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# Understanding How College Students' Literacy Is Affected By Texting SMS Lexicon

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UNDERSTANDING HOW COLLEGE STUDENTS' LITERACY  
IS AFFECTED BY TEXTING SMS LEXICON

being

A Field Study Presented to the Graduate Faculty  
of the Fort Hays State University in  
Partial Fulfillment of the Requirements for  
the Degree of Education Specialist

by

Katherine L. Herrman

M.S., Fort Hays State University

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Major Professor

Approved \_\_\_\_\_  
Chair, Graduate Council

The research described in this thesis utilized human subjects. The thesis prospectus was therefore examined by the Human Subjects Research Committee of the Psychology Department, Fort Hays State University, and found to comply with Title 45, Subtitle A – Department of Health, Education and Welfare, General Administrations; Part 46 – Protection Subjects.

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## ABSTRACT

Spelling and grammar have always been taught in schools as means of proper language mechanics (U.S.D.E., 2006). Recently, the use of correct spelling and proper grammar in writing among college students has seemed to weaken (Junco & Cotton, 2011). Although there may be many factors that could contribute to this decrease in proper language use, the development of new technologies may be playing an important role. Presently, one of the newest technologies, cell phones, is in the hands of many young adults. Most of these young adults are using their cell phones to send and receive instant messages, or text messages. In typing out text messages a new lexicon has developed that uses a pattern of short cuts to communicate complete sentences (SMS, 2010). The extent to which young adults or college students use this new lexicon may be affecting their ability to spell correctly and use proper grammar language within other arenas; most notably, academics.

The purpose of the current study is to analyze the effects of high versus low usage of short messaging system (SMS) lexicon in text messaging on college students' spelling and grammar abilities. Theory suggests that college students who participate in text messaging more often will have poorer spelling and grammar abilities due to the increase in using the SMS lexicon as opposed to proper English formatting (Hauck, 2003). The high number of text messaging that some college students send and receive daily will negatively correlate with their inability to spell correctly and use proper grammar.

## ACKNOWLEDGEMENTS

The completion of my thesis was made possible through the work and dedication of the faculty of the psychology department at Fort Hays State University. Many of the professors, including Dr. Bonds-Raacke, Dr. Patrick, and Betsy Leeds, who are also members of my thesis committee, provided such useful information and feedback in order to assist me in presenting the finest research possible on this particular subject matter. I would also like to express my gratitude towards Dr. Naylor for helping me to gain a more in depth understanding of my study and assisting me with the statistical analysis of my dataset. I would most like to thank Dr. John Raacke, my thesis chair, for his collaboration and effort with this project. He provided many, many hours of advice, offered his own questionnaire for the purpose of this research, and proofread several revisions. I cannot thank him enough for his guidance and support during this process.

I would also like to recognize my family and friends who supported me through this project. First, I would like to thank Casey Schmidt for providing me with resources and ideas throughout the process. Second, I would like to thank my mom, the English teacher, for helping me grade the grammar tests and supplying her professional knowledge for the spelling and grammar portions of this research. She and my dad continue to show how much they love and support me by their willingness to do whatever they can to help me reach my goals. And finally, I would like to thank my husband, Jesse, for putting up with the many hours I was absent to work on this research, the warm meals when I got home, and the supportive and loving hugs when I showed complete frustration.

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## INTRODUCTION

More and more researchers are investigating the effects of using short messaging language when chatting or texting with others through the use of technology on formal and informal writing. However, this research is mostly conducted using younger participants or those individuals who may not participate in text messaging, also known as short messaging system (SMS), as much as college-aged students. The current research study examines the effect of high and low usage of text messaging and using SMS lexicon on college students' ability to spell correctly and use proper grammar.

The first proposed hypothesis suggests that college students between the ages of 18 and 30 who participate in higher volumes of text messaging will have reduced abilities in correct spelling and proper grammar usage in coursework. Next, the high volume of text messaging that some college students send and receive daily will positively correlate with increased sociability and, in turn, negatively correlate with their ability to spell correctly and use proper grammar. Finally, in order to account for spelling and grammar in relation to academic performance, the last proposed hypothesis suggests that higher grade point averages for college students will positively correlate with the ability to spell and use grammar correctly and negatively correlate with high volumes of text messaging.

### *The Importance of Spelling and Grammar*

Spelling and grammar are basic principles within the English language. When people communicate, they use spelling and grammar as the root of sentence and word construction. When language is spoken as opposed to written, spelling is much harder to

evaluate than grammar (mispronunciation may cause problems). When writing language down, if the grammar is not correct, then the meaning may become lost. According to Briggs (2009), the importance someone puts on his/her spelling and grammar is consistent with how seriously they want to be taken and how successful they hope to become. Even if writing is not done for monetary purposes, one should take the principles of good writing into consideration for the sake of those who may be reading it.

One American journalist wrote that any piece of written content should communicate its message clearly and concisely (American Writers, 2011). When one uses improper fragmented sentences or unclear phrases due to grammatical errors it can make understanding the message in the writing very difficult. If readers have difficulty understanding the author's writing, they will not be interested in continuing reading or acting upon it.

Spelling is another critical aspect of written language because it represents meaning and parts of speech. Uniformity in the spelling of words is one of the features of a standard language in modern times. All writing should undergo a spell check to help ensure proper spelling. Not only do misspellings in writing take away from the literature, but it can harm the author's credibility if the literature is printed or posted for another's view. One may be penalized for misspellings and it can make it more difficult to publicize additional literature (American Writers, 2011).

The United States Department of Education considers proper grammar and correct spelling as an important part of education, evident by a set curriculum containing both of

these conventional batteries used in instructing language mechanics. Federal and state governments vote to spend millions of dollars to ensure a good education for children in the United States. In the No Child Left Behind Act of 2002, Congress ensured that students' progress in reading and writing reached that of one-hundred percent proficiency by 2012 stating that all students should be skillful readers in the English language (Paige, 2003). Furthermore, administrators make certain that teachers are well trained to teach such topics so that students understand language mechanics and use these mechanics properly as they continue with their education (U.S.D.E., 2006).

Due to advances in technology, Americans are expected to have the ability to read, write, and communicate at a higher proficiency level in order to succeed economically and socially. How competent one is in literacy is a good indicator of how well he/she will succeed in secondary school and beyond (eSpindle Learning, 2005). According to the data, more than half of America's secondary students are struggling to read their assigned textbooks and course material and are struggling to master core literacy skills. Currently, a small number of the elementary students in the United States (U.S.) have learned to read and write at a functionally literate level.

Furthermore, over forty percent of U.S. business employees are functionally illiterate. A recent poll showed that the United States is ranked 49<sup>th</sup> among the 156 United Nation member countries with regard to literacy (eSpindle Learning, 2005). The evidence of poor literacy, including spelling and grammar, could be attested to the lack of

appropriate instruction. However, the existence of technology has diminished the need for proofreading and, in turn, has resulted in loss of opportunity to practice such skills.

The following data was reported from the National Assessment of Educational Progress (NAEP) and research conducted by Hurwitz and Hurwitz (2004):

July 2003 NAEP test scores show that fewer than one in three of the nation's fourth-, eighth-, and 12th-graders are proficient in writing--that is, capable of composing organized, coherent prose in clear language with correct spelling and grammar. Only 24 percent of high school seniors achieved that goal. Teachers themselves lack writing skills. Only a handful of states require courses in writing for teacher certification, even for elementary school teachers, and few of the nation's public school teachers have taken after-school, weekend, or summer courses in writing or the teaching of writing. Students rarely receive rigorous writing assignments, even in English class. NAEP reports that nearly all elementary school students (97 percent) spend three hours a week or less on writing, about 15 percent of the time they spend watching television. Only half of high school seniors (49 percent) receive writing assignments of three pages or more for English class, and then only once or twice a month. Employers and college professors decry the quality of writing among their new employees and students (Hurwitz & Hurwitz, 2004, n.p.).

Since the NAEP scores reported for 2003, there has not been a significant decline in writing scores (National Assessment of Education Progress, 2008). However, the results of the Iowa Tests of Basic Skills (ITBS), a standardized test that is given across the nation to measure academic achievement, showed that spelling scores among elementary students rose through the 1980s, but have been on the decline since 1990 (Woo, 1997).

In relation to the current study, if a college student's writing and spelling ability is hindered due to his/her participation in technology, being mass texting usage or SMS, then he/she may produce poor written content that is difficult for readers to understand. Additionally, poor grammar and spelling abilities may correlate with a decrease in reading ability and thus, a decrease in eventual overall grade point average.

#### *Short Messaging System (SMS) or Texting*

Text messaging, by definition, is an electronic message sent over a cellular network from one cell phone to another by typing words, often in shortened form on the phone's numeric or QWERTY keypad (Text message, n.d.). This new form of communication is also called short messaging system, or SMS (SMS, 2010). SMS allows text messages to be sent and received to and from mobile telephones. The text is usually comprised of words or numbers or an alphanumeric combination. This alphanumeric combination is most of what represents the newfound language that young adults use throughout their text messages.

The first SMS message sent occurred on December 3, 1992, in the United Kingdom and was over the Vodafone GSM network (Hillebrand, 2002). A man named



Neil Papworth was using his personal computer to send a message to Richard Jarvis, who was using an Orbitel 901 handset. The message that he sent read, “Merry Christmas.” From that moment on, text messaging continued to develop for the next eighteen years until it grew to gross \$114.6 billion in revenue worldwide in 2010.

There were over two trillion text messages sent worldwide in 2008 (Research and Markets, 2008). And, text messaging has since grown tremendously to almost 4.1 billion text messages being sent daily from mobile devices (CTIA–The Wireless Association, 2009). Text messaging is most often used between private mobile phone users as a substitute for voice calls in situations where voice communication is impossible or undesirable. Even more recently, the use of text messaging has leaked into the education and business worlds. Teachers are reporting using text messaging to communicate with students or to get students to participate in discussion forums (Lomine, 2009). Businesses use text messaging to inform individuals about meetings, deliveries, and campaigns (Mah, 2008). And, university campuses and public schools have also adopted text messaging to alert students and staff members in cases of emergency and non-emergency situations.

In the education realm, M-learning, or mobile learning, is a recent teaching concept entertained by some teachers of higher learning. The teachers use “handheld technology” to instruct their students through podcasts or text messaging. The availability of the “handheld devices” in today’s society has created the need for a paradigm shift to a more technologically advanced teaching style. The aim of this new “style” is not to

challenge nor replace other forms of interactions (e.g. in classroom or virtually). It is a supplementary method that can support, enrich, and enhance students' learning experiences (Lomine, 2009).

Using mobile devices for educational purposes for students has become widely accepted by many districts in classes ranging from kindergarten through 12<sup>th</sup> grade (Eisele-Dyrli, 2011). Research shows that mobile learning is advancing rapidly and will soon become part of a curriculum designed to use some of the mobile capabilities effectively. A few of the positive attributes of using mobile learning is that the student is not only able to receive and send new information, but also consume new content, such as news and referenced information, and share it all with one handheld device. Educators have also relayed that they may be able to conduct ongoing assessments as the students are working on assignments by sending standardized questions to their mobile device, which the student can then respond to through sending the answer back to the teacher (i.e., polleverywhere.com). This type of instruction would allow the teacher to adjust their content based on the constant assessment and the ability to measure the students' knowledge on such a consistent basis (Lomine, 2009).

Furthermore, the advantages of text messaging alerts on university campuses gives the university the ability to alert students of cautious weather, emergency and/or dangerous situations, and weather-related cancellations immediately and directly to the student. Recently, campuses, like that at Fort Hays State University, are using messaging systems to notify college students of mobile learning updates. Using systems such as

Blackboard Mobile Learn, which makes interactive teaching and learning mobile, students and educators are given access to their courses, content, and organizations on a variety of smart cellphone devices (FHSU, 2011).

Similarly, in the business world, agencies use text messages as marketing devices to communicate advertisements and coupons for local deals to consumers who have compatible cell phones. Also, many corporations submit meetings and agendas to employees and clients through text messages (Cohen, 2009). Text messaging a client or employee is a much faster communication method than interacting through email or even calling at an inopportune moment (Mah, 2008). In this modern society, people most often carry their cell phones with them and thus are easily notified if they are capable of receiving text messages (Cohen, 2009).

The accessibility of participating in or using text messaging or SMS has grown exponentially throughout modern society. Text messaging, as opposed to verbal communication, using cellphones has become a popular choice. In the present day, certain generations, such as college students, are not only using text messaging for personal communication, but also for educational, business, and informative purposes. The increase in exposure to or participation in texting or SMS usage aids in the increase of the likelihood or probability of the college student joining this technological trend.

#### *Generational Use and Sociability*

Since text messaging is a relatively new form of technology, there is not an overabundance of research covering the impact it has on academic performance. In 2010,

Ling conducted a study in Norway over the use of text messaging at different points in the life cycle. The researchers examined whether using “SMS is a life phase or if it is just a cohort phenomenon” (Ling, 2010, p. 277). In other words, is SMS something people participate in at a certain phase in their life, or is it just a fad of the times? Ling describes life phase technologies as things that are adopted and used only during a particular portion of a person’s life, such as gaming consoles. However, cohort technologies are technologies that are adopted by a certain age group, like teenagers, and then carried with them as they mature, like cell phones and, in particular, text messaging.

The researchers hypothesized that text messaging is not merely a cohort technology, but a life phase technology. Data was gathered between 2001 and 2007, and although the researcher found that using SMS was more associated with teenagers, the researcher also found that there was an increase in the use of SMS over time among every age group tested. In addition, the data showed that the peak age for text messaging is around the late teen to young adult years (Ling, 2010) which is consistent with college-age students. The evidence of Ling’s study does show that teenagers and early adults, who at this moment in life are still very active in academics such as high school or college, participate in text messaging more often than any other generation.

One other factor that affects the amount a person texts is his or her interest in being a sociable person, or his/her sociability. Sociability is the act or quality of being inclined to seek or enjoy the companionship with others of the same species, and is

typically marked by or conducive to friendliness or pleasant social relations (sociability, n.d.). Sociability may be an unrelated factor to incorrect spelling and poor grammar, but is linked to this study through the relationship of being social and the frequency of using SMS; reportedly, those who are more social are more likely to text and use SMS.

Few measures are available to solely examine the sociability of a person. However, sociability can be measured through the analysis of an extraversion rating. According to Plomin (1976), correlations among sociability factors and extraversion items have indicated that extraversion is a measure of sociability. Although extraversion does not relate to the intensity or quality of social relationships, it does consistently measure how sociable a person is or is interested in being with certain social circles.

Very little research has been conducted over the relationship of sociability and texting. In 2009, Pettigrew studied the impact of text messaging on interpersonal relationships. This research showed that people text more when they are involved personally with other people. Additionally, one research study has shown that instant messaging is the form of communication used most often between university students in order to keep in contact with other students or friends and family that are geographically distant (Quan-Haase, 2007).

In relation to using text messaging as a social network among teenagers, Orleans and Machinery (2002) conducted research that focused on text messaging as a support of interpersonal communication and its role and prominence in everyday life. The researchers surveyed sixteen teenage instant messaging (IM) users ranging from high

school to college students. In particular, the researchers evaluated social communication in reference to the teenagers' interpersonal relationships and whether messaging used in their everyday routine was the primary mode of communication between them and peers, peer groups, and social opportunities. The researchers concluded that there was a difference in instant messaging use between high school and college teens, which was attributed to differences in lifestyle and dependence versus independence. Reportedly, college teens used instant messaging more as a form of communication between peers and themselves. Additionally, internet and transportation access also played a role in the difference of usage between high school and college teens. Overall however, the researchers found that IM use is a highly preferred form of communication for teen life for both college and high school students.

On the other hand, Alison-Bryant, Sander-Jackson, and Smallwood conducted a study in 2006 that investigated adolescent use of socially interactive technologies (SITs) and its effect on social abilities outside of technologies. The researchers focused on three main questions: (a) were adolescents creating more, but weaker social networks using SITs? (b) did adolescent SIT networks overlap with other friendship networks? and (c) were SIT networks more important to adolescents if they have few friends outside of technology-based relationships? Surprisingly, the results of their study showed that adolescents were not creating more network-based relationships using SITs or creating weaker relationships. Also, there was little overlap between SIT networks and friendships outside of technology-based networking. One important factor relevant with the current

study is that the researchers found socially isolated adolescents were less likely to use socially interactive technologies, such as SMS, than those adolescents who were reported as more socially active.

According to prior research, teenagers and early adults are more likely to participate in text messaging than any other generation. Furthermore, more socially isolated adolescents are less involved with socially interactive technologies, like that of text messaging and SMS usage. Therefore, a college student's measure of their own interest in being social, or extraversion, may have an impact on the current study. Consequently, a measure of social interest may be comparable to how often college students participate in text messaging.

#### *A New Lexicon*

As can be seen, new developments in electronic technologies have given people the opportunity to be more social through written expression in a variety of ways. Advancements like instant messaging, email, chats, and text messaging have enabled people to communicate more efficiently. In order to keep up with the fast-paced society that exists today, people have developed short cuts for expressing themselves.

Varnhagen et al. (2009) researched different forms of written communication used in text messaging and considered it as a type of "new language." The researchers defined this new language as comprised of abbreviations, acronyms, word combinations, and punctuations. These short cuts are used so often that people are starting to create dictionaries in order to understand each new acronym or phrase. Adolescents have

developed certain short cuts like *l8r* for the word ‘later’ or *lol* for the phrase ‘laugh out loud,’ meaning really funny. Progressions, such as these short cuts for phrases, may have resulted from the amount of errors that occur while typing or the speed of typing versus the speed of talking. Either way, a new lexicon has developed that people enjoy using and makes talking through type faster. However, not everyone is excited about the creation of this new language.

According to Varnhagen et al. (2009), some people interpret the technically incorrect language and spelling “errors” in instant messaging as detrimental and incorrect, whereas others view it as slang developed by this generation. Certain researchers go on to say that this new language enhances creativity in written language and expression and increasing literacy (Sweeny, 2010). The researchers’ study focused on two objectives, including exploring the nature of words produced in instant messaging and their function in conversation and examining the relationship between spelling ability and this new language use. As with earlier studies, research recognizes that teenagers and early adults are among those who use SMS most often.

During Varnhagen et al.’s (2009) research study, adolescents were asked to collect a history of their instant messages for a week, after which they were administered a standardized spelling test over the same instant messaging program to measure spelling ability (Varnhagen et al., 2009). The researchers then divided the different use of short cuts into separate categories, such as emoticons, letter or number word substitutions,



abbreviations, and acronyms. They used these different categories to measure the use of linguistic context in this “new language.” As a result of Varnhagen et al.’s study (2009), they identified 14 types of new language that could be grouped into three broad categories: (a) short cuts used as speed communicators, (b) pragmatic devices used to substitute for nonreferential communication used in face-to-face interaction, and (c) errors that occurred in typing.

Varnhagen et al. also found that girls used this new language more than boys and that age had no effect on this matter. An especially significant finding was that spelling ability did not correlate with this new language use and that the adolescents were using correct spelling when it came to typing out the new language. The implications of these results may suggest that adolescents are learning how to spell this new language without using traditional methods offered in schools and that using this new language has no effect on writing ability.

In 2011, Baron and Ling examined punctuation use or non-use in communication through technology, whether online or through mobile devices. They analyzed text messages sent by university students by creating a focus group that discussed the implications and meaning of punctuation use in messages, including emoticons or “smiley faces.” The results showed that some usage patterns were based on gender, but more importantly that the university students were developing their own meanings for how different punctuation marks and emoticons were to be interpreted through the

messages. The meaning of the different marks was understood consistently by all of the students involved, which suggests that it is consistently understood across all adolescents. Essentially, students have created “expressions” through punctuation marks and emoticons understood through media-based messages.

Adolescents’ have demonstrated the ability to create and universally understand a new lexicon used in SMS without the assistance of traditional learning methods. Some researchers have suggested that the ability to do so has shown an improvement in creative writing techniques. On the other hand, other researchers suggest that this new language has had detrimental effects on early adolescent’s spelling abilities. The current study suggests that college students who use this new lexicon while texting will consistently show a decreased spelling ability.

#### *Short Messaging Language in Literacy*

There has been much discussion amongst educators and researchers over the use of correct grammar and spelling read via the Internet, emails, and over cell phones. Text written in the short messaging lexicon that is read via the Internet, emails, and on cell phones is, according to Briggs (2009), not only just a simple matter of odd typo(s), but also what has been described as a horrific use of spelling and a non-existent use of grammar. Thus the incorporation of this new language use may be making it difficult to teach the proper form of language arts in schools (U.S.D.E., 2006).

One study that researched the use of messaging in electronic communication in relation to the quality of writing attempted to find if teenagers used textisms in formal and informal writing (Rosen, Chang, Erwin, Carrier, and Cheever , 2010). Rosen et al.'s study (2010) researched samples of formal and informal writing from over a thousand participants ranging in age from 18 to 25. Reportedly, a national survey of U.S. teens showed that they use their cell phones more for texting than talking and thus this age group is a representative sample of those that would be affected by the use of textisms (Nielsen Mobile, 2009). The researchers conducted two studies with the surveys given over the Internet in order to counterbalance the formal and informal writing procedures. In each study, the participant was asked to write either a formal or informal response to the survey questions, as well as, asked about his/her reported daily use of electronic communication tools and textisms. The researchers used a generated rubric to grade each writing sample. The results showed that female adolescents used more linguistic and contextual textisms than male adolescents.

In the case of formal and informal writing, Rosen et al. (2010) found a negative association between using textisms and formal writing, and a positive association between using textisms and informal writing. Although the participants did, in fact, use textisms throughout their writing, those who had more education used fewer textisms. The implications of these findings suggests that texting in early adult years may have a

significant impact on a person's ability to write properly in both formal and informal writing tasks.

Few research studies have recently been published over the relation of text messaging and literacy for children. Kemp and Bushnell (2011) investigated the effects of mobile phone text message abbreviations and poor literacy skills among children aged 10 to 12. They reported that children took significantly longer and made more errors when reading messages written in texts than in conventional English. Additionally, general spelling and reading scores did not differ significantly with usual texting method. The results did add to the belief that there is a positive correlation between texting proficiency and traditional literacy skills.

In contrast to Kemp and Bushnell, Powell and Dixon (2011) researched the effects of exposure to textisms, misspellings, and correctly spelled words on adults' spelling. The experimenters offered a spelling pre-test and a post-test after being exposed to textisms correctly spelled and misspelled. The data resulting from their study suggested that the exposure to textisms, unlike misspellings, had a positive effect on adults' spelling. However, the research was conducted only for adults and showed no findings for school or college-aged children or adolescents.

In 2011, Coe and Oakhill investigated children between the ages of 10 to 12 and the relationship between their reading ability and text-messaging behavior. They focused on comparing good and poor readers' mobile phone usage, what type of device they used, and how often they text using this device. They also measured how fast the participants

could read messages written in “text” compared to formal English. The results showed that poor readers used their phones more often per day than good readers, but that good readers used more textisms in their written text messages and were faster at reading messages in both text and formal English. In conclusion, even though those who had poor reading ability were shown to text more, the indication of a relationship between using textisms and poor literacy skills was not evident.

Rankin, in 2010, studied the use of SMS shortcuts and their impact on students’ spelling and grammar skills. As with the current study, the researcher noticed how language shortcuts used in texts messages were occurring more in students’ academic writing assignments. The researcher used four directed questions, including (a) how students use language shortcuts in their academic writing, (b) how language shortcuts influence students’ spelling and grammar skills, (c) how well students are able to differentiate between casual writing and academic writing, and (d) how the use of language shortcuts influences the amount of writing students do.

After conducting student interviews, a focus group, and observation of students during a writing assignment, and analyzing the students’ graded compositions with a sample group of 25 students, the researcher found four common conceptual indicators. First, the students used text messaging and language shortcuts often. Second, the language shortcuts appeared in the students’ academic assignments. Third, the students’ admittedly concurred that language shortcuts have influenced them to exhibit poorer spelling abilities. And lastly, the students who participated in this study had academic

deficiencies that went beyond the errors that occur in text messaging and language shortcuts. Interestingly however, Rankin proposed that due to the findings and the increase in errors shown in the study, that a possible change in curriculum to match the developmental position that students are currently taking through the new form of communication could lead them to become more proficient writers (Rankin, 2010).

Even though research has not shown a significant impact of text messaging in schoolwork, one thirteen year old reported that the shortcuts she uses while texting on her cell phone affects how she does her schoolwork. For instance, instead of spelling Y-O-U, the teenager replaces it with the letter U. Some linguists are concerned that the practice of using SMS while text messaging will result in poor, undisciplined habits among American youths (Hauck, 2003). On the other hand, other language experts do not believe that the new SMS language will have a negative effect on grammar usage, similarly to slang words that have been in existence for many years now that have not strongly affected writing and reading abilities.

Because text messaging was popularized among the teenage crowd and they were given limited characters and writing space on phones, they were able to use the short messaging lingo that had been developing through chat and email across the internet in text messages. One expert explained that text messaging is going through the natural progression of language (Hauck, 2003). According to Sheidlower, principal editor of the U.S. office of the Oxford English Dictionary, the more people use text messaging and learn the new abbreviations and acronyms, the more the language will be familiar to a

growing population of cell phone users. In turn, the more the population participates in the new lexicon for text messaging, the more likely it is to affect speech and writing.

With the possible affect that the new lexicon may have on speech and writing, some linguists see that the problem in the quick language format of written communication occurs when the sender and receiver of the message are not familiar with one another. Although, this quick language format is more acceptable when talking or using text messages to communicate with acquaintances and friends. Other linguists view this change in language as creative and are pleased with the development and expansion of peoples' writing skills (Hauck, 2003). The two perspectives of the acquisition of this new language share positive and negative points of interest. However, data shows that currently, there is no negative effect on the reading abilities of American youth (National Assessment of Educational Progress, 2008).

Although previous research has shown little to no correlation between the use of this new language in instant messaging and texting and spelling or writing ability, there is still some debate on whether the effects of texting frequently as a teenager or young adult will eventually creep into academics. Prior research conducted has only looked at the effects of SMS usage on writing styles. There is a lack of research on the affects of SMS usage on grammar and spelling. The current research looks at how the amount of text messaging done by a college student impacts his/her ability to spell and use grammar correctly. In using college students as the group selected to examine, the researcher hopes

to find that early adolescents' use of textisms and short cuts has led to a significant change in spelling and grammar in early adult years.

As stated previously, spelling and grammar are fundamentally important in the education of today's youth (U.S.D.E., 2006). Research reviewed discusses that teenagers and adults using the SMS lexicon, comprised of abbreviations and acronyms, are both negatively and positively affected in their ability to write formally and informally, spell, and comprehend while reading (Rosen et al., 2010). Even though educators and researchers theorize that using SMS lexicon has a negative effect on literacy abilities such as spelling and grammar, no such research has definitively supported those hypotheses (Briggs, 2009).

The purpose of the current study was to analyze the effects of high versus low usage of short messaging system (SMS) lexicon in text messaging on college students' spelling and grammar abilities. The current study examined three different hypotheses related to the previous literature. First, college students who participate in text messaging more often will have poorer spelling and grammar ability due to the increase in using the SMS lexicon as opposed to proper English formatting. Second, the high volume of text messaging that some college students send and receive daily will positively correlate with increased sociability and in turn, negatively correlate with their inability to spell correctly and use proper grammar. And third, higher grade point averages for college students will positively correlate with the ability to spell and use grammar correctly and negatively correlate with high volumes of text messaging.



## METHODOLOGY

### *Participants*

In this study, the researcher surveyed 129 college students, between and including the ages of 18 and 30, who are enrolled as students at Fort Hays State University. The ages of the participants who completed the surveys displayed a mostly normal distribution as evident in Figure 1. This particular age range group is considered representative of those who participate in text messaging most often (Ling, 2010) and have been using SMS for an extended period of time. Of the 129 participants who were surveyed, one hundred were female and 29 were male. One hundred and seventeen of the participants considered themselves White Caucasians-Non Hispanic, four were of mixed race or ethnicity, three were African-American or Black, three were Hispanic or Latino, one was Asian, and one was Native American-American Indian. All but five of the student participants were native or fluent English speakers. According to the data, most of the participants were upperclassmen in either the junior, senior, or graduate student classification. Distribution of the participants' classification can be seen in Figure 2.

Approximately 72 percent of the student participants reported using a handheld or touchscreen cell phone, although flip and keyboard cell phones were also reported. Also, a majority of the participants had a texting plan with their service provider in which they were allowed an unlimited number of text messages monthly. Most student participants also have predicted text messaging or predicted words on their phone; which are already spelled for the text user. As measured using a likert scale, most students reported either

never or always using predicted texting words. More importantly, most participants reported that they use SMS while communicating through cellphone messages.

### *Materials and Procedure*

Four different types of survey measures were given online through FHSU (Fort Hays State University) Surveys (<http://survey.fhsu.edu>) during this study. The first measure was a basic demographic information questionnaire used to obtain data such as gender, age, race, and ethnicity that might be helpful in analyzing the results of the study (Appendix D). This survey also asked the participant's grade point average in order to account for the relationship between grade point average and spelling and grammar abilities.

The second measure was a text messaging questionnaire that was used to determine if the participant uses his/her cell phone for texting, how often, if he/she uses short cuts in writing text messages, and if the participant uses SMS lexicon while writing his/her text messages and can be found in Appendix E. The third measure, which can be found in Appendices F and G, is a state certified high school spelling and grammar chapter test. The spelling test consists of presenting three different words, one of which is misspelled. The student was to choose the misspelled word from the three choices provided. The grammar test consists of nine different sentences written correctly and incorrectly. The student is to fix any punctuation, spelling, capitalization, and

organization that is necessary to make the sentences grammatically correct and type their corrected sentences in the spaces provided.

The fourth measure that was used is a scale to measure the participant's sociability or extraversion or how interested the participant is in interacting with other people. In order to determine the sociability of a student, the researcher used the extraversion rated scale from the Big Five Inventory (Appendix H). The Big Five Inventory is a brief self-report inventory that was designed to measure the Big Five dimensions (Srivastava, 2012). It is a taxonomy of personality traits that includes extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience. When given to a student sample population, the domain scales averaged a strong reliability among scales ( $r = .84$ ) (John, Naumann, & Soto, 2008). External validity for the Big Five Inventory is moderate ( $r = .56$ ) (John, Naumann, & Soto, 2008). This inventory consists of 44 items assessed using a five point likert scale ranging from disagree strong to agree strongly and takes approximately five minutes to complete. For the purpose of this study, the researcher focused mainly on the extraversion scale, also known as surgency, which envelopes specific traits such as how talkative, energetic, and assertive a person is. If the participant was determined to be more extraverted, then he/she was considered a more social person and vice versa for a less extraverted rating. In relation to the current study, a student who reported to feel more extraverted than introverted is considered to reportedly be a more social and outgoing person, or have a higher sociability. Based on previous research, a more social and outgoing person is more

likely to participate in social communication acts like that of text messaging and/or SMS usage.

This study took place over a two-month period in the spring and summer semesters of the 2012 school year. Recruitment was completed through online communication with both potential professors and student participants at Fort Hays State University. Professors were emailed an explanation of the study and the link to the survey with the possibility of offering it to their online students. The researcher also emailed potential student participants directly using the Fort Hays student email address database. The students were sent an explanation of the survey and the hyperlink to the FHSU survey with the possibility to complete the surveys. Online consent was required initially before completing the surveys and a debriefing statement was made available at the end of the survey procedure offering assistance from the Kelly Center, the Psychology Ethics Committee Chairperson, or the project's thesis chair if the participant felt distressed.

Some FHSU online professors were asked to offer the survey to their online students during the summer 2012 term and elected to do so as an extra credit opportunity. Other participants were emailed the recruiting script and informed consent. If they were interested in possibly participating, they were directed by hyperlink to FHSU surveys where they read the informed consent statement and signed it electronically by selecting yes. Participants completed the entire process electronically online through the FHSU survey page established through Fort Hays State University. The student participants were then given the measures. The measures were administered at one time, with no

identification necessary. Surveys were counterbalanced randomly for each participant. When finished with the surveys, the participants saw the debriefing statement and contact information.

### *Experimental Design*

This study applied a non-experimental research design in which the researcher measured a number of variables that were believed to be significantly related (Warner, 2008). Specifically, the current study used a between-subjects design which examined the discrepancies between different comparison groups. According to Warner (2008), in a between-subjects or independent groups study, every participant or subject is a member of only one group. Since the researcher analyzed data that previously existed as part of the participants' characteristics, a between-subjects design method was the appropriate application. A series of independent and dependent variables were measured at one time using an anonymous survey analysis procedure. Then, data was analyzed using multivariate analyses of variance or MANOVAs between participants and the groups they were divided into by their recorded responses.

In order to conduct a MANOVA, the researcher first needed to verify that the two dependent variables were linearly related by assessing the correlation between the spelling and grammar test grades. The researcher chose the Pearson  $r$  to describe the strength and direction of the linear relationship between the two quantitative, dependent variables. The significance of the Pearson  $r$ , whether positive or negative, shows that the score of one variable can be predicted by the other variable. In the instance of the current

study, the score of the participant's spelling grade can be predicted by his/her grammar grade, or vice versa.

Once a linear relation was verified, a series of multivariate analyses of variance (MANOVAs) were conducted in order to examine the outcome of the three hypotheses proposed. A MANOVA is used to assess research situation in which there are multiple quantitative dependent variables that are compared across two or more groups. When considering all of the dependent variables or outcomes together, the means of the groups are different across the levels. The assumption then is that all of the groups are the same, at least one independent variable is grouped, and two or more dependent variables are scaled. As opposed to a univariate analysis of variance (ANOVA), a MANOVA includes multiple predictors, or independent variables. It measures one underlying construct with different measures and achieves a more accurate and detailed picture of complexity for the researcher to study (J.M. Naylor, personal communication, April 2011). Overall, the researcher can see the impact of the independent variables on two conceptually different outcome variables.

If the researcher were to use a series of ANOVAs instead of a MANOVA with the multiple variables, then it would inflate the Type I error rate and the intercorrelations between the outcomes variables would not be accounted for in the sequence. In a MANOVA research situation, data should be collected so that the dependent variables are observed independently of each other. The current study examined both dependent variables using two separate surveys that were unrelated. In addition to a linear relation

between quantitative dependent variables, there should be homogeneity of variance in a MANOVA. In other words, equal variances are assumed across the different groups. This study used the Box M test to assess the assumption of homogeneity of variances. Any overall significance in this study was reported using Wilk's Lambda, or *F* ratio.

### *Variables*

The current study evaluated multiple outcomes by measuring two dependent variables, spelling and grammar in relation to the independent variables. The independent variables that were hypothesized to correspond with the dependent variables included the participants' text messaging usage or frequency in reference to using SMS lexicon, their sociability, and their grade point averages earned in college at the time of completing the survey. As previously discussed, the two dependent variables, spelling and grammar, although typically academically associated, were measured separately to ensure all assumptions of examination were met. The scores obtained for spelling and grammar were measured by dividing overall responses by correct responses and computing a percentage grade, which was then logged into the SPSS database. The range of scores for the spelling and grammar test progressed from zero to 100.

Consistent with non-experimental research, the independent variables were not treatment variables, but were previously established descriptors for the participants. The first independent variable, the participant's text messaging usage or frequency in reference to SMS lexicon was measured by asking the participant to log, using his/her cellphone memory counter, how many text messages that they had sent and received in

the past twenty-four hour period, including erased messages. Also, the survey included a question asking the participant whether or not he/she used SMS lingo while texting. The second independent variable, sociability, was measured by using an extraversion likert scale from an established personality inventory. The last independent variable, grade point average, was obtained by including a question on the given survey measures simply asking the participant's grade point average at the current time.

The current study compared high versus low groups for each of the three independent variables. In order to divide the groups evenly the researcher examined frequencies for the participants' different grade point averages, extraversion ratings, and the total amount of text messages sent and received in twenty-four hours. After further investigation, a median split was chosen as the method used to separate the participants into two even groups. With a median of 3.50 ( $M = 3.29$ ,  $SD = .80$ ), those who reported having grade point averages at 3.49 or below were considered in the low group and those who reported a grade point average of 3.50 or above were in the high group. The extraversion scale rates from one, a less extraverted person, to five, a more extraverted person. A frequency table showed that the median for extraversion among the participants was 3.375 ( $M = 3.34$ ,  $SD = .82$ ). Therefore, the researcher recoded the low extraversion group as those who scored at 3.374 and below and the high extraversion group as those who scored at 3.375 and above. Finally, the frequency of text messaging displayed a median of 61 texts sent and received daily ( $M = 151.26$ ,  $SD = 221.82$ ), where 70% of the participants use SMS lexicon. The low text messaging group consisted of



those who reported 60 or below overall text messages, whereas the high text messaging group consisted of those who reported 61 texts or above. Median splits for each independent variable resulted in mostly equal groups and an increase in the robustness of this study. Table 1 displays a summary of statistics for each variable in this study.

### *Counterbalancing*

All four measures were given at once with different IP addresses as identification so that no personal identification on the surveys was necessary, increasing the confidentiality of this study. However, because there are four different surveys presented at one time to each participant, the potential problem arising from order effects was present in this study. In order to balance the order of presentation, or counterbalance the measures, the researcher set the measures to rotate randomly for each participant. This random rotation was an option granted through the online survey management and was part of the creation of the online survey.

## RESULTS

A bivariate correlation was performed to assess whether the participants' spelling grades could be predicted by their grammar grades. Spelling and grammar tests were gathered through an online survey test procedure in which the participant voluntarily completed both tests, which are considered to be high school level. Scores for spelling tests were obtained by grading the measure on correct responses out of total responses and giving the participant a percentage score between zero and 100. Similarly, scores for the grammar tests were obtained by grading the participant's proofread sentences for each item and granting them a score of 1 or 0, adding up to a total percentage score between zero and 100 as well.

Examination of histograms, shown in Figure 3 and Figure 4, indicated that the distribution shape of grammar scores was mostly normal. However, the spelling scores indicated an exponential distribution that was negatively skewed. The scatter plot (Figure 5) of spelling grades with grammar grades suggested a positive linear relationship. There were some bivariate outliers in this plot, and the spelling and grammar scores were both positively skewed across the X and Y axes. However, the correlation between spelling grades and grammar grades was statistically significant,  $r(129) = +.52, p < .01$  (two-tailed). The  $r^2$  was .27; thus, about 27% of the variance in the participant's spelling grade could be predicted from his/her grammar grade. The researcher identified that the significance of the correlation established a linear relationship between the two dependent variables, spelling and grammar, meeting a necessary assumption of

MANOVA testing, and therefore could proceed with assessment examining whether or not a significant difference in means between groups existed.

*Hypothesis (a)*

The researcher first hypothesized that higher grade point averages (GPAs) for college students will positively correlate with their ability to spell and use grammar correctly and negatively correlate with their high volumes of text messaging. A MANOVA was performed on grade point averages of college students using spelling and grammar as the dependent variables. The researcher divided the high versus low groups using a median split as discussed previously in the experimental design (Level 2 Low = lowest – 3.49, Level 1 High = 3.50 – highest). The factors included the high and low groups of the student participants' grade point averages. Preliminary data screening indicated a violation of the assumption of multivariate normality for spelling grades,  $F(1,127) = 6.25, p < .05$ , but not for grammar grades, thus equal variances are not assumed for spelling grades. There were no violations of the assumption of linearity of association between the outcome variables. The Box M test did not indicate a significant violation of the assumption of homogeneity of variance and covariance matrices across conditions,  $F(3, 2925959) = 2.59, p < .05$ .

For the overall MANOVA, all three multivariate tests were statistically significant (since there was a violation we cannot completely assume these statements correct). The violation of Box M may decrease the statistical power for this test and increase the risk of committing a Type I error. Because Pillai's Trace is more robust to violations of this

assumption, this test will be reported along with Wilk's Lambda. For the students' grade point averages, Wilk's Lambda = .93, approximate  $F(2, 126) = 4.96, p < .05, \eta^2 = .07$ , and Pillai's trace = .07, approximate  $F(2, 126) = 4.96, p < .05, \eta^2 = .07$ , which is a medium effect size with the sample size of the population. There were significant positive interactions for both spelling and grammar scores for the two grade point average groups.

Follow-up analyses were conducted to understand the interaction between spelling and grammar scores for the GPA factor levels. Post hoc tests could not be performed because there were fewer than three groups. Tests of between-subjects effects showed that college students in the high GPA group scored significantly higher on both the spelling and grammar tests than students in the low GPA group. Univariate  $F$ s were significant for spelling,  $F(1, 127) = 7.87, p < .05$ , and for grammar  $F(1, 127) = 7.06, p < .05$ . Univariate means and  $F$  ratios for the differences in test scores can be seen in Table 2. These results are consistent with the researcher's hypothesis, students with higher grade point averages statistically scored higher on the spelling and grammar tests than those students who have lower grade point averages.

#### *Hypothesis (b)*

In the next hypothesis, the researcher stated that the high volume of text messaging that some college students send and receive daily will positively correlate with increased sociability and, in turn, negatively correlate with their ability to spell correctly and use proper grammar. A MANOVA was performed on the sociability or extraversion

rating of the college students using spelling and grammar as the dependent variables. The researcher divided the high versus low groups of sociability using a median split as discussed previously in the experimental design (Level 2Low = lowest – 3.374, Level 1 High = 3.375 – highest). The factors included the high and low groups of the student participants' sociability or extraversion rating on a five point likert scale; one point corresponds as a low score and five points corresponds with a high extraversion rating. Data cell *ns* were mostly equal across groups. Preliminary data screening indicated no violations of the assumption of multivariate normality for neither dependent variables. In addition, there were no violations of the assumption of linearity of association between the outcome variables. The Box M test did not indicate a significant violation of the assumption of homogeneity of variance and covariance matrices across conditions,  $F(3, 2925959) = .96, p > .05$ .

For the overall MANOVA, none of the three multivariate tests were statistically significant. For the students' sociability, Wilk's Lambda = .99, approximate  $F(2, 126) = .47, p > .05, \eta^2 = .007$ . Univariate means and *F* ratios for the differences in test scores can be seen in Table 3. Statistics indicated no correlation between extraversion rating and performance on the spelling and grammar tests ( $r(129) = .09, p > .05$ , two-tailed), and that those who rated themselves higher on the extraversion rating scale reported a wide distribution of total text messages sent and received daily (Figure 7). There were no significant interactions for the outcome variables between groups. Since there were no statistically significant differences between groups, the researcher rejected the second

hypothesis that there is no interaction or difference between the factor levels, a college students' sociability or extraversion rating, and his/her ability to spell correctly and use proper grammar.

*Hypothesis (c)*

The last hypothesis the researcher examined was that college students who participate in text messaging more often will have poorer spelling and grammar ability due to the increase in using the SMS lexicon as opposed to proper English formatting. A MANOVA was performed on the text messaging usage or frequency by college students using spelling and grammar as the dependent variables. The researcher divided the high versus low groups of text messaging frequency using a median split as discussed previously in the experimental design (Level 1 Low = lowest – 60, Level 2 High = 61 – highest). The factors included the high and low groups of the student participants' frequency of text messaging or total text messages reported overall in a twenty-four hour period. Data cell *ns* were mostly equal across groups. Preliminary data screening indicated no violations of the assumption of multivariate normality for neither dependent variables. In addition, there were no violations of the assumption of linearity of association between the outcome variables. The Box M test did not indicate a significant violation of the assumption of homogeneity of variance and covariance matrices across conditions,  $F(3, 2925959) = .12, p > .05$ .

For the overall MANOVA, all three multivariate tests were not statistically significant. For the students' texting frequency, Wilk's Lambda = .99, approximate  $F(2,$

126) = .80,  $p > .05$ ,  $\eta^2 = .004$ . Univariate means and  $F$  ratios for the differences in test scores can be seen in Table 4. There were no significant interactions for the outcome variables between groups. Since there were no statistically significant differences between groups, the researcher assumed to retain the null hypothesis that there is no significant interaction or difference between the factor levels, the amount that a college student participates in text messaging and uses SMS lexicon, and his/her ability to spell correctly and use proper grammar. In addition, statistical analysis revealed a negative relationship ( $r(129) = -.21$ ,  $p > .05$ , two-tailed) between high grade point averages and text messaging or SMS frequency of the college student participants (Figure 6).

## DISCUSSION

The purpose of the current study was to examine the effect of high and low usage of text messaging and using SMS lexicon on college students' ability to spell correctly and use proper grammar. Prior research has looked at adolescents' ability to write formally and informally (Rosen et al., 2010) with the influence of having participated in short messaging conversations for the purpose of social communication (Orleans & Machinery, 2002). Little research has examined the effects that using SMS lexicon while texting has had on a person's ability to spell correctly and use proper grammar (Rankin, 2010; Kemp & Bushnell, 2011; Powell & Dixon, 2011), especially not for the late teen and early adult generation noted as being the most active in SMS usage (Ling, 2010; Quan-Haase, 2007; Orleans & Machinery, 2002). This study was designed in response to the noticeable usage of SMS lexicon appearing in college level academic work, including incorrect spellings of transition words and improper use of punctuation in constructive writing. This study also took into consideration the influence that a student's academic ability level and sociability rating has on how well they perform in spelling and grammar and how often they communicate using text messaging.

Three hypotheses were developed in order to examine the effects of 129 college students' high and low usage of texting and SMS lexicon on their spelling and grammar abilities, rated by their scores on high school level chapter tests; accounting for extraneous variables, such as current grade point averages and sociability ratings. First, higher grade point averages for college students will positively correlate with the ability



to spell and use grammar correctly and negatively correlate with high volumes of text messaging. The importance of spelling correctly and using proper grammar exists in everyday society (Briggs, 2009). And, according to prior research data, how competent one is in literacy is a good indicator of how well he/she will succeed in secondary school and beyond (eSpindle Learning, 2005), which can be displayed by his/her current academic performance. The data analysis conducted between grade point averages and spelling and grammar abilities supported the first hypothesis; college students who were considered in the higher grade point average bracket consistently scored higher than those in the lower grade point average group on the spelling and grammar measures that were administered. These results parallel literature that has been reviewed by indicating a positive correlation between college students' grade point averages and their ability to spell correctly and use proper grammar.

The second hypothesis stated that the high volume of text messaging that some college students send and receive daily will positively correlate with increased sociability and in turn, negatively correlate with their inability to spell correctly and use proper grammar. Sociability, as measured by Big John's Extraversion likert Rating Scale (John, Naumann, & Soto, 2008), may be an unrelated factor to incorrect spelling and poor grammar, but is linked to this study through the relationship of being social and the frequency of using SMS. More socially isolated adolescents are less involved with socially interactive technologies, like text messaging and SMS usage (Alison-Bryant, Sander-Jackson, & Smallwood, 2006). A college student's measure of their own interest

in being social, or extraversion, might have been comparable to how often they participated in text messaging. However, the data analysis conducted between extraversion ratings and spelling and grammar scores resulted in no significant interaction. Even after further analysis of the estimated marginal means of both spelling and grammar scores, only spelling scores were consistent with the proposed hypothesis; those who reported a higher extraversion rating scored lower on the spelling test. These small interactions between variables could not be taken under consideration because of the lack of significance in the initial analysis. The researcher rejected the theory that sociability negatively correlates with college students' ability to spell correctly and use proper grammar.

The last hypothesis developed, connecting the first two hypotheses to the overall theory, states that college students who participate in text messaging more often will have poorer spelling and grammar abilities due to the increase in using the SMS lexicon as opposed to proper English formatting. Data analysis has revealed that, for the current study, college students with higher grade point averages scored higher on the spelling and grammar tests. In contrast, the interest that the college student participants have in being social, or their extraversion rating, has no correlation with how well they performed on the spelling and grammar tests. Some linguists are concerned that the practice of using SMS while text messaging will result in poor habits among American youths (Hauck, 2003) although the effects have not been seen specifically in national and state basic skills tests (Woo, 1997). Furthermore, prior research and data has shown that college

students do use SMS lexicon shortcuts in their casual and academic writing, and that these students have admitted to it affecting their writing performance in school (Rankin, 2010). Data analysis conducted in this study between high and low usage of text messaging and SMS lexicon and spelling and grammar scores resulted in no significant interaction. Further analysis of the estimated marginal means of both spelling and grammar scores revealed a slight difference in means of scores for both spelling and grammar scores. However, only the spelling scores were consistent with the proposed hypothesis; participants who reported a lower usage of text messaging frequency scored higher on the spelling test. The small difference in the means between the high and low groups of text messaging and SMS usage could not be taken into consideration because of the lack of a significant difference in the initial data analysis. In conclusion, the researcher assumed that college students who participate in text messaging more often will have no change in spelling and grammar abilities compared to those who do not participate in text messaging with such high regularity.

### *Limitations*

In using the chosen experimental design and methodology described above, the current study contains certain limitations. First, the cell *ns* were relatively equal across groups ( $N_1 = 65$ ,  $N_2 = 64$ ), the total number of participants overall ( $N = 129$ ) could be increased thereby increasing the within-cell *n* leading to appropriate degrees of freedom. An increase in within-cell *ns* would also increase the robustness of the univariate *F* tests in this study. Second, the quantitative dependent variables that were chosen for this study

were expected to show naturally occurring differences among groups. The researcher might have used more than one method of measurement for both spelling and grammar, or what is known as multiple operationalizations of a construct (e.g. previous academic works by the students, observations, and other past data accumulated over an extended period of time), to help strengthen the reliability of this study. Since only one report method (i.e. standardized tests conducted online) was used to collect data on whether the student had sufficient spelling and grammar skills, the confidence of those scores reflecting the student's true ability is not as high as it would be using multiple constructs. A test-retest assessment of the dependent variables could be conducted to improve the reliability of this study. Third, because the researcher used an online format for conducting the measures included in this study, the potential for the student participant to "fake" his/her answers and the expectancy of a true response is decreased, which reduces the validity of this study.

Fourth, when conducting a MANOVA, there are some problems in presenting univariate follow-up analyses, as opposed to multivariate follow-up analyses. For instance, running multiple significance tests for univariate follow-ups may result in an inflated risk of Type I error. Likewise, these univariate analyses do not take intercorrelations among the individual dependent variables into account. This type of error may be visible in noting that high spelling and grammar scores were positively correlated and, almost redundantly, high grade point averages were positively correlated with high spelling and grammar scores. However, the correlation between spelling and

grammar scores was not so high as to assume they were the same measure. Also, sometimes a clearer understanding of the reason for differences between groups on an individual outcome variable is gained when there is control for the other outcome variables, or in this case one variable. The results of any univariate follow-up analyses reported for a MANOVA need to be considered in relation to the multivariate outcomes (Warner, 2008).

Lastly, the disproportionate number of female participants compared to male participants may have skewed the data results. Prior researchers have discussed that males are more likely to perform at a higher level in the area of spelling as compared to females (Feingold, 1992). Also, previous literature research stated that females are more active in using text messaging than males and have reported using SMS lexicon more than males (Varnhagen et al., 2009). Although statistics did not reveal any significance between genders, results may have varied if the two groups, males and females, were more proportionate.

#### *Practical Significance and Future Research*

The current research indicated that for a particular sample of students, participation in using SMS lexicon and a high rate of text messaging has little to no effect on spelling correctly and using proper grammar. Future research is necessary to validate the results of the current study and to increase the information on the relationship between using SMS lexicon in text messages and correct spelling and grammar usage. Because some differences consistent with the current study's hypotheses were seen

between all three independent variables (GPA, sociability, and text messaging usage) and spelling scores, a more in depth analysis between text messaging and SMS usage and spelling abilities, while using more constructs, should be conducted. Furthermore, sociability levels and its relation to text messaging as the main form of communication desired for early adults should be assessed further to understand the interests of being social and whether that person prefers to text, email, or communicate verbally.

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## TABLES

**Table 1***Descriptive Statistics of Overall Spelling and Grammar Scores*

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Test	N	M	SD
Spelling	129	85.81	14.10
Grammar	129	61.83	22.60

---

**Table 2**

*Significant Univariate Differences in Test Scores Across Levels of the GPA Factor:  
Means and Univariate F Ratios for Spelling and Grammar Scores*

	Low GPA (0 – 3.49)	High GPA (3.50 – 4.00)	$F^a$	$p$	Partial $\eta^2$
Spelling	82.39	89.17	7.87	.01	.06
Grammar	56.63	66.95	7.06	.01	.05

a. Each  $F$  ratio in this table had (1, 127)  $df$ . The  $p$  values have not been adjusted for inflated risk of Type I error. Only outcome variables that had a significant univariate main effect for GPA at the  $\alpha = .05$  level are included in this table.

**Table 3**

*Univariate Differences in Test Scores Across Levels of the Sociability/ Extraversion(E)  
Factor: Means and Univariate F Ratios for Spelling and Grammar Scores*

	Low E	High E	$F^a$	$p$	Partial $\eta^2$
Spelling	86.66	84.97	7.87	.01	.06
Grammar	61.34	62.31	7.06	.01	.05

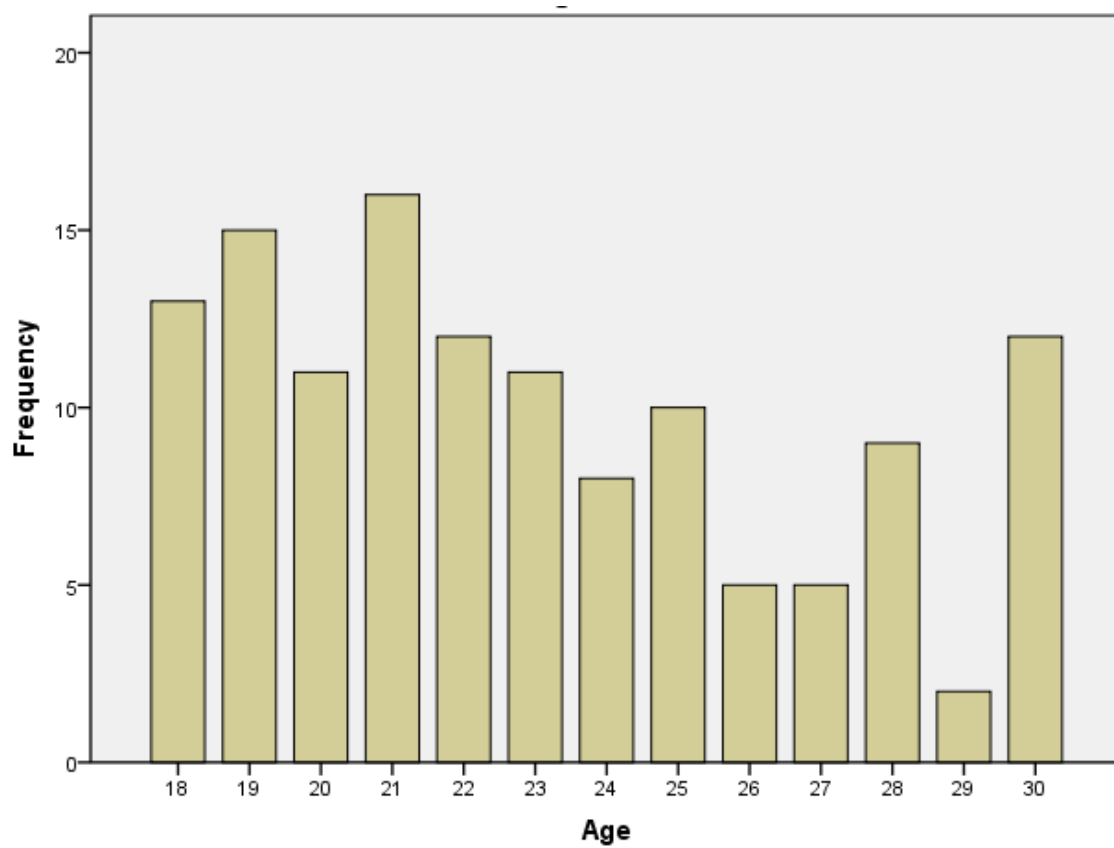


**Table 4**  
*Univariate Differences in Test Scores Across Levels of the Text Messaging Frequency*  
*Factor: Means and Univariate F Ratios for Spelling and Grammar Scores*

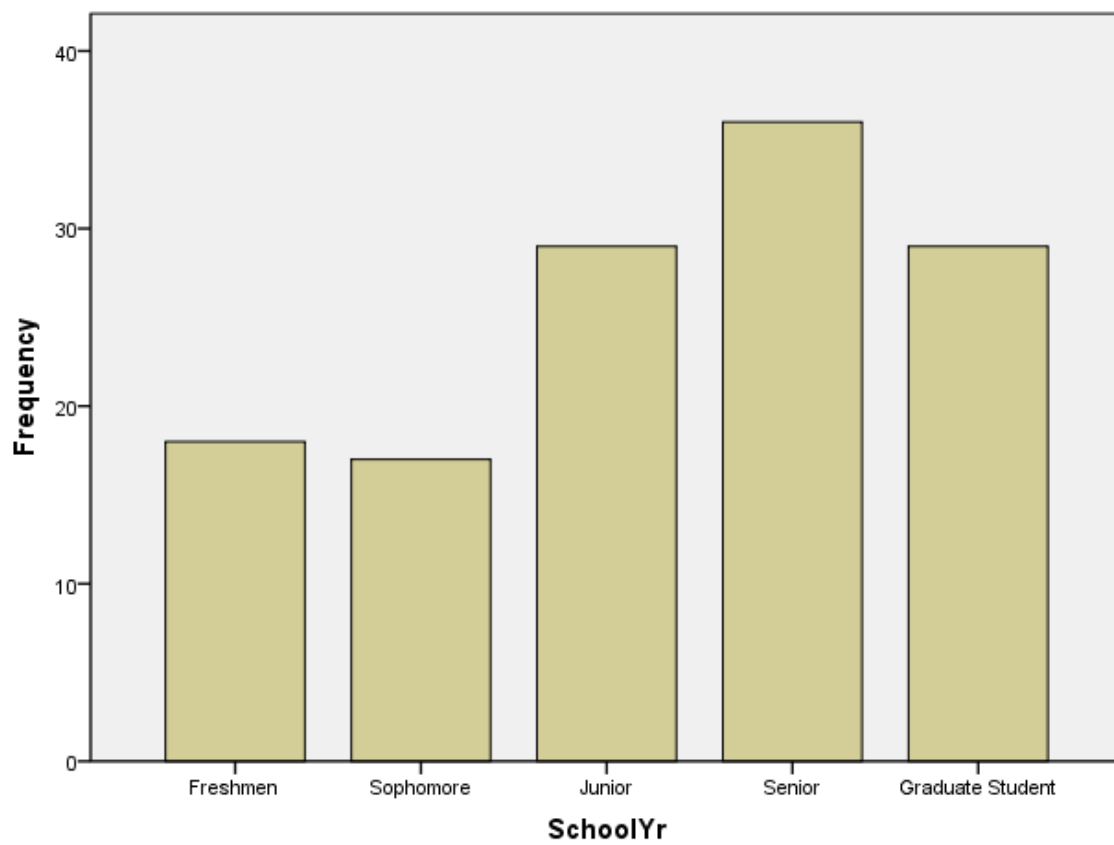
	Low Texts	High Texts	$F^a$	$p$	Partial $\eta^2$
Spelling	86.31	85.31	.16	.69	.001
Grammar	61.33	62.32	.06	.80	.000

## FIGURES

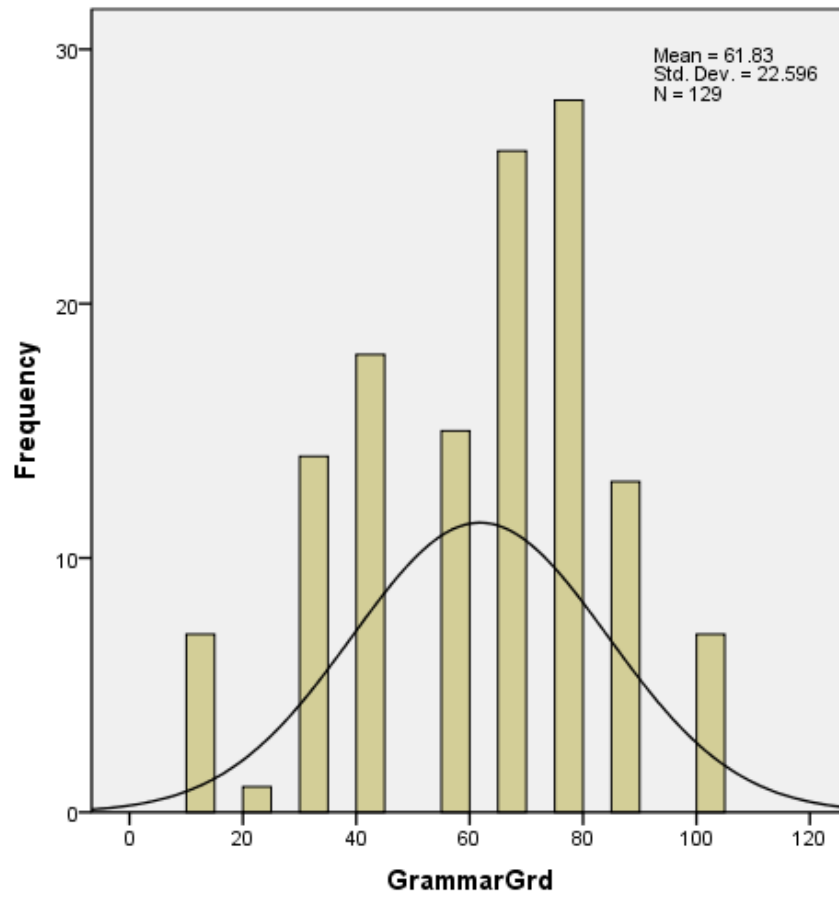
**Figure 1**  
*Age Distribution*



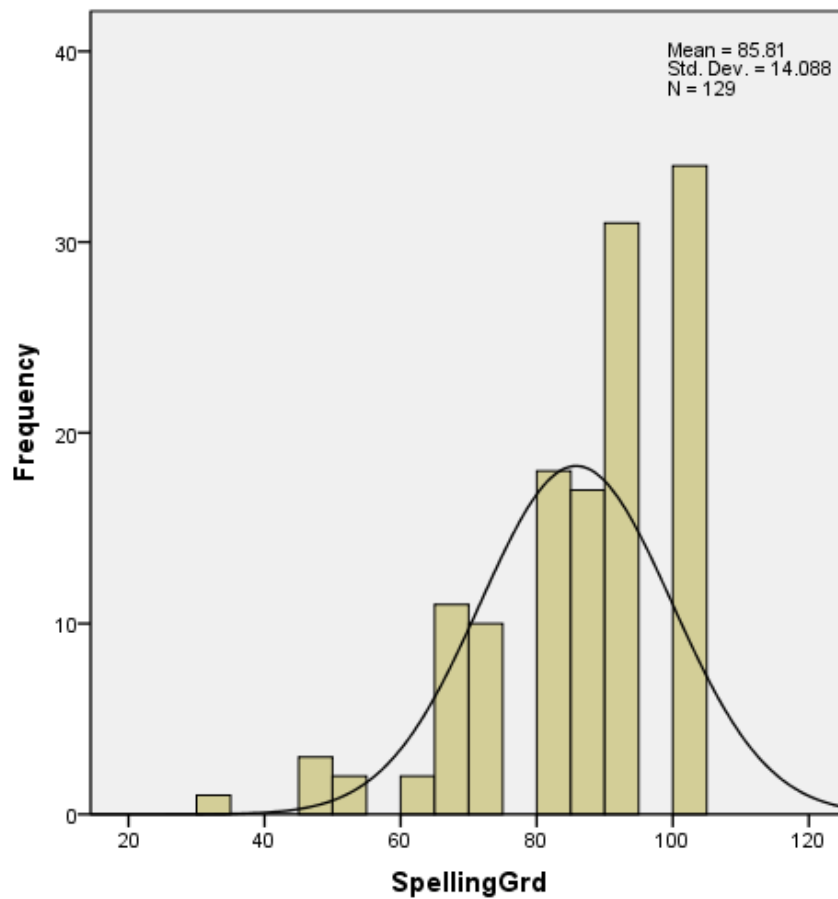
**Figure 2**  
*Student Classification*



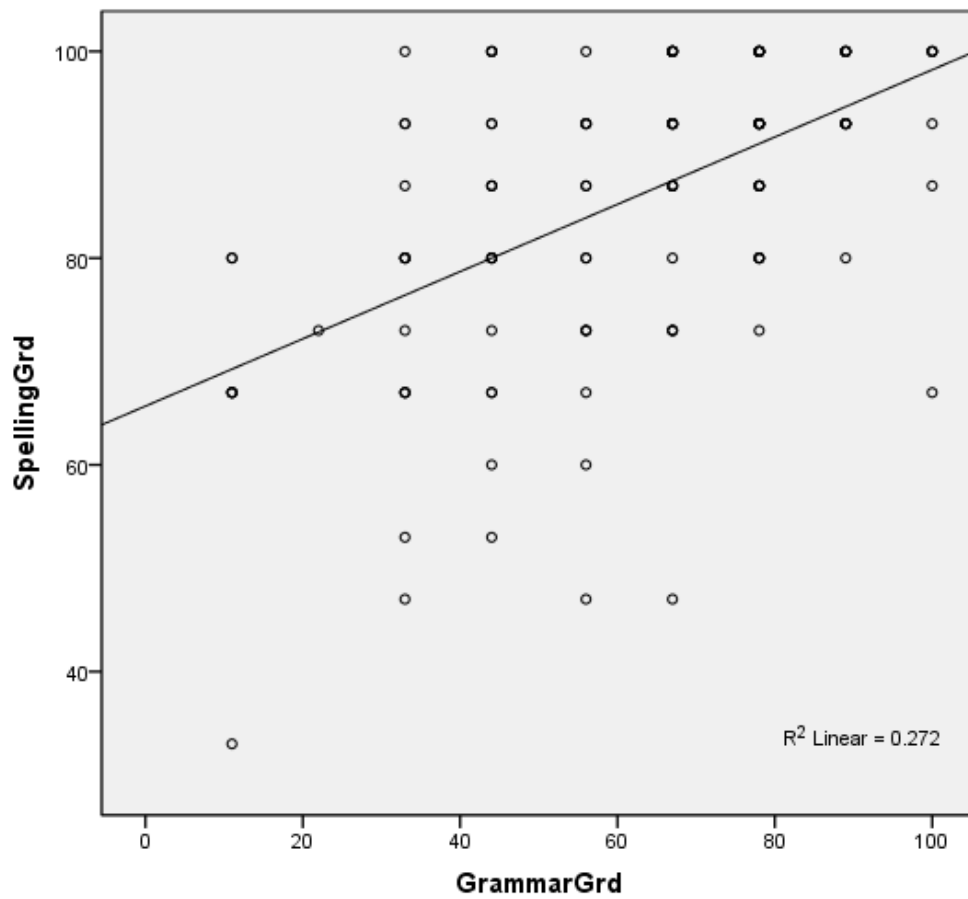
**Figure 3**  
*Frequency Distribution of Grammar Grades*



**Figure 4**  
*Frequency Distribution of Spelling Grades*

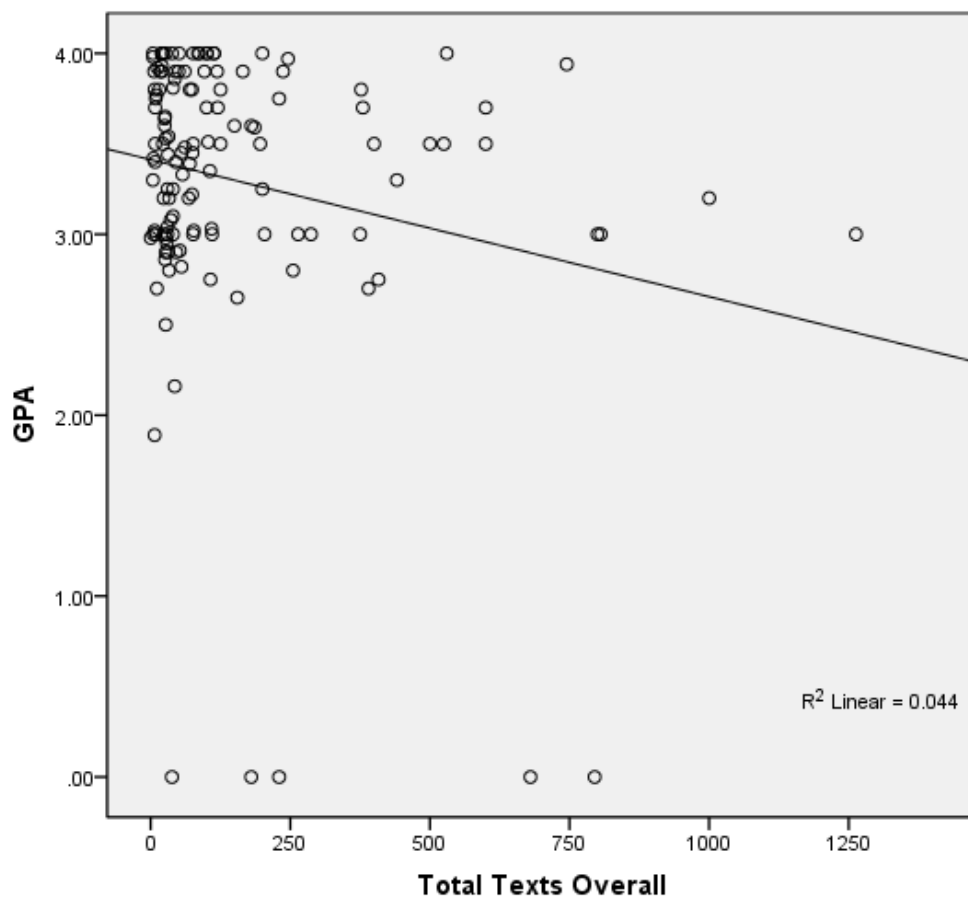


**Figure 5**  
*Correlation between Spelling and Grammar Grades*

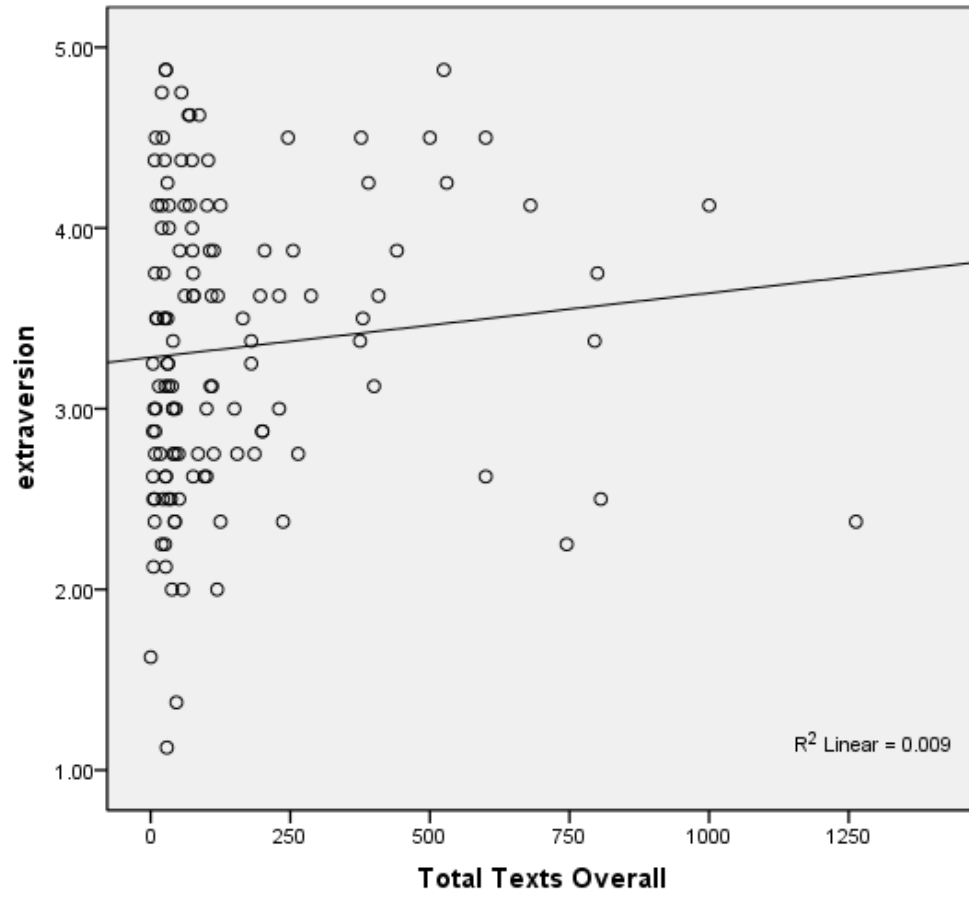


**Figure 6**

*Correlation between Grade Point Averages and Text Messaging Frequency*



**Figure 7**  
*Correlation between Sociability and Text Messaging Frequency*





APPENDIX A  
Informed Consent Form

## **CONSENT TO PARTICIPATE IN RESEARCH**

*Department of Psychology, Fort Hays State University*

***Study title: Understanding How College Students' Literacy is affected by Texting SMS Lexicon***

*Name of Researcher* **Katherine Herrman**

*Contact Information* **klrausch10@gmail.com (785) 639-1876**

*Name of Faculty Supervisor & Contact Information, if student research* **John Raacke, jdraack@fhsu.edu**

**You are being asked to participate in a research study. Before you give your permission, it is important that you read the following information and ask as many questions as necessary to be sure you understand what you will be asked to do. It is your choice whether or not you will participate.**

Your decision whether or not to participate will have no effect on benefits, grades, or academic standing or services to which you are otherwise entitled. Please ask questions if there is anything you do not understand

### **What is the purpose of this study ?**

The purpose of this experiment is to analyze the effects of high versus low usage of short messaging system lexicon in text messaging on college students' abilities to spell and use grammar correctly.

### **What does this study involve ?**

The purpose of this study is to survey the amount of text messages you send and receive in a day and how that might affect your ability to spell correctly or use proper grammar. Also, this study will survey demographic information like gender, age, and other information such as your GPA. The third purpose of this study is to survey your skills in spelling and grammar. You were emailed the recruiting script. If you are interested in possibly participating, you will be given the chance to follow the link and see the informed consent. You will be given a chance to ask any questions, and sign the consent electronically if you wish to participate. Then you will be given the surveys (described below). The surveys will be administered at one time, with no identification necessary (all surveys will be attached to the email). When finished with surveys, you will see a debriefing sheet and if you have any questions please contact any of numbers or emails provided. There are four different surveys that will be administered: a high school spelling and grammar chapter test, a text-messaging questionnaire, a demographic

questionnaire, and a personality inventory. You should be capable of taking the surveys without assistance, however, directions are provided for each survey.

**If you decide to participate in this research study, you will be asked to sign this consent form after you have had all your questions answered and understand what will happen to you. The length of time of your participation in this study is approximately 20 minutes. Approximately 125 participants will be in this study. None of the questionnaires used in this study are experimental in nature. The only experimental aspect of this study is the gathering of information for analysis.**

**Are there any benefits from participating in this study ?**

There may be no benefits to you should you decide to participate in this study. Your participation will help us learn more about how literacy may be better understood while still participating in the “new language” of text messaging. Your participation will also help us learn more about how text messaging SMS affects college students’ spelling and grammar abilities.

**Will you be paid or receive anything to participate in this study ?**

You will not receive any compensation if the results of this research are used towards the development of a commercially available product.

**What are the risks involved with being enrolled in this study ?**

It is unlikely that participation in this project will result in harm to participants. If you feel distressed or become upset by participating in this study, access help from the Kelly Center (information will be given to you in the debriefing).

**How will your privacy be protected?**

Data is collected only for research purposes. Your data will not be identified. All personal identifying information will be kept in locked files and these files will be deleted after five years. The investigator will destroy all data at the end of the project.

The information collected for this study will be used only for the purposes of conducting this study. What we find from this study may be presented at meetings or published in papers but your name will not ever be used in these presentations or papers.

**Other important items you should know:**

- **Withdrawal from the study:** You may choose to stop your participation in this study at any time. Your decision to stop your participation will have no effect on your academic standing or grades.
- **Funding:** There is no outside funding for this research project.

**Whom should you call with questions about this study ?**

Questions about this study may be directed to the researcher in charge of this study:

**Katherine Herrman at 785.639.1876**

**Dr. John Raacke at [jdraacke@fhsu.edu](mailto:jdraacke@fhsu.edu)**

If you have questions, concerns, or suggestions about human research at FHSU, you may call the Office of Scholarship and Sponsored Projects at FHSU (785) 628-4349 during normal business hours.

**CONSENT**

I have read the above information *about Understanding How College Students' Literacy is affected by Texting SMS Lexicon* and have been given an opportunity to ask questions. By signing this I agree to participate in this study and I have been given a copy of this signed consent document for my own records. I understand that I can change my mind and withdraw my consent at any time. By signing this consent form I understand that I am not giving up any legal rights. I am 18 years or older.

Electronic signature required.

By selecting yes, you are certifying that you are willing to participate in this study. You certify that this electronic signature is intended to be the binding equivalent of a traditional handwritten signature.

APPENDIX B  
Debriefing Statement

## Understanding How College Students' Literacy is affected by Texting SMS Lexicon

The purpose of this experiment is to analyze the effects of high versus low usage of short messaging system lexicon in text messaging on college students' abilities to spell and use grammar correctly. I would like to test if college students' language mechanic skills are affected by how often he/she types and sends text messages.

If after answering any of my questions you are feeling unsure or scared please feel free to contact any one from the list below. They can offer you professional support and counseling if needed.

Kelly Center  
Fort Hays State University  
600 Park Street  
Hays, KS 67601  
Phone: (785) 628-4401

If you have any questions about this study or your rights as a participant in this study, please contact:

Dr. John Raacke  
Assistant Professor  
jdraacke@fhsu.edu  
Martin Allen Hall 214  
(785) 628-5896

Dr. Janett Naylor  
Department Ethics Chair  
Assistant Professor  
jmnaylor@fhsu.edu  
Martin Allen Hall 216  
(785) 628-5857

APPENDIX C  
Recruiting Script

Hello. My name is Katie Herrman. I am a graduate student in the School Psychology department and I would like to ask you to participate in my study by completing online surveys on whether or not you participate in text messaging and how often, as well as, a spelling and grammar test. You will also be asked to fill out a personality inventory to compare what type of personality you have with how often you participate in text messaging. You are not required to do this and, if you decide to, you may stop at any time. You will not receive any benefits from participating (except extra credit if your instructor offers it), but you will be helping me by increasing my knowledge about this topic. I have a consent form that gives you details. Please proceed by clicking on the following link if you are interested in participating. Thank you!



APPENDIX D

Demographic Questionnaire

Directions: Please answer the questions below with the appropriate response.

Age: \_\_\_\_\_

Gender:        M        F

Ethnic and Racial background:

- African-American, Black
- Asian
- Hispanic or Latino
- White Caucasian-Non Hispanic
- Decline to answer
- Other \_\_\_\_\_

Are you a native English speaker?            Yes    No

What year are you in school?

- Freshmen
- Sophomore
- Junior
- Senior
- Graduate student
- Other \_\_\_\_\_

What is your current GPA? \_\_\_\_\_

APPENDIX E

Text Messaging Questionnaire

Answer the following questions if you **HAVE** used text messaging

Directions: Please answer each question below with an appropriate response.

1. What type of cell phone do you have?
  - Flip phone
  - Handheld/Touchscreen
  - Keyboard
  
2. What provider is your cell phone through?
  - Verizon
  - AT&T
  - Sprint and Nextel
  - T-Mobile
  - Nextech Wireless
  - A tracking phone (e.g. pay as you go) and I do not know the provider
  
3. Do you have a texting plan?
  - Yes
  - No
  
4. What is your texting plan?
  - Unlimited
  - Pay fixed amount per text
  - Pay a set amount for a specific number of texts (i.e. \$10 for 100 texts)
    - \*If so, how many texts do you get per month with your plan? \_\_\_\_\_
  
5. Does your cell phone have predictive texting (e.g., T9 word, ABC, Swype)?
  - Yes
  - No (Skip to question #7)

6. If so, how often do you use predictive texting?

Never      1      2      3      4      5      6      7      Always

7. Pull out your cell phone. Count the number of incoming text messages that you have received in the past 24 hours.

How many incoming text messages did you count in the past 24 hours? \_\_\_\_\_

\*If you have erased any messages within the past 24 hours that are not on your cell phone now, approximately how many have you erased? \_\_\_\_\_

8. Now, count the number of outgoing text messages that you have sent in the past 24 hours.

How many outgoing text messages did you count in the past 24 hours? \_\_\_\_\_

\*If you have erased any messages within the past 24 hours that are not on your cell phone now, approximately how many have you erased? \_\_\_\_\_

9. Do you text using SMS (Short Messaging System) lingo while texting, such as LOL or C U L&r?

Yes

No

APPENDIX F

Spelling Test

## Spelling

**Directions:** Underline the misspelled word in each of the following groups. Then, on the line provided, write the word correctly.

**Example 1.** amplifying, trampled, decieve \_\_\_\_\_ *deceive*

1. videos, mispeak, stealthily \_\_\_\_\_

2. silliness, admireable, unwieldy \_\_\_\_\_

3. turkies, has-beens, counterfeit \_\_\_\_\_

4. preview, illogical, usualy \_\_\_\_\_

5. sorely, procede, occurred \_\_\_\_\_

6. shareing, accede, regrettable \_\_\_\_\_

7. steadily, acquital, happiness \_\_\_\_\_

8. embodiment, imaterial, ninth \_\_\_\_\_

9. paid, whining, dissapprove \_\_\_\_\_

10. erasable, disobeyed, referrence \_\_\_\_\_

11. unecessary, frugally, redeemed \_\_\_\_\_

12. fortunate, layzyly, mischief \_\_\_\_\_

13. repaired, lying, frenzied \_\_\_\_\_

14. receipt, theif, either \_\_\_\_\_

15. supplied, favored, arguement \_\_\_\_\_

APPENDIX G

Grammar Test



## Writing Workshop: Revising and Proofreading

**Directions:** The following essay has errors in grammar and spelling. Please proofread the essay, cross out the errors, and insert your corrections.

### Mrs. McCarthy's Magic

When I first walked into Mrs. McCarthy's third-grade class my knees rattled. It was my first day in public school, I was nervous. Mrs. McCarthy turned out to be a special teacher.

Mrs. McCarthy participated in service projects all over town and always shared stories about her experiences one day she told us that there were people downtown who did not have enough to eat. "I know that this is a true thing", she said, "because every weekend I work at a soup kitchen downtown." My classmates and I sat on the edges of our seats. As she described the soup kitchen, I imagined her behind a counter smiling at the people who came by.

The morning after I filled my shoe box, I felt warm inside as I placed it on Mrs. McCarthy's desk. I had learned the joy of giving because Mrs. McCarthy now how to teach me to give.

APPENDIX H

The Big Five Inventory

## How I am in general

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who *likes to spend time with others*? Please write a number next to each statement to indicate the extent to which **you agree or disagree with that statement.**

1	2	3	4	5
Disagree Strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree Strongly

### I am someone who...

1. \_\_\_\_\_ Is talkative
2. \_\_\_\_\_ Tends to find fault with others
3. \_\_\_\_\_ Does a thorough job
4. \_\_\_\_\_ Is depressed, blue
5. \_\_\_\_\_ Is original, comes up with new ideas
6. \_\_\_\_\_ Is reserved
7. \_\_\_\_\_ Is helpful and unselfish with others
8. \_\_\_\_\_ Can be somewhat careless
9. \_\_\_\_\_ Is relaxed, handles stress well.
10. \_\_\_\_\_ Is curious about many different things
11. \_\_\_\_\_ Is full of energy
12. \_\_\_\_\_ Starts quarrels with others
13. \_\_\_\_\_ Is a reliable worker
14. \_\_\_\_\_ Can be tense
15. \_\_\_\_\_ Is ingenious, a deep thinker
16. \_\_\_\_\_ Generates a lot of enthusiasm
17. \_\_\_\_\_ Has a forgiving nature
18. \_\_\_\_\_ Tends to be disorganized
19. \_\_\_\_\_ Worries a lot
20. \_\_\_\_\_ Has an active imagination
21. \_\_\_\_\_ Tends to be quiet
22. \_\_\_\_\_ Is generally trusting
23. \_\_\_\_\_ Tends to be lazy
24. \_\_\_\_\_ Is emotionally stable, not easily upset
25. \_\_\_\_\_ Is inventive
26. \_\_\_\_\_ Has an assertive personality
27. \_\_\_\_\_ Can be cold and aloof
28. \_\_\_\_\_ Perseveres until the task is finished
29. \_\_\_\_\_ Can be moody
30. \_\_\_\_\_ Values artistic, aesthetic experiences
31. \_\_\_\_\_ Is sometimes shy, inhibited

32. \_\_\_\_\_ Is considerate and kind to almost everyone
33. \_\_\_\_\_ Does things efficiently
34. \_\_\_\_\_ Remains calm in tense situations
35. \_\_\_\_\_ Prefers work that is routine
36. \_\_\_\_\_ Is outgoing, sociable
37. \_\_\_\_\_ Is sometimes rude to others
38. \_\_\_\_\_ Makes plans and follows through with them
39. \_\_\_\_\_ Gets nervous easily
40. \_\_\_\_\_ Likes to reflect, play with ideas
41. \_\_\_\_\_ Has few artistic interests
42. \_\_\_\_\_ Likes to cooperate with others
43. \_\_\_\_\_ Is easily distracted
44. \_\_\_\_\_ Is sophisticated in art, music, or literature

