authors. For the first task, each subject completed three predetermined writing prompts: an email message, a text message, and a Facebook status—each with a specific intended audience—on their iPhones. Subjects then completed the survey to self-report their level of awareness of AutoCorrect's changes. Correction data was coded and categorized into one of four types of changes. The change type was determined by analyzing video recordings of each prompt. Type B changes—made when the subject accidentally hit the wrong key—proved to be the most common, followed by Type A changes (made when the subject seemed unable to spell the word), Type C changes (made as a result of incorrect capitalization or punctuation), and Type D changes (changes that did not fit into another category). Four out of five subjects self-reported that AutoCorrect changed their writing over 10 times. The fifth participant reported that AutoCorrect made 6-10 changes, though the program had actually altered his work 18 times. His response suggests that AutoCorrect may be becoming invisible to some users. The observations in this thesis are not generalizable; instead, they serve to provide a starting point for further exploration into authorial awareness in digital writing contexts.

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AUTOCORRECT AWARENESS: CATEGORIZING AUTOCORRECT CHANGES AND MEASURING AUTHORIAL PERCEPTIONS

By

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Section I: Introduction

On Wednesday, February 29, 2012, a high school student in Gainesville, Georgia, pulled out his iPhone to send a text message to a friend: "Gunna be at west hall today," he typed and hastily pressed send. Unfortunately, his iPhone's word processing technology failed to recognize the slang term "gunna" and corrected the word to the

closest alternative: “gunman.” The original message, sent with innocent intentions, had fatefully changed to “gunman be at west hall today.” The mistake resulted in the lockdown of two schools. Police officials in the area remained on high alert until the source of the cryptic text message was confirmed (Goldberg 1).

There are two key players in this incident. The first is the “texter” himself, and the second is the automatic correction technology, called AutoCorrect, which is programmed into most smartphones and other word processing technologies. AutoCorrect provides assistance to users in a variety of electronic writing contexts, from text messaging a friend from the small, touch-screen keyboard of a smartphone, to typing up a quick email on a tablet device. The correction software exists to counter the problems that arise while composing digital content. True literacy in the twenty-first century requires us to acknowledge the challenges and consequences that develop from the use of innovative writing technologies and determine ways to remedy these issues.

Blaming AutoCorrect for the “gunman” scenario above is a tempting route to take. As a society that places such a high priority on technological advancement, we’ve become so accustomed to AutoCorrect that it is almost invisible. Whenever we do notice an error caused by the program, we become frustrated, and the digital teams of companies like Apple and Microsoft attempt to resolve the issues. Correction technology is constantly striving to achieve perfection, but what may first need revamping is our perception of what these programs should do. In an ideal scenario, AutoCorrect would consistently and correctly distinguish between what we actually type and what we intend to type with little to no user intervention. However, this

idealized world is not the one we live in. In the aforementioned "gunman" scenario, the texter likely did not catch his error before pressing send, and why would he? He was likely unaware of the mistake AutoCorrect had made.

While most people do not send text messages that shut down multiple high schools, the school incident reveals that society may still be learning how to navigate newer writing technologies. Over the past few years, we have begun to make a shift from larger electronics, like desktop computers, to handheld devices, like smartphones and tablets. The shift itself is not the problem. The problem is that we aren't yet acclimated to constraints associated with working on smaller screens. On a bigger device, it is possible that we may be less likely to make mistakes. If this is true, we can then deduce that we may be more likely to catch errors when they do occur. For some users, it may be harder to analyze every typed word on a smaller screen, both because the text may be more difficult to see, and because, historically, it seems we haven't placed much importance on accuracy when using smaller devices.

Handheld devices were once associated with more casual activities, like text messaging and playing games. This relationship may translate into careless typing, as perfect spelling, grammar, and syntax are often not required. Carelessness is especially detrimental to today's smartphone or tablet user because many companies are beginning to introduce professional software, like Microsoft Office, into their products (Etherington 1). Software designers hope that the inclusion of such programs will provide consumers with a way to complete work-related tasks on their handheld devices with as much ease as text messaging a friend. Technology is advancing at a

rapid rate, and society needs time to adjust its attitude to fit the revolution. Users must begin to approach their smartphone's writing programs in the same way as they approach software on their laptop computer: with greater attention to detail. If we plan to use AutoCorrect-enabled devices to generate documents for more formal audiences, we must find strategies to effectively navigate the technology.

AutoCorrect functions to fill the gap between the features of today's smartphone writing programs and society's expectations of handheld devices. Yet, AutoCorrect itself proposes a number of new challenges that were absent in simpler spelling correctors of the past. The major difference between spell check, an older technology, and AutoCorrect is that AutoCorrect changes an error without the user's consent, whereas spell check alerts the writer when a word is misspelled. Spell check then provides a list of suggestions for correction. Working with a technology that serves to automatically clean up spelling mistakes is a relatively new phenomenon, which requires negotiation because the process is automated. Many users of the technology may have no idea about the extent to which AutoCorrect is changing their texts.

Our perception of AutoCorrect's capabilities may give the program too much credit. When users perceive AutoCorrect to be just as reliable as their own editing skills, they mistrust the program's abilities to recognize and correct errors, which sometimes allows mistakes to slip through the cracks. If users remain aware of a correction program while they write, they may be more likely to catch mistakes and support corrections made by the program. Again, we can point to the previously mentioned

"gunman" incident. If the student who sent the text message had realized the mistake made by AutoCorrect, the situation could have been avoided.

Our attitudes towards AutoCorrect may also affect our perception of our natural spelling abilities. When AutoCorrect changes a word without user interference, we sometimes neglect to learn how to spell the word ourselves. This may lead to an inability to differentiate between our own spelling competence and the typed version we see in front of us.

In 2009, researchers at the University of Pittsburgh made a claim that spell check programs were leveling the playing field between those with higher level writing skills and those with less advanced writing skills. The test surveyed 33 undergraduate students, approximately half of whom were asked to proofread a one-page business letter using spell check on Microsoft Word. The remaining 16 students were asked to make corrections without the help of a correction program. In the group that proofread without spell check, students who had high SAT verbal scores made an average of 5.0 errors, while students with low SAT verbal scores averaged 12.3 errors. This outcome was expected (Sheehan 1). The surprise, however, involved the group that used spell check to assist them in making corrections. Students with high SAT verbal scores made an average of 16.0 errors, frighteningly close to the average of 17.0 errors made by students with low SAT scores (Sheehan 1).

The study was intended to show that spell check may bridge the gap between exceptional and novice spellers, but it may also indicate that programs like AutoCorrect

have the potential to undermine innate skills and provide a sense of false confidence in one's spelling abilities.

In my study I categorize the types of changes, and authorial perception of those changes, made by AutoCorrect for five volunteer subjects composing emails, text messages, and Facebook statuses intended for different audiences. One objective of this research is to generate hypothesis for studying AutoCorrect, since empirical research and theory on correction software is scarce. I am interested in how AutoCorrect functions within composing processes, whether varied audiences and genres affect the mediated writing process, and how individuals perceive and negotiate AutoCorrect changes on their phones. I am also interested to explore whether users of the technology are aware of the changes made by AutoCorrect and if mistakes made by the AutoCorrect program were noticed by the writers.

Section II: Lit Review

Digital spelling correctors, which became integrated into word processing programs in 1980, serve to both detect spelling mistakes and either suggest a correction, or, in the case of AutoCorrect, make that change automatically. AutoCorrect on smartphones functions using a basic algorithm that checks words against the program's built-in dictionary and makes changes when a word does not match with any word in the database. More sophisticated AutoCorrect programs have the ability to recognize and suggest a word before the user has even finished typing it (Manjoo 1).

In 1980, James L. Peterson of the University of Texas at Austin, in his article "Computer Programs for Detecting and Correcting Spelling Errors," predicted that the popularity of spelling corrector programs would continue to increase with the growing demand for computers. He stated that, in the future, spelling programs would be an expected feature in all text-processing systems (Peterson 676).

Peterson had the right idea. With the integration of computers and cellular devices into mainstream society, the popularity of spelling correctors has continued to climb over the past few decades. The range of features offered by these programs has

expanded as well. When Peterson wrote his essay, spelling correctors that functioned alongside word processors did not change errors automatically. Now, AutoCorrect's immediate editing exists as somewhat of an all-knowing digital eraser, providing users with correct spelling before they can even recognize the error.

Even in 1980, Peterson had a sense that spelling correctors would continue to improve in the future. He hypothesized that the software would become more refined in the areas of syntax and semantics. According to Peterson, correction software would one day be able to differentiate between the uses of different spellings of the same word, like "grey" and "gray," and would then be able to correctly apply a consistent version to all writing. He also expected that potential spelling correctors would be capable of identifying incorrect punctuation and grammatical errors. Peterson describes his perception of spell check's advanced future:

> This program would check that the ideas in the document are properly developed and presented, that conclusions are correctly based on the facts presented (or known), that the document is complete and consistent, and that the document contributes new information or insights into significant problems. (685)

Almost all of these areas have yet to catch up to Peterson's predictions. Society's hesitation to develop a "do-it-all" correction technology may suggest that we are starting to notice the ways that these programs are negatively influencing our writing. Dennis E. Baron, professor of English and linguistics at the University of Illinois at Urbana-Champaign, discusses our newfound familiarity with electronic writing and the

changing face of literacy in his book, *A Better Pencil: Readers, Writers, and the Digital Revolution*.

In the first line of his book, Baron states that over the past two decades, "our attitude toward computers and the internet has moved from suspicion or curiosity to dependence" (Baron ix). Like our relationship with the Internet, our relationship with AutoCorrect is quickly making a shift toward reliance. Technology critics are eager to criticize digital writing programs, often questioning if our dependence on emerging technologies is destroying the way that we interact with the English language. In a 2008 article discussing the effects of spell check, Johanna Sorrentino, Managing Editor of Education.com, asks if spell check is "creating a generation of dummies" (Sorrentino 1). This is a common trope among discussions of how technologies are influencing society, especially in the younger generations who are seen as having a deficit because of a specific technology. According to Baron, the answer is no. He states the following:

> English survives, conversation thrives online as well as off, and on balance, digital communication seems to be enhancing human interaction, not detracting from it...these new genres—email, instant messaging, texting, and blogging, to name only some—pose a continual challenge as we look for ways to evaluate the digital texts that we read and to make credible the digital texts we write. (135-6)

Despite the concerns associated with new writing technologies, Baron praises the direction in which digital communication is headed. He supports the idea that we must displace negative feelings toward these new genres by actively finding a way to interact

with emerging programs in an appropriate way. That "way" should be neither dependence nor suspicion.

Another expert in the field of new media, Katherine N. Hayles, discusses the cultural and individual repercussions of the digital era as a whole in her book, *How We Think: Digital Media and Contemporary Technogenesis*. Hayles argues that our reliance on new technology is leading us to identify ourselves with our machines, which she calls "embodiment." She specifically mentions our frequent use of computer keyboards:

> The more one works with digital technologies, the more one comes to appreciate the capacity of networked and programmable machines to carry out sophisticated cognitive tasks, and the more the keyboard comes to seem an extension of one's thoughts rather than an external device on which one types. (3)

Hayles' theory can be perfectly applied to our interactions with AutoCorrect. We may be beginning to view correction programs not just as an assistant, but also as a part of our own set of skills. Not only do we rely on AutoCorrect to clean up words we're unable to spell and correct mistakes made by our imperfect fingers, but we also expect the program to accurately relay our thoughts while we type. The distinction between our innate knowledge and that of the machine is becoming difficult to pinpoint. Hayles' idea of technological embodiment raises Baron's concept of dependence to a frightening new level. AutoCorrect may exist not as a crutch, but almost as a second leg to keep us from falling into an abyss of spelling mistakes. Without this leg, will we be able to walk? Is our remaining leg strong enough to hold us up on its own? For now, these questions are unanswerable, but further insight may come in the form of research that

has yet to be conducted by scholars on the link between digital literacy and AutoCorrect.

Though there is presently a lack of academic literature about AutoCorrect written from a sociological or rhetorical perspective, the topic has not been ignored by popular culture. User-generated websites documenting the challenges that come with navigating the correction technology have become increasingly popular over the last few years. *Damn You AutoCorrect!*—or *DYAC*, as its founders call it—is one of these websites. *DYAC* consists of screenshots of real text message conversations sent in by smartphone users across the country who have experienced extreme, often inappropriate, corrections to their messages. The screenshots are compiled on the site, allowing readers from every demographic to come together and compare the problems that they have faced while navigating AutoCorrect. The site, which functions almost as a coping mechanism for smartphone users dealing with the challenges of the new software, suggests just how necessary it is to explore the societal effects of this AutoCorrect culture.

Online publications, such as *Slate Magazine*, have also covered stories on the problems that arise while using AutoCorrect. Farhad Manjoo, a columnist at *Slate*, wrote an article for the site that discusses the "thankless job" of AutoCorrect, as well as the ways in which the software may continue to advance (1). In an attempt to support AutoCorrect, he states that society fails to point out the ways that the program aids them in avoiding mistakes. Instead, smartphone users consistently call attention to the software's failures. However, Manjoo does admit that the blunders produced by

AutoCorrect can be so dramatic that they often outweigh all favorable features of the program. According to an interview with Scott Taylor, vice president of mobile solutions at a tech company called Nuance, mobile phone companies are working to develop a correction software that will eliminate issues of incorrect AutoCorrect changes.

One way to achieve this goal is through crowdsourcing, a term which refers to the gathering of information on a particular topic using the input of people across the web (Manjoo 2). If implemented, crowdsourcing will add phrases commonly used online to smartphone word databases, which will allow the phone to attempt to interpret entire sentences rather than individual words. Crowdsourcing should aid in preventing situations like the "gunman" scenario, because the database will, theoretically, have the ability to recognize that the word "gunna" is more appropriate than the word "gunman" in the given sentence. However, the act of crowdsourcing threatens users' online privacy, so for now, the technique has not been approved for smartphones (Manjoo 2).

In addition to references made in the media, AutoCorrect has recently been recognized in a study conducted in the United Kingdom. The study, published in May 2012, surveyed the spelling proficiency of two thousand adults. The survey consisted of two parts: a spelling test with five commonly misspelled words like "necessary," "definitely," and "separate," and a questionnaire which asked respondents to self-report how often they use spell check and AutoCorrect on their computers and smartphones (Clark 1).

Of the 2,000 adults surveyed, only one in five participants, or 20%, scored perfect marks. However, only 18% of subjects reported that they used spelling correctors everyday. Students were labeled as the worst spellers of all age groups tested, which is not surprising considering the popularity of smartphones amongst the demographic (Clark 1). It is unreasonable to blame AutoCorrect entirely for students' poor spelling abilities, but there may be a correlation between the correction technology and the behaviors involved in learning. Vice President of Poynter Institute Roy Peter Clark argues that the dilemma arises when the use of electronics takes precedence over hobbies that have educational benefits:

> The root of the problem is a lack of three basic behaviors: reading, writing, and talking about how language works. The more of that there is, the more literate the student will become. The less there is, the greater the temptation to rely upon a crutch which will not always be your friend. (qtd. in Sorrentino 2)

Clark's insight, along with the UK study above show that the digital revolution not only affects how we interact with new technology, but how we approach older literary behaviors as well. The rise of technology has placed less of an emphasis on traditional reading, writing, and spelling, which may be contributing to our dependence on programs like AutoCorrect.

Section III: Methods

My primary goal in this study is to explore how individuals negotiate AutoCorrect technology on their iPhones when writing for different audiences. Since awareness plays a major role when dealing with AutoCorrect, I want to explore how this awareness manifests itself and how aware authors are of changes made to their texts. I chose a convenience sample of five test subjects, which I will report out as case studies, between the ages of 19 and 22. Three of these subjects were females aged 21, 22, and 20, and two of the subjects were males aged 21 and 19. To be selected for the experiment, each subject had to be comfortable with typing on an iPhone and using the device's

email, Facebook, and text messaging features. Participants used their own personal iPhones to simulate a more normal writing environment, though I recognize that since each subject was given a set of specific tasks, the study was not as naturalistic as it would have been had I observed subjects generating their own messages throughout the day. However, a more naturalistic study would have left me unable to observe multiple people completing the same set of tasks under the same constraints, which would have changed the outcome of my experiment.

In my selection of subjects, I also realize that this is a very "high context" group of people, since they are all university students and not at all random. For the purposes of my thesis, I wanted to conduct specific case studies rather than a large experiment so that I could observe each task and comment on the awareness of each individual. In reporting on these case studies I am able to generate a taxonomy of AutoCorrect changes as well as observe the level of awareness in these five individuals.

The study consisted of two portions: the writing task and a subsequent survey. In Part 1, each subject completed three separate writing prompts on their iPhones: typing out an email to a formal audience, writing up a Facebook status, and composing a text message to a peer for which I had generated a script that was read aloud to each of the subjects. Each subject completed the three writing prompts in a different order. Participants were not made aware of the order before beginning the first activity.

While subjects completed each prompt, I recorded their process using a computer program called X-Mirage. X-Mirage works through Apple Airplay, a mirroring technology built into the iPhone that allows the screen of the phone to be projected onto

a larger compatible device like a computer or television screen. X-Mirage allowed me to view and record each activity and save the video for later analysis. After participants completed Task 1, they moved on to Task 2, where they were provided with a list of survey questions to record how they felt about all three activities.

Writing Prompt 1: Email

The first prompt instructed subjects to type out a 92-word email message ostensibly to the university president asking for funding for a new, fictional organization on campus called the Piano Club. Though the message would not actually be sent to President Barron, subjects were directed to type as they normally would in this situation. I read the email message aloud (including when to use certain punctuation like periods and commas), and the subjects transcribed my words. While the participants completed the prompt, I recorded their progress on my computer using X-Mirage. The message read as follows:

> *To: fsupresident@gmail.com*
>
> *Subject: Piano Club Funding*
>
> *Dear President Barron,*
>
> *My name is _____. I am a student at FSU, and I am writing to seek funding for my new music organization on campus. It is called the Piano Club, and* ***its*** *success depends on your donation. I can* ***guarantee*** *that this is a project worth funding. Many of our members have* ***received prestigious*** *awards throughout* ***their***

*years of playing piano. They have **impeccable rhythm** and have **persevered** through many obstacles to reach where they are today. Thank you for your consideration, your time is greatly appreciated.*

Sincerely,

_____

(In each blank, the subjects filled in their own name to simulate a more realistic email.)

To provide a challenge, I included these eight commonly misspelled words within the email message above: "its," "guarantee," "received," "prestigious," "their," "impeccable," "rhythm," and "persevered." The words, which varied in level of complexity, presented subjects with more than one type of challenge. For example, the word "its" is not difficult to spell, but some subjects may have found it a challenge if they were unclear on the rules of apostrophes. Similarly, the word "their" could have easily been confused with synonyms "there" and "they're." A different type of challenge arose in words like "guarantee" and "rhythm," which could have been difficult because the words do not sound the same as they are spelled.

While recording Prompt 1 for each subject, I looked out for a few different types of AutoCorrect changes. James Peterson, mentioned in the previous section, categorizes three types of spelling corrections in his essay. These three types of corrections arise as a result of typographical mistakes caused by incorrect finger movements while typing, transmission and storage errors related to problems with coding on the device or

program itself, and author ignorance, which refers to the writer's incorrect attempt to spell the word (Peterson 677). I chose to categorize my changes in a similar way. I created four different types of change to classify the AutoCorrect changes that occurred in each subject's activities. These types are listed below.

- Type A changes: Changes made when the subject seemingly did not know how to spell the word.
- Type B changes: Changes made when the subject accidentally hit the wrong key.
- Type C changes: Changes made as a result of incorrect capitalization or punctuation.
- Type D changes: Changes that do not fit into one of the above categories. (Type D changes sometimes occurred as a result of inconsistencies between my spoken word and the subject's typed version. For example, when I used the word "donation," one of the subjects initially typed out "donating" because she thought that was what I had said. AutoCorrect technology would not consider this wrong because it cannot pick up on contextually incorrect usage of words. Though Type D errors were not misspellings, the words still required correction for the purposes of this study.)

Writing Prompt 2: Text Message

For the second prompt, subjects were asked to compose a text message consisting of 27 words to send to a peer. This activity was intended to simulate a low-stress typing environment, because the perceived consequences of making a mistake were not as

great as they were in the formal email to President Barron. As in Prompt 1, I recorded the subjects' progress as they typed out the words I read aloud. The text message read as follows:

> *Hi. I will **definitely** be there in less **than** 5 minutes. _____ said **she'll** be there in a second, but I cannot **vouch** for her. See you soon.* (In the blank, I used the name of one of the subjects' actual friends to make the prompt seem more natural.)

Again, the four bolded words above ("definitely," "than," "she'll," and "vouch") were included in the activity to present a challenge for the participants. If the words "definitely" or "vouch" were missed by the subject and required AutoCorrect's assistance, I expected the changes to be Type A changes since the words are easily misspelled. I decided to include the word "she'll" in the message instead of "she will" because the iPhone's AutoCorrect technology is not programmed to automatically place an apostrophe into words that also have a meaning without one. Though the word "she'll" is most likely used more often than the word "shell," users are required to place the apostrophe manually if they wish to use the contraction. I was curious to observe if participants would make that choice.

Writing Prompt 3: Facebook Status

The final prompt required subjects to type out a 21-word Facebook status, which, if posted, would reach a much wider audience than the text message and the email. This activity was intended to simulate a higher-stress scenario, but not in the same way as

the President Barron message. Subjects typed out the message below, which included four potentially difficult words: "reminiscing," "Jamaica," "surprise," and "souvenirs."

> *I am still **reminiscing** about my amazing vacation in **Jamaica**. Can't wait to **surprise** my family with **souvenirs** from the trip!*

The Facebook prompt presented an interesting dichotomy between the effect of the size of the audience versus the effect of the perceived importance of the audience. In Prompt 1, writing to President Barron may have produced anxiety because he is on a much higher professional level than a college student. Had the message really been sent to the university president, the subject would likely have felt pressure to avoid making any mistakes in a message directed at someone in a more prestigious social class than themselves.

A Facebook status, on the other hand, would likely be seen mostly by others in the same demographic as the subject, since Facebook users generally fill their profiles with friends and peers. The subject likely would not be as intimidated by the perceived importance of the audience, but he or she may worry about how their status would be perceived or judged by individuals in the same demographic.

Task 2: Survey Questions

After each subject completed all three writing prompts, they were asked to fill out a six-question survey to recap how they felt they performed in each activity. Subjects

were asked to self-report how many times they thought AutoCorrect made a change to their writing, what type of change they thought AutoCorrect made most often, whether or not they agreed with the changes made by AutoCorrect, and if they had to go back and manually correct AutoCorrect's suggestions at any point during the activity. Subjects were also asked to rate their level of confidence, on a scale of "not confident" to "completely confident," to describe how sure they were that AutoCorrect made the right changes to their writing in each prompt. These questions were intended to measure the participants' awareness of AutoCorrect while they typed, as well as provide insight into whether the perceived importance of the audience had an effect on their interactions with the program. A link to the survey itself, as well as videos of each subject's completion of the three writing prompts and transcripts of AutoCorrect's changes are provided in the appendix section at the end of this thesis.

Section IV: Results

For each individual, the results of the assigned tasks differed slightly. Across all five subjects, an average of 3.4 mistakes were made in the text message prompt, 5.0 mistakes were made in the Facebook status prompt, and 16.4 mistakes were made in the email prompt. If the average amount of changes (both those made manually and by

AutoCorrect) is compared to the total number of words in each prompt, the ratio of changes to total word count for each activity is as follows: 1 change per 7.9 words in the text message prompt, 1 change per 4.2 words in the Facebook status prompt, and 1 change per 5.6 words in the email prompt.

Figure 1 below shows the percentage of times each type of change occurred across all five subjects and all three prompts. From the pie chart, we can gather that Type B changes, defined as changes made when the subject accidentally hit the wrong key, occurred most frequently. Three out of five test subjects reported that AutoCorrect made this type of change most often. Type A changes were the second most frequent, followed by Type C changes and Type D changes.

In the survey, four out of five subjects reported that they were aware that AutoCorrect had made more than 10 changes to their writing. The fifth participant reported that AutoCorrect had made 6-10 changes to his writing across all three prompts, but in reality the program had altered his work a total of 18 times. His response suggests that he was not as aware of the work AutoCorrect was doing in the background as the other four subjects were.

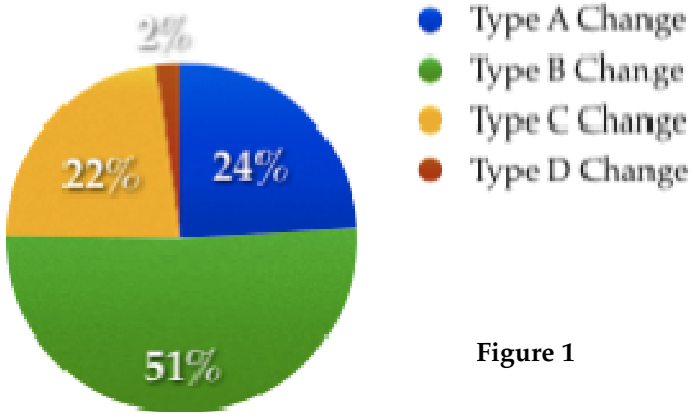

Figure 1

In Writing Prompt 1, the email message, Type B changes were the most common across all five subjects. There are a few possible reasons for this result. First, Prompt 1

had the greatest amount of words of all three activities, meaning that there was greater opportunity to hit the wrong letter on the keyboard. Because this prompt consisted of almost 100 words, subjects' fingers may also have become fatigued more rapidly than in the other two prompts which consisted of fewer words. This fatigue could translate into carelessness, thus leading to more Type B changes.

Additionally, X-Mirage provided a limitation for subjects that was most apparent in the email prompt. Because I used a free trial version of the app, I could only record a maximum of three minutes per video. Prompt 1 was the longest of the activities, so I warned each subject before they began that the app would stop recording after three minutes. Each subject was assured that if the writing prompt took longer than the time allotted, we would simply start over with no penalty. Though I instructed participants to type as they normally would in the given scenario, it is possible that some felt more hurried to complete the prompt than they would if there had been no time constraint. This anxiety may have caused them to type quicker, raising the possibility of Type B changes.

The most interesting instance of consistent Type C changes (changes made as a result of incorrect capitalization or punctuation) in a prompt appeared in Subject 5's completion of the email activity. When writing to President Barron, the subject failed to capitalize several titles and proper nouns, including "President Barron," the name of the fictional club, the pronoun "I," and the subject's own name. Since his iPhone was programmed to recognize that his name and "I" should both be capitalized, AutoCorrect changed his lowercase versions of the words to the correctly capitalized

versions. However, AutoCorrect did not recognize the name of the club or the name of President Barron, so the incorrect lowercase versions remained unchanged. Since the subject was accustomed to AutoCorrect capitalizing words for him, he may not have felt the need to double-check for capitalization mistakes and manually change the errors. This instance indicates that Subject 5, like many other smartphone users, may have become so unaware of AutoCorrect's assistance that he did not realize the necessity of proofreading his work.

Interestingly, when subjects were asked how confident they felt in the changes AutoCorrect made to their email message, only three out of five subjects said that they felt completely confident. The other two subjects claimed that they were only somewhat confident in the program's changes. When combined with the fact that five out of five subjects felt completely confident in the text message prompt, and only three out of five felt completely confident in the Facebook status prompt, this outcome supports the idea that the perceived importance of the audience may affect how aware the user is of AutoCorrect's assistance while they type.

In Prompt 2, subjects wrote out the assigned text message. The most common type of change in this prompt was also Type B, though Type C changes were common as well. This result suggests that subjects were less careful in both the areas of spelling and punctuation because they were composing a casual message to be sent to one person. As mentioned, each subject self-reported that he/she was completely confident in the changes that AutoCorrect made in this prompt, despite the fact that in three separate instances, AutoCorrect either failed to correct a mistake, or made an incorrect change. In

one example, the subject began to write the word "definitely," but mistakenly started spelling the word "sef." AutoCorrect did not know how to fix this error, so the subject had to backspace and correct the mistake manually.

In another example, AutoCorrect failed to recognize when a participant typed out the words "by" and "couch" instead of "be" and "vouch." Had the words been changed by AutoCorrect, they would have been considered Type B changes, but because the mistakes were both valid words, AutoCorrect decided that there was no need for correction. The subject backtracked and made the changes, yet still reported that she was completely confident in the work AutoCorrect had done. She may have answered the question this way because she proofread and caught the mistakes herself, but had she not noticed them, she would have mistrusted a program that did not accurately represent the message she had intended. This points yet again to the perceived accuracy that we have in AutoCorrect, despite the fact that the program does not prove its credibility.

The most common type of change in Prompt 3, the Facebook status activity, was Type A— changes made when the subject seemingly did not know how to spell the word. Participants had the most trouble with the words "souvenirs" and "reminiscing." In some cases, AutoCorrect recognized the subject's spelling attempts and made the right changes, but in other cases, the original spelling of the word was so far from correct that AutoCorrect was unable to assist in fixing the mistake. When this happened, subjects became flustered, often saying aloud, "I have no idea how to spell this word."

It was interesting to watch participants navigate spelling in a situation when AutoCorrect was of no use to them. When this happened, some participants were left unable to fix their mistakes. Examples like these show how our unintentional reliance on AutoCorrect has affected our perception of our own own abilities. If AutoCorrect doesn't correct our mistakes, they will sometimes go unchanged.

Section V: Conclusion

Upon the completion of my research, I can identify different kinds of changes made by AutoCorrect during writing prompts, and I have begun to explore the extent to which authors are aware of these changes. As technology advances, we may become less aware of the ways that programs like AutoCorrect silently assist us in producing texts. These programs will only continue to grow in popularity, especially as we continue to shift toward handheld devices and the technologies like AutoCorrect become expectations. To be truly literate in the twenty-first century, it is vital to learn to negotiate the new writing practices associated with these gadgets, and also to learn how to incorporate them into our lives with a watchful eye. It is up to us to learn how to adjust our attitudes to the idea that, though AutoCorrect and similar programs are designed to provide assistance, we must remain aware of their abilities to avoid reliance. This goal can be reached partly through the continuance of humanities-based research projects like mine.

This study is only a first step in exploring how AutoCorrect functions, and these five case studies are not generalizable. However, I do believe they are a starting point and may generate hypotheses or motivate way to study other facets of these technological phenomena. Potential topics for consideration include a study of the effects of eliminating the use of AutoCorrect among a specific group, or an analysis of whether AutoCorrect programs on devices other than the iPhone have a similar effect on users. Perhaps it could also be beneficial to explore and compare the spelling abilities of those who use AutoCorrect enabled devices versus those who write without the help of a corrector. The most worthwhile way to avoid another AutoCorrect-related high school lockdown is by educating smartphone users on the implications of using AutoCorrect. In order to remedy AutoCorrect's negative influence on our writing habits, it is of vital importance that we figure out how to separate the person from the machine.

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APPENDIX

I. Writing Prompt Videos

- Subject 1
  - Email Prompt: http://youtu.be/IJF1GZckTe4
  - Text Message Prompt: http://youtu.be/HF1JJGOaFBU
  - Facebook Status Prompt: http://youtu.be/NLVae-6YRkw

- Subject 2
  - Email Prompt: http://youtu.be/KIsg8XX7j7w
  - Text Message Prompt: http://youtu.be/KVyY0l3oRfI
  - Facebook Status Prompt: http://youtu.be/IWTaMEbaAsY

- Subject 3
  - Email Prompt: http://youtu.be/GcumpCgpv0U
  - Text Message Prompt: http://youtu.be/6CHCD78QKVg
  - Facebook Status Prompt: http://youtu.be/ZFKQ3gFfUjo

- Subject 4
  - Email Prompt: http://youtu.be/fTB8o0GS3h0
  - Text Message Prompt: http://youtu.be/0wZE0S1GJa4
  - Facebook Status Prompt: http://youtu.be/euz2YNSc3N0

- Subject 5
  - Email Prompt: http://youtu.be/W9DdizeYFRM
  - Text Message Prompt: http://youtu.be/H1M8hV95BmI
  - Facebook Status Prompt: http://youtu.be/Y9wL5MwAKAI

II. Survey Questions

Link: https://www.surveymonkey.com/s/832GV8Z

III. Change Transcripts

Key

REASON TYPE	Description
A	Spelling (because subject could not spell the word)
B	Spelling (because subject accidentally hit the wrong key)
C	Capitalization/punctuation error
D	Other

Subject 1

Prompt 1: Email Message

MISTAKE	TIME	REASON TYPE (see key)	AUTO-CORRECTED (Y/N)	TO WHAT?	MANUALLY CORRECTED (Y/N)	TO WHAT?
"nam"	00:00:06 sec.	B	N	--	Y	"name"
"ks"	00:00:07 sec.	B	Y	"is"	N	--
"colleen"	00:00:10 sec.	C	Y	"Colleen"	N	--
"stident"	00:00:15 sec.	B	Y	"student"	N	--
"i"	00:00:19 sec.	C	Y	"I"	N	--
"orhanization"	00:00:28 sec.	B	Y	"organization"	N	--
"canpus"	00:00:33 sec.	B	Y	"campus"	N	--
"Paino"	00:00:40 sec.	B	N	--	Y	"Piano"
"it's"	00:00:43 sec.	C	Y	"it's"*	N	--
"succeds"	00:00:46 sec.	B	Y**	"success"	Y	"success"

MISTAKE	TIME	REASON TYPE (see key)	AUTO-CORRECTED (Y/N)	TO WHAT?	MANUALLY CORRECTED (Y/N)	TO WHAT?
"donating"	00:00:50 sec.	D	N	--	Y	"donation"
"guarentee"	00:00:55 sec.	A	Y	"guarantee"	N	--
"pronect"	00:00:58 sec.	B	Y	"project"	N	--
"rwxeiced"	00:01:07 sec.	B	Y	"received"	N	--
"uears"	00:01:16 sec.	B	Y	"years"	N	--
"theough"	00:01:29 sec.	B	Y	"through"	N	--
"onstacles"	00:01:31 sec.	B	Y	"obstacles"	N	--
"thwy"	00:01:35 sec.	B	Y	"they"	N	--
"youe"	00:01:42 sec.	B	Y	"your"	N	--
"Skncerely"	00:01:53 sec.	B	Y	"Sincerely"	N	--
	Total mistakes: 21					
	Most common reason: Type B					

Prompt 2: Text Message

MISTAKE	TIME	REASON TYPE (see key)	AUTO-CORRECTED (Y/N)	TO WHAT?	MANUALLY CORRECTED (Y/N)	TO WHAT?
"by"	00:00:07 sec.	B	N	--	Y	"be"
"shell"	00:00:15 sec.	C	Y	"she'll"	N	--
"butni"	00:00:20 sec.	B	Y	"but I"	N	--
"couch"	00:00:22 sec.	B	N	--	Y	"vouch"
	Total mistakes: 5					
	Most common reason: Type B					

Prompt 3: Facebook Status

MISTAKE	TIME	REASON TYPE (see key)	AUTO-CORRECTED (Y/N)	TO WHAT?	MANUALLY CORRECTED (Y/N)	TO WHAT?
"jamaica"	00:00:13 sec.	C	Y	"Jamaica"	N	--
"souveniera"	00:00:22 sec.	A & B	Y	"souvenirs"	N	--
	Total mistakes: 2					
	Most common reason: N/A					

Subject 2

Prompt 1: Text Message

MISTAKE	TIME	REASON TYPE (see key)	AUTO-CORRECTED (Y/N)	TO WHAT?	MANUALLY CORRECTED (Y/N)	TO WHAT?
"thetre"	00:00:10 sec.	B	Y	"there"	N	--
"i"	00:00:36 sec.	C	Y	"I"	N	--
	Total mistakes: 2					
	Most common reason: N/A					

Prompt 2: Email Message

MISTAKE	TIME	REASON TYPE (see key)	AUTO-CORRECTED (Y/N)	TO WHAT?	MANUALLY CORRECTED (Y/N)	TO WHAT?
"schoenbehr"	00:00:24 sec.	B	Y	"Schoenberg"	N	--
"i"	00:00:37 sec.	C	Y	"I"	N	--
"yo"	00:00:40 sec.	B	Y	"to"	N	--
"it's"	00:01:05 sec.	C	Y**	"it's"	Y	"its"
"succrss"	00:01:07 sec.	B	Y	"success"	N	--
"drpends"	00:01:09 sec.	B	Y	"depends"	N	--
"ginding"	00:01:25 sec.	B	Y	"finding"	Y	"funding"
"recieved"	00:01:42 sec.	A	Y**	"received"	N	--
"predtigious"	00:01:49 sec.	B	Y	"prestigious"	N	--
"immpecable"	00:02:08 sec.	A	Y	"impeccable"	N	--
"perservered"	00:02:16 sec.	A	Y	"persevered"	N	--
"obstaclrs"	00:02:20 sec.	B	Y	"obstacles"	N	--
"tpday"	00:02:28 sec.	B	Y	"today"	N	--
"yome"	00:02:32 sec.	B	Y	"time"	N	--
	Total mistakes: 14					
	Most common reason: Type B					

Prompt 3: Facebook Status

MISTAKE	TIME	REASON TYPE (see key)	AUTO-CORRECTED (Y/N)	TO WHAT?	MANUALLY CORRECTED (Y/N)	TO WHAT?
"."	00:00:03 sec.	C	N	--	Y	"." removed
"atill"	00:00:06 sec.	B	Y	"still"	N	--
"remeniscing	00:00:11 sec.	A	Y	"reminiscing"	N	--
"abouy"	00:00:16 sec.	B	Y	"about"	N	--
"vacayion"	00:00:19 sec.	B	Y	"vacation"	N	--

MISTAKE	TIME	REASON TYPE (see key)	AUTO-CORRECTED (Y/N)	TO WHAT?	MANUALLY CORRECTED (Y/N)	TO WHAT?
"yo"	00:00:27 sec.	B	Y	"to"	N	--
	Total mistakes: 6					
	Most common reason: Type B					

Subject 3

Prompt 1: Facebook Status

MISTAKE	TIME	REASON TYPE (see key)	AUTO-CORRECTED (Y/N)	TO WHAT?	MANUALLY CORRECTED (Y/N)	TO WHAT?
"remenecing"	00:00:09 sec	A	Y	"remembering"	N	--
"jamaica"	00:00:20 sec	C	Y	"Jamaica"	N	--
"souvinears"	00:00:35 sec	A	N	--	Y	"souviners"
"souviners"	00:00:51 sec	A	Y	"souvenirs"	N	--
"reminesing"	00:01:04 sec	A	Y	"reminiscing"	N	--
	Total mistakes: 5					
	Most common reason: Type A					

Prompt 2: Text Message

MISTAKE	TIME	REASON TYPE (see key)	AUTO-CORRECTED (Y/N)	TO WHAT?	MANUALLY CORRECTED (Y/N)	TO WHAT?
“definately”	00:00:08 sec	A	Y	“definitely”	N	--
“tjan”	00:00:13 sec	B	Y	“than”	N	--
“monuted”	00:00:16 sec	B	Y	“minutes”	N	--
“can not”	00:00:41 sec	D	N	--	N	--
	Total mistakes: 4					
	Most common reason: Type B					

Prompt 3: Email Message

MISTAKE	TIME	REASON TYPE (see key)	AUTO-CORRECTED (Y/N)	TO WHAT?	MANUALLY CORRECTED (Y/N)	TO WHAT?
“Baron”	00:00:07 sec	D	N	--	N	--
“PTEL”	00:00:12 sec	B	N	--	Y	“Patwl”
“Patwl”	00:00:13 sec	B	N	--	Y	“Patel”
“im”	00:00:24 sec	C	Y	“I’m”	N	--
“canphs”	00:00:35 sec	B	Y	“campus”	N	--
“it’s”	00:00:45 sec	C	N	--	N	--
“sucess”	00:00:48 sec	A	Y	“success”	N	--
“guarentee”	00:00:58 sec	A	Y	“guarantee”	N	--
“recieved”	00:01:20 sec	A	Y	“received”	N	--
“impecable”	00:01:44 sec	A	Y	“impeccable”	N	--
“precerveeref	00:01:52 sec	A & B	Y	“prefer erre”	Y	“percerveeref”
“percerveeref	00:00:07 sec	A & B	N	--	Y	“percerveered”
“obsticles”	00:02:14 sec	A	Y	“obstacles”	N	--
“appreciatef”	00:02:35 sec	B	Y	“appreciated”	N	--
“Sincerly”	00:02:42 sec	A	Y	“Sincerely”	N	--
	Total mistakes: 15					

MISTAKE	TIME	REASON TYPE (see key)	AUTO-CORRECTED (Y/N)	TO WHAT?	MANUALLY CORRECTED (Y/N)	TO WHAT?
	Most common reason: Type A					

Subject 4

Prompt 1: Email Message

MISTAKE	TIME	REASON TYPE (see key)	AUTO-CORRECTED (Y/N)	TO WHAT?	MANUALLY CORRECTED (Y/N)	TO WHAT?
"Myname"	00:00:08 sec	C	Y	"My name"	N	--
"fsu"	00:00:21 sec	C	N	--	Y	"FSU"
"i"	00:00:23 sec	C	Y	"I"	N	--
"nee"	00:00:31 sec	B	Y	"new"	N	--
"piano club"	00:00:48 sec	C	N	--	Y	"Piano Club"
"its"	00:00:53 sec	C	Y	"it's"	N	--
"garuntee"	00:01:10 sec	A	N	--	Y	"guarujtee"
"guarujtee"	00:01:15 sec	B	Y	"guarantee"	N	--
"theoughout"	00:01:39 sec	B	Y	"throughout"	N	--
"Piano"	00:01:50 sec	C	N	--	Y	"piano"
"pwrsevered"	00:02:01 sec	B	Y	"persevered"	N	--
"theogh"	00:02:04 sec	B	Y	"through"	N	--
"reacj"	00:02:10 sec	B	Y	"reach"	N	--
"tike"	00:02:25 sec	B	Y	"time"	N	--
"hreatly"	00:02:29 sec	B	Y	"greatly"	N	--
"Sinxe"	00:02:33 sec	B	N	--	Y	"Sincerely"
	Total mistakes: 16					
	Most common reason: Type B					

Prompt 2: Facebook Status

MISTAKE	TIME	REASON TYPE (see key)	AUTO-CORRECTED (Y/N)	TO WHAT?	MANUALLY CORRECTED (Y/N)	TO WHAT?
"reminicing"	00:00:10 sec	A	Y	"reminiscing"	N	--
"souveijers"	00:00:37 sec	B	Y	"souvenirs"	N	--
	Total mistakes: 2					
	Most common reason: N/A					

Prompt 3: Text Message

MISTAKE	TIME	REASON TYPE (see key)	AUTO-CORRECTED (Y/N)	TO WHAT?	MANUALLY CORRECTED (Y/N)	TO WHAT?
"sef"	00:00:07 sec	B	N	--	Y	"definiteky"
"definiteky"	00:00:09 sec	B	Y	"definitely"	N	--
"i"	00:00:31 sec	C	Y	"I"	N	--
	Total mistakes: 3					
	Most common reason: Type B					

Subject 5

Prompt 1: Text Message

MISTAKE	TIME	REASON TYPE (see key)	AUTO-CORRECTED (Y/N)	TO WHAT?	MANUALLY CORRECTED (Y/N)	TO WHAT?
"mijutes"	00:00:12 sec	B	Y	"minutes"	N	--
","	00:00:14 sec	C	N	--	N	--
"hell"	00:00:15 sec	C	Y	"he'll"	N	--
	Total mistakes: 3					
	Most common reason: Type C					

Prompt 2: Facebook Status

MISTAKE	TIME	REASON TYPE (see key)	AUTO-CORRECTED (Y/N)	TO WHAT?	MANUALLY CORRECTED (Y/N)	TO WHAT?
"remincing"	00:00:05 sec	A	Y	"reminiscing"	N	--
"vscation"	00:00:10 sec	B	Y	"vacation"	N	--
"jamaica"	00:00:13 sec	C	Y	"Jamaica"	N	--
"Cant"	00:00:14 sec	C	Y	"Can't"	N	--
"surorise:	00:00:16 sec	B	Y	"surprise"	N	--
"souvineirs"	00:00:23 sec	A	Y	"soy units"	Y	"souviniers"
"souviniers"	00:00:30 sec	A	N	--	Y	"souvineits"
"souvineits"	00:00:31 sec	B	N	--	Y	"souvineias"
"souvineias"	00:00:32 sec	B	N	--	Y	"souvineirs"
"souvineirs"	00:00:33 sec	A	Y	"souvenirs"	N	--
	Total mistakes: 10					
	Most common reason: Types A & B					

Prompt 3: Email Message

MISTAKE	TIME	REASON TYPE (see key)	AUTO-CORRECTED (Y/N)	TO WHAT?	MANUALLY CORRECTED (Y/N)	TO WHAT?
"president baron"	00:00:06 sec	C	N	--	N	--
"carlos"	00:00:10 sec	C	Y	"Carlos"	N	--
"i"	00:00:16 sec	C	Y	"I"	N	--
"musoc"	00:00:23 sec	B	Y	"music"	N	--
"canpus"	00:00:26 sec	B	Y	"campus"	N	--
"the piano club"	00:00:33 sec	C	N	--	N	--
"it's"	00:00:35 sec	C	N	--	N	--
"oroject"	00:00:49 sec	B	Y	"project"	N	--
"Mani"	00:00:55 sec	B	N	--	Y	"Many"
"pristegious"	00:01:05 sec	A	Y	"pros regions"	Y	"prestigious"
"impecable"	00:01:22 sec	A	Y	"impeccable"	N	--
"rythym"	00:01:24 sec	A	N	--	Y	"rythymn"
"rythymn"	00:01:34 sec	A	Y	"rythmic"	Y	"rythm"
"rythm"	00:01:44 sec	A	N	--	Y	"rythmn"
"rythmn"	00:01:45 sec	A	Y	"rhythm"	N	--
"teach"	00:02:03 sec	B	N	--	Y	"reach"
	Total mistakes: 16					
	Most common reason: Type A					