ENGLISH LANGUAGE BUTCHERED: A STUDY OF THE CORRELATIONAL
RELATIONSHIP BETWEEN TEXT MESSAGING FREQUENCY AND THE
INSTANCE OF JARGON IN FORMAL WRITING

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A typical Guyanese Creole proverb states that "Han' wash han' mek han' cum clean." When translated this means that if we wash each others' hands then our hands will be clean also (if you help others you will be helped also). So, I wish you all clean hands.

Abstract

The rapidly evolving text messaging phenomenon among teenagers and young adults is noteworthy. This study was designed to investigate the relationship between text messaging frequency and use of text messaging jargon in formal writing. The sample consisted of 152 Year 11-13 secondary school students (68 males and 84 females) ranging from ages 14 to 18. The participants were taken from three Secondary Schools and Colleges in the greater Wellington area.

This study used a non-experimental quantitative design; specifically, a correlational research design. A ten- item questionnaire was used to assess general text messaging behaviours and text messaging frequency. The participants' formal writing pieces were also assessed and text messaging jargon forms such as alternative phonetic spelling, vowel deletion and alphanumerisms were identified. The participants' language ability (represented by their NCEA scores for the previous year) was also assessed. The results revealed that the participants sent an average of 95 text messages per day with girls averaging about 126 messages per day while the boys averaged 64 messages per day. Overall, the research revealed that there was a weak negative correlational relationship (-0.01; p=.986) between frequency of text messaging and instance of text jargon in formal writing. Therefore, the principal conclusion of the study was that the two variables, frequency of text messaging and instance of jargon in formal writing were not statistically related.

CHAPTER ONE

Introduction

textin is messin,

mi headn' me English,

try2rite essays

they all come out txtis

gran not plsed w/ letters she getn,

swear i wrote better

b4 comin2uni

& she's african

      This poem written by a teenager, Hetty Hughes (cited in Crystal, 2008) was among the winners of a writing contest held in New York. Although it gets its point across, it is littered with alternative phonetic spelling and alphanumerisms, pays little or no attention to conventional punctuation and is fraught with initialisms. It represents the language patterns of text messaging, the main mode of communication of most teenagers in the developed world (Lenhart, 2010). It is written in what is referred to as textese, textism, text language or text messaging jargon.

      Text messaging, also known as texting, is basically a short message sent or received using a mobile phone or the internet (Braun, 2007). According to Grinter and Eldridge (2003) "text messaging is using a mobile phone to send a message" (p.2). In fact, the words texting and text messaging have become part of common lexicon and are the general terms used to refer to sending short messages from mobile phones. Grinter and Eldridge indicate that "text messaging utilises SMS (short message service) capability built into the Groupe Spéciale Mobile (GSM) wireless standard" (p.1). Therefore, a text message can be sent from any mobile phone to any other phone on the GSM wireless network irrespective of the sender's and receiver's service providers.

1.1 Texting Teens: A Worldwide Phenomenon

There is no doubt that teenagers and young adults all over the world are at the forefront of the text messaging phenomenon (Koskinen, 2007; Ling & Pedersen, 2003). Text messaging behaviours show similar patterns all over the developed world as teenagers can be observed with their thumbs twiddling across the body of the mobile phone, their eyes fastened on the tiny screen and even in some cases expressing emotions such as joy, anger and frustration based on the nature of the message received. Mante and Piris (2002) highlight that in the Netherlands SMS is very popular among teens. Vershinskaya (2002) also reports that in Russia SMS use among teenagers is becoming increasingly popular and as such language patterns are changing. Ito (2005) also notes the proliferation of text messaging among Japanese teenagers. While Oksman and Ruatiainen (2002) report that in Finland, where the penetration of mobile phone is the highest in the world, there is extensive use of text messaging among teenagers. Unsurprisingly, Lenhart (2010) also reports that in the USA teenagers are utilising text messaging as their main mode of communication. Several other reports from all over Europe, Asia and North America indicate that teenagers the world over have an affinity for and an attachment to text messaging.

1.2. The Sociolinguistics of SMS Text Messaging

Text messaging is exceptionally influenced by social and cultural factors. In fact, Thurlow & Brown (2003) highlight that through text messaging "the so called 'net generation' is … reinventing conventional linguistic and communicative practices" (p.1). Further, Carrington (2004) postulates that "the introduction of short messaging service (SMS) has created the context for the emergence of new forms of language, new grammatical structures and a new communication medium" (p.216). Additionally, Oksman (2006) claims that "young people have acted as developers and pioneers of the SMS culture" (p. 9). Undoubtedly, text messaging has influenced conventional language structures in an immense way. This section presents the ways in which text messaging is changing conventional

language patterns by examining the linguistic features of text messaging. Each feature is described and examples are provided.

1.2.1 Text Messaging and Language Change.

Text messaging influences language use. An examination of the text messages sent by today's teens may seem like a foreign language to someone who is not au fait with it its unique and idiosyncratic language pattern that is oftentimes far removed from the normative language (Harris, 2010). However, it must be noted that text messaging language seems to have had an incidental development that emerged out of the inherent limitations of SMS. Since a text message should not contain more than 160 characters including spaces (Crystal, 2008: 10), teenagers and young adults have devised several acronyms and other lexical shortenings that are used to decrease the number of characters they use in a message (Grinter & Eldridge). Several of these acronyms have become part of teenagers' everyday speech and text messaging is often viewed as a hybrid between written and spoken language as new language patterns emerge in society. For example, teenagers often use the text messaging phrases WAM (which means wait a minute) and TTYL (talk to you later) in oral situations. For those unfamiliar with the lingo, these terms would seem strange and as if teenagers are speaking another language.

It is this constant practice of truncation, vowel deletion, alternative spellings, alphanumerisms using numeric graphemes and a plethora of other combinations that has raised the eyebrows of those who criticise text messaging. There is a fear that text messaging is butchering the core foundations of the English language (Thurlow, 2009). Actually, Thurlow (2007) cited in Johnson and Ensslin (2007) notes that "fears are growing that today's teenagers are becoming 'Generation Grunt', a section of society that has effectively lost the ability to talk and express itself" (p. 213).

Baron (2005), however, is not surprised by present text messaging culture and avers that historically, "adolescents have long been a source of linguistic and behavioural novelty" (p. 30). But, does the text messaging behaviour of youths spell the demise of the English Language as we know it? Further, does it affect

the skills and abilities required for formal writing? These questions are at the hub of the contentions among educators, linguists, socioculturalists and education purists. Several assumptions based on various views and schools of thought have been postulated, but there is limited empirical research on this topic (Crystal, 2008). This study hopes to shed more light on the issue.

1.2.2 The Linguistic Features of SMS Text Messaging.

　　　Hard af Segerstad (2005) cited in Harper, Palen and Taylor (2005) summarised the linguistic features of SMS. Her meta-analysis drew from the work of several researchers and several languages. Hard af Segerstad's research reveals that the features of SMS can be discussed under four broad categories: Spelling, Grammar, Punctuation, and Graphics (non alphabetic). These features are as follows:

1.2.2.1 Spelling

　　　Text messaging has a unique spelling pattern. This pattern is highly phonetic. Words are often spelled the way they sound and in some cases numeric graphemes (such as 2 for too and 8 for words ending with –ate or -eat) are employed forming a distinct type of alphanumerism (use of alphabetic and numeric symbols to form words). Hard af Segerstad posits that this type of spelling is mainly employed to save time and keystrokes. However, in some cases, the text messaging equivalent of the word contains the same amount or even more characters than the conventional word. This is particularly true for plurals which end with "s" that sound like "z" (girls). In some cases, texters prefer to enter girlz rather than girls even though they require the same amount of keystrokes to enter. This is an interesting pattern and reveals much about the freedom and creativity provided by text messaging.

　　　Some examples of textisms which employ phonetic spelling and alphanumerisms are as follows:

skool – school

nite - night

gr8 – great or cr8 - crate

2day – today

fone - phone

 Spelling in text messaging also involves lexical (word) shortenings by replacing longer words with shorter forms (Hard af Segerstad). Ling and Baron (2005) discovered three types of lexical shortenings related to text and instant messaging; acronyms / initialisms, abbreviations and contractions. With acronyms and initialisms, Hard af Segerstad claims, the first letters of the phrase or sentence is utilised. Sometimes, this phrase forms a new word and this word is often used in speech. In some cases, the acronym resembles a word in the language and as such changes the pragmatic meaning of that word. A typical example of this is the term TINT (till next time). Conventionally, tint connotes a pale shade. However, when a teenager uses this word to bid farewell to a friend, its meaning is entirely different. Further, entirely new words are introduced into the language. For example LOL (laugh out loud or lots of laughs) is commonly used in speech and has become a common oral response.

 Some typical examples of acronyms and initialisms employed by text messaging are:

LIMT – Laughing in my tummy

SMH – Scratching/Shaking my head

AYSOS – Are you stupid or something?

PW – Parent watching

ROTFL – rolling of the floor laughing

ILY – I love you

 Abbreviations are also employed in text messaging spelling. Abbreviations have existed for centuries, pre-date text messaging and are a part of conventional English. However, text messaging abbreviations are quite different from conventional abbreviations both in structure and derivation. With conventional abbreviation, there are specific laws that govern how words are abbreviated (by initialism- WHO, by first and last letter – Dr. or by first syllable – Tues.). And terms or words are generally abbreviated using lowercase letters

(except for proper nouns where the first letter of the abbreviation is capitalised – Gen: Genesis). Although text messaging abbreviations, like conventional abbreviations, contain some amount of initialism and in some cases uses the first syllable, a major difference is that text abbreviations pay little or no attention to case and punctuation. Some abbreviations also employ numeric symbols that resemble alphabetic symbols (3 for e, 1 for i or l, 6 for b) and other graphical symbols such as the asterisk and the ampersand.

Some examples of text messaging abbreviations are:

LIK – liquor   1ce – once

633F – beef   B1t   - bit

MOZ – mosquito   B& - Banned, band

Text messaging spelling also involves vowel deletion and as such consonants are mainly utilised in text messages. Medial vowels that do not change the phonology of the word are often deleted. Usually, if the phonology of the word will be changed by the deletion of the vowel, the vowel is maintained. Further, the silent e at the end of words is also deleted completely changing the spelling patterns of words. However, initial vowels are usually maintained. It is interesting to note that vowel sounds are often maintained (like y as in every) in text messaging orthography. Again, this is mainly done for character-saving (Ling & Baron, 2005). Some examples of text messaging spelling employing vowel deletion are as follows:

bd – bad   dn - done

gd – good   evry - every

1.2.2.2 Punctuation

Hard af Segerstad notes that text messages are generally void of punctuation as punctuation marks such as commas and end marks (period, question mark, exclamation point) are accounted for in the total number of characters used in the message. Therefore, in order to decrease the number of characters used, texters generally omit punctuation marks. In some cases spaces are also omitted. Capitalisation is also ignored in text messaging. Usually,

teenagers' text messages are written either entirely in uppercase or lowercase with little or no attention paid to proper nouns and adjectives. Therefore a typical text message may read "hirweon42niteitsokw84vick" (Hi, are we on for tonight? It's okay, wait for Vick). As it is, the message is 24 characters long. However, written the conventional way the message would have been 51 characters long. Inserting punctuation marks on some mobile devices is also quite burdensome and time consuming as punctuation marks are retrieved by cycling through the 1 key and continuously tapping until the desired mark is reached.

1.2.2.3 Grammar

Text messaging language seems to deviate from conventional Grammar in four main ways: by omitting the subject pronoun, by omitting verb or prepositional phrases, by reducing inflectional endings and by omitting articles (Hard af Segerstad). Hard af Segerstad notes that the subject pronoun is usually omitted in teenagers' text messages because the name of the person who sent the message usually appears on the screen and as such the subject and the subject pronoun are implied. Verb and or prepositional phrases, on the other hand, are omitted so as to save time and space. Therefore, several messages may read "m33t m3…library…3pm" (Meet me at the library at 3p.m.). Note that ellipses are used to replace the prepositional phrase.

Inflectional endings are usually reduced with text messaging. For example, plural noun forms with the inflected –s or –es are usually reduced as well as verb forms with inflected endings. This is also done to same time and to reduce the number of characters in a message.

1.2.2.4 Graphical Symbolism (Graphics)

Text messaging employs a variety of graphical symbolisms. According to Hard af Segerstad this is done in three main ways: through the use of emoticons, by using asterisks and by substituting graphical symbols for words.
The word emoticon is a portmanteau of emotion and icon and therefore an emoticon (or smiley) is an icon used to express emotion. Walther and D'addario

(2001) describe emoticons as "graphic representations of facial expressions" employed by several types of computer mediated communication (p.324). Emoticons employ punctuation marks, alphabetic symbols, brackets and numerical symbols that if tilted in the right direction, resemble common facial expressions for emotions. Teenagers are quite au fait with the compositions that make up the different emotions and constantly use these symbols in text messages (Provine, Spencer and Mandell, 2007). Some common emoticons and their meanings are shown below.

:-) or :) – smile or happy   :((- very unhappy or crying

:(- sad   : x – hug and kiss or in love

;-) – smile and wink   : p – stick out tongue

=)) – rolling on the floor laughing : d – wide, emphatic smile

:)) – laughing loudly   :-* - kiss

O :-) – angelic smile or angel   x (- infuriated

=d> - applause   =; - talk to the hand

This list is by no means exhausted as new emoticons are being developed daily.

Text messaging also employs the use of asterisks. However, this use is dissimilar to that of the conventional use of asterisks. With text messaging, asterisks are used mainly to emphasise certain words or phrases so that its meaning is non-ambiguous (Hard af Segerstad). However, using emoticons increases the number of characters in the message. For example, entering *hugs* or *never* adds two characters to the message.

Hard af Segerstad also notes that with teenagers' text messaging, graphical symbols are sometimes used in the place of words. This is mainly done to reduce the burden of entering the message, to save time and most of all to save space (decrease the number of characters used). Sometimes, Hard af Segerstad claims, these symbols are emoticons that represent a single word. For example, in the message "im so :-)" (I'm so happy) the emoticon :-) (happy) is used instead of the word happy. These sociolinguistic features are all changing the face of language and it seems as if text messaging is emerging as a language of its own.

1.3 Theoretical Framework: Text Messaging as Evolution of Language and Communication

It is difficult to ignore the influence text messaging has on communication and by ripple effect, language. The language of Hetty Hughes' poem reminds us that the English language as we know it is once again evolving. Historical Linguistics (the study of language change) shows that language has never been static, but dynamic and fluid throughout the centuries (Aitchison, 2001). One read of Beowulf or Chaucer or even Austen would show stark differences between "old" English and "modern" English. Because language has changed, modes of communication have also changed to the extent that it seems as if communication change and language change are abstract concurrent parallels of the needs continuum. Communication is a core need and as peoples' needs become more complex, so does communication and eventually language. It was perhaps the need to communicate that motivated the Phoenicians to develop and alphabet in 3500 BC, the Sumerians to develop cuneiform writing or the Egyptians to record their history in hieroglyphics. Interestingly, Woods and Woods (2006) bring to light the role that "gizmos and gadgets" and such devices play in the communication change process. They postulate that the "inventions created and improved over the centuries" also played a crucial role in the morphing of communication over the years (p.5). Whether by societal needs, the invention of new gadgets or by the nature of society itself, perhaps inadvertently, communication and language change is imminent. Communication change in the twenty first century reveals itself in the form of computer based communication (CMC) and internet and communication technologies (ICTs).

This study is therefore based on the theoretical framework that communication (via language) evolves or changes with and over time and generations. And therefore, the present text- messaging behaviours are a part of this change, this evolution.

Several proponents of theories about language evolution have unfurled over the centuries. One such proponent, perhaps the major proponent of the

twenty-first century, is Richard Croft. Croft (2004) developed the Communication Theory based on the analysis and synthesis of numerous theories of language and communication change dating as far back as Aristotle. The main thrust of Croft's theory is that communication is evolutionary in nature and this evolution is often rooted in the social framework of the society. Croft proposes that although the means and modes of communication have changed over the centuries, the communication process remains the same. Communication still involves a sender, a receiver and message that relates in some way or the other to them both.

1.4 Outline of Thesis

This paper has five chapters. Chapter One provides a somewhat detailed overview of text messaging including the sociolinguistics of text messaging and its linguistic features. Chapter Two, the Literature Review, provides a comprehensive examination of the current issues and perspectives of text messaging including issues such as why teenagers adopted text messaging and the use of text messaging as a tool in the classroom. Chapter Three, Methodology, reveals the methods employed by the researcher. Chapter Four, employing descriptive statistics, indicates the results of the research while Chapter Five provides a detailed discussion of the results along with limitations and future directions.

CHAPTER TWO

LITERATURE REVIEW

2.0: Overview

The phenomenon of texting among teenagers is one that is rapidly evolving. As such, there is limited empirical research on this topic. However, the debate as to whether text messaging influences formal writing skills and abilities centres on the basic question of whether texting enhances, interferes with, or has no relationship with formal writing skills. The agreement or disagreement emerges from various points of view (optimistic, pessimistic, pluralist and techno-realist) or discourse frameworks and is multifaceted in some cases. These views, according to Weerakkody (2008) represent the main discourses of technology and govern the perceptions of technology in society as they shape how technology is discussed in the society.

The optimistic view of text messaging, for instance, focuses mainly on the gains that can be had from engaging in text messaging. It stems from the view that all technological advancements and devices are positive and lead to progress. On the other hand, the pessimistic view frames its ideologies around the losses, costs and harms of mobile telephony. A key argument mobile technology pessimists (Beniger, 1986; Foucault, 1977) raise is that of the increase of power and control of the powers that exist. Foucault (1977) cited in Weerakkody (2008) likens the pessimistic view of new technologies to a system of surveillance whereby those at the centre of the activities control those on the periphery. This control then leads to abuse, misuse and oppression such as the cyberbullying present in today's society.

The pluralist view greatly challenges and even opposes the pessimistic view. The frame of reference of this view is that of use, that is, mobile telephony and text messaging within themselves are neutral. The positive, negative or neutral outcomes then depend on how it is used. For example, the same uranium that is used to fuel nuclear power reactors to generate electricity can be used to make the deadliest explosives. In this case, uranium itself is neither good nor bad,

but neutral. It, however, depends on how it is used. According to Weerakkody (2008) the techno-realist view takes the middle ground and views technological applications such as text messaging as a "mixed blessing" capable of both positive and negative outcomes (p.464).

Three major themes stem from an examination of the literature on text messaging and formal writing. First, there is the issue of why teenagers adopted text messaging. Several researchers examined why teenagers adopted text messaging as an attempt to understand the impulsion of present text messaging behaviours. They examined the theories and models that govern behavioural acceptance and applied them to the adoption of text messaging and other technological exploits. A second theme that emerged from the literature is that of the influence of text messaging on society and the debates that surround present text messaging behaviours. Included in this discussion is the question of whether or not the discourse about the role text messaging plays in influencing new language patterns is a result of moral panic or is it really a moral dilemma. Most crucial to this research, however, is the issue of whether or not text messaging jargon is a new form of literacy, whether or not it is influencing formal writing, and its implications for classroom practice. This review presents these arguments.

2.1 Why Teenagers Adopted Text Messaging

A cursory glance at any arena where teenagers are assembled would show most of them in a common position – heads down, thumbs fastidiously moving across the body of a mobile phone, eyes fixed on the tiny screen - texting. In fact, it seems as if the message received tones of mobile phones have somewhat interwoven themselves into natural sounds of the environment. One has to become accustomed to hearing the constant distinct beeps that warn the mobile phone user that he or she has received a text message.

Several researches have demonstrated that teenagers are at the forefront of the rapidly evolving text messaging phenomenon. For instance, Pederson and Ling (2002) noted that although great variability exists among teenage segments, text messaging is still "very well integrated in the daily lives of teenagers" (p.13).

Grinter, Palen and Eldridge (2006) also point out that "in the late 1990s teenagers rapidly adopted two text based technologies: short message service (SMS) and instant messaging (IM)" (p. 424). In fact, by the year 2000, the rate of adoption swiftly increased and more than seventy five percent (75%) of British teenagers owned mobile phones with which they used to send more than one million text messages (Haddon, 2002). Haddon claims that this time period clearly demarcates the genesis of adoption among British youths as they significantly lagged behind their European counterparts. Further, Ling and Baron (2007) stated that "among teenagers and young adults, two popular forms of one to one electronically mediated communication are instant messaging (IM) … and the transmission of text messages on mobile phones" (p.291).

Ling and Baron maintain that teenagers' rapid adoption of texting had its birth in Europe in 1993 when the GSM network was first commercialised making it more affordable. This rapid adoption was filtered to other parts of the world especially USA and Asia. Carrington (2004), however, dates the surge of adoption of text messaging among teenagers as mid 1995. Aarnio, Enkenberg, Keikkila and Hirvola (2002) also indicate that the adoption rate among Finnish youth is increasing rapidly and the average age for ownership of a mobile phone is ten (10) years old. However, a more current research shows that the average age is now eight (8) years old (Oksman & Turtiainen, 2004). Research from other parts of the world also shows that mobile phone ownership among teenagers is rapidly increasing and that teenagers are quite captivated by the rapidly evolving text messaging phenomenon (Tilley, 2009).

According to Thurlow and Brown (2003) teenagers across the globe use text messaging as their main mode of communication. In fact, texting or text messaging is an integral part of many teenagers' daily one to one communication system (Thurlow & Brown, 2003; Carroll, Howard, Vetere, Peck & Murphy, 2002). Lenhart, Ling, Campbell and Purcell (2010) also establish that for teenagers, text messaging is the most preferred mode of communication trumping other popular methods such as instant messaging, social networking and cell calling. For example, in 2009 in the USA alone a typical teenager sent and received a total of

eighty (80) text messages daily (Hafner, 2009). This number represents a 50% increase from 2008. However, the statistics for 2010 show that this number has increased significantly and American teenagers now send approximately one hundred (100) text messages per day or three thousand (3000) text messages per month (Goldberg, 2010). Similarly, in early 2000 UK teens sent a total of five hundred and sixty (560) million text messages, a number which increased by seventeen percent (17%) later in the year (Grinter & Eldridge, 2001).

Lang and Jarvenpaa (2005) emphasise the degree of connectivity teens have with text messaging. Ravichandran & Fielden (2009) also reveal that New Zealand parents and caregivers are becoming increasingly worried about the seeming obsession teenagers have with their mobile phones and texting. Interestingly, Block (2008) noted that text messaging is listed as one of the three forms of internet addiction. Block lists four components of this addiction (excessive use, withdrawal, tolerance and negative repercussions) and points out that today's teenagers exhibit one or more of these components, especially females (Geser, 2006; Hye-Soo, 2003). In fact, Block also points out that in some Asian countries such as Korea and China, mobile phone addiction is being treated as an epidemic. And Kershaw (2006) indicated that treatment for internet and mobile phone addiction is becoming increasingly popular. Whether they are texting in bed the wee hours of the morning (Dunnewind, 2007) or texting during class (Sweeney, 2006), teenagers and young adults all over the world are at the centre of the text messaging fad.

Why have teenagers rapidly adopted text messaging? What are some of the defining features of SMS that have teenagers completely hooked to the point of addiction? Why did teenagers adopt a communication system that was initially designed to be used by the hearing impaired? Researches have explored these pertinent questions and are the focus of this section of the review. The aim therefore of this section is to explore the underlying factors, theories and models that attempt to explain why teenagers adopted text messaging and mobile telephony in general. It is hoped that such an examination will aid a deeper understanding of the current text messaging behaviours of teenagers and place

these behaviours into context. Further, it is hoped that such an examination would provide a developmental pathway on which trends in text messaging behaviours can be tracked, analysed and compared.

A blanket answer to the aforementioned questions may be that today's teenagers, according to Nikirk (2009), represent the millennial generation (those born after 1981 and as such "came of age" in the new millennium). This generation is a unique generation whose lives are and have always been entrenched in media and technology (Oblinger &Oblinger, 2005) and therefore the rapid adoption of text messaging may be a result of a natural tendency to bend towards internet and communication technologies (ICTs). Keeter and Taylor (2009) aver that millennials are the first generation in human history not to regard activities such as text messaging, Facebooking and tweeting as remarkable innovations but rather as a fundamental part of social life and a quest for knowledge. Further, Monaco and Martin (2007) claim that millennials are naturally technologically savoir-faire. This ability seems to cause millennials to naturally gravitate to technologically based feats such as text messaging, blogging, IMing, gaming and social profiling on a plethora of social networking sites such as MySpace, Twitter, BeBo and Hi5. Text messaging therefore seems to provide an opportunity or an outlet to exercise this need and ability.

Vincent (2008), however, challenges this idea and claims that teenagers' adoption of text messaging does not stem from a love of technology or the device itself but from the "emotional attachment to everything it engenders" (p.1). She reports that young persons felt emotions such as loneliness and insecurity when faced with the scenario of being without a mobile phone and not being able to send and receive text messages. Whether it is due to millennialism or emotion, the fact remains that teenagers are engrossed in text messaging and mobile telephony in general.

Millennials are also dubbed Generation Y, Echo Boomers, GenNext, iKids and digital natives and are said to be prolific communicators and as such have a desperate need to remain connected in their social networks (Sweeny, 2006). In fact, millennials' social connections are heavily reliant on the sphere created by

computer and internet communication technologies of which mobile telephony is at the hub. Events are planned, calendars are set, details are furnished and minutely tracking of whereabouts are all accomplished through text messaging and its features (Ling & Yttri, 2002). Sweeney (2006) observes that millennials "love and expect communication mobility to remain in constant touch wherever and whenever; un-tethered" (p.5). Could this be the main reason why text messaging has ricocheted into the hearts and lives of teenagers? Could text messaging have been the voice of hope in the wilderness, the answer to a wired generation's call? It certainly may be one of the initial factors, but perhaps not the sole factor.

2.1.1 The Complexity of the Mobile Phone

The mobile phone has evolved over the decades, transforming into a powerful tool with features that are comparable to much larger and more complicated devices (Berridge, 2009). The first mobile phones were not commercially available until 1983 although Motorola displayed a prototype in 1973. The first commercial mobile phone, the Motorola Dyna TAC 8000X weighed almost a kilogram, had a battery life of just one hour and a phonebook capacity of merely thirty (30) contacts.

A decade later the IBM Simon Personal Communicator was introduced. A much lighter instrument, this phone was distinct in that it was completely void of physical keys. Instead, its users would enjoy the novelty of a touch screen and optional stylus (phonograph needle) to perform operations such as sending e-mails and faxes, playing games, accessing a world clock and even recording simple notes on a notepad.

Within the first decade of the new millennium, several handsets that provided the consumer with a wider range of functions were introduced. These phones not only made the sending and receiving of text messages faster and more sophisticated, they also allowed for the surfing of the internet, recording of videos and experiencing greater optical zoom when taking photos. Many of today's teenagers are said to own one or more of these phones (Ito, 2005).

However, given these advances in technology, text messaging is still quite complex in nature. As such mobile user interface (the system by which the user interacts with the mobile phone) becomes more challenging for some with each new design. In some cases, the mobile phone is no longer a phone per se, but a complex mobile, internet capable device that also acts a phone.

Ziefle and Bay (2005) purport that a modern device such as the mobile phone "imposes considerable cognitive loads on [its] users" (p.375). For instance, the information displayed on the small screen of the mobile phone makes usability a challenge for some mobile phone users (Watanabe, Omori, Hasegawa, Matsunuma & Miyao, 2009; Zimmerman & Yohon, 2009, Chae and Kim, 2004). According to Chae and Kim (2004) the size of the screen significantly affects the navigation behaviours of mobile users. Their experimental study showed that the greatest effect screen size has on user interface is how quickly the information changes as the user scrolls up or down. With smaller screens (those that allow for six lines of information to be displayed at a time) one third of the information changes with each scroll. On the other hand, with larger screens (those that allow nine lines to be displayed at a time) only one sixth of the information changes per scroll. The smaller the screen, then, the more drastic the change of information experienced by the user. Chae and Kim (2004) conclude that with smaller screens the cognitive load is considerably increased since the mobile user endeavours to decipher his or her location from or to a reference point.

In Zeifle and Bay's (2004) view, this is a key issue leading to the complexity of mobile user interface as small screen displays also restrict the access of information. This is particularly difficult since "users navigate through a menu whose complexity, extension and spatial structure is not transparent to them as it is hidden from sight" (p. 375). The user, as a result, is tasked with memorising or creating other ways of remembering the sequence of items in a hierarchal menu in order to quickly navigate through the limited information on the screen. Further, the user also has to assimilate information from a series of screens. Ziefle (2002) also claims that although the menu of the mobile phone is similar to that of other computer mediated communication devices, the small screen display of the

mobile phone poses several challenges to the user with reference to learnability (the ease at which one understands a specific device), predictability (the degree to which present experiences with the device influences perceptions about future ease of use) and generalisability (the degree of transferability of the new skills acquired). However, Ziefle and Bay admit that these challenges are decreased as the user becomes more familiar with the device. In fact, they maintain that technologically experienced teenagers and young adults, because of their early contact with and high exposure to the device, find it less difficult to navigate through the small screen.

Readability is another challenge posed by small screen displays. The challenge of quickly and comfortably reading text messages from a small screen has increased with the addition of modern physical features such as web browsing using search engines (Zimmerman & Yohon, 2009). Apart from the psychophysiological concerns raised by Lin and Peper (2009), other issues such as font size, font type, screen type, screen colour, contrast and luminosity affect the readability of information on small screen displays (Zimmerman & Tohon, 2009). Lin and Peper (2009) claim that the body undergoes major physiological changes when one tries to focus on and read information displayed on a small screen. They monitored the breathing, heart rate and muscular responses of teenagers sending and receiving text messages. Psychophysiological responses such as rapid shallow breathing, increased heart rate and the stabilising of the trunk were all observed in eighty three percent (83%) of the participants while sending text messages. Lin and Peper (2009) conclude that "the task of focussing on a small digital screen and composing a text message demanded significant covert effort and concentration" (p.57). Interestingly, Lin and Peper note that most of the participants were unaware of these changes.

Omori, Hasegawa, Watanabe, Matsunuma and Miyao (2009) cited in Smith and Salvendy (2009) indicate that the size of the characters displayed also has a significant effect on the on rate of reading and legibility. Their experimental study which compared the (vertical and horizontal) heights of the characters displayed on small screens with the ease of readability proves that the larger the characters

displayed on the screen, the greater the readability of the text on the screen. However, Buchanan et. al (2001) challenge the idea that small screens affect readability. Their analysis claims that users' ability to read text on small screens is not adversely affected. They point out that readability on some levels is affected by other extraneous factors such as the user's preferences, level of performance and actual behaviour. They conclude that "the negativity to small screens seems a little uninformed" (p.4). Again, familiarity and expertise with the device plays a major role and younger mobile phone users seem to develop their own ways of overcoming these challenges. For instance, Watanabe et. al. (2009) conclude that younger mobile phone users "ensure readability by shortening the viewing distance" (p.401). Teenagers seem to be overcoming and mastering otherwise challenging text messaging tasks.

Text messaging employs two main input systems: the multi-tap system and, more recently, the predictive text system. These systems also pose challenges to user interface and increase the complexity of the text messaging process mainly because the English language has twenty six (26) letters or characters which are distributed on the mobile phone's twelve keys (Sandnes, 2008; James & Reischel, 2001; Oniszczak & MacKenzie, 2004). Multi-tap, according to Lyons et. al. (2004) is a text entry system in which several letters are mapped to the same key on a keypad. With this system "logic is embedded in the phone that records the number of times an individual key is pressed and matches this to one of the letters assigned to that key" (James & Reischer, 2001: 366). Therefore, in order to access a character, the user must cycle through letters by tapping multiple times (hence the name) until the desired letter is reached.

According to Butts and Cockburn (2001), this is the "core problem" with entering text on a mobile phone (p. 56). With the multi-tap keypad display, the letters of the alphabet are printed in a three letter sequence beginning at two (2). However, two numbers, seven (7) and nine (9) have four letters mapped to their keys. Number one (1) on the keypad is used for punctuation, other icons and functions. The multi-tap system, then, employs twelve (12) to fifteen keys (Stocky, Faaborg & Lieberman, 2004). Dunlop and Masters (2008) suggest that this

increases the user's cognitive load as the use of more keystrokes decreases the rate at which the user completes the process. For instance, to type the phrase "see you at the pub" which is just thirteen letters long, the user taps the keypad a total of thirty five (35) times providing that he or she does not make an error. Dunlop and Crossnan (2000) indicate that "clearly this is a cumbersome method for text entry and likely to be highly error prone" (p. 134).

Axup, Viller and Bidwell (2005) share Dunlop and Crossnan's view and aver that multi-tap also becomes challenging when users are changing physical environments as they often do when using a mobile phone. They claim that because the user on the move is not able to devote time and attention (especially visual) to the task of texting, text entry speed is affected. Cox, Cairns, Walton and Lee (2008) agree with Axup et al's position. They refer to this lack of visual contact during the user's change of physical environments as "eyes busy, hands busy" (p.569). Their experimental investigation aimed at describing the effects of visual feedback on mobile interaction. Their results show that users were more inclined to choose the voice option rather than the multi-tap system in "eyes busy, hands busy" situations.

Peevers, Douglas and Jack (2008) also agree that the multi-tap system is quite difficult to use. Their investigation into the use of multi-tap in SMS banking reveals that the multi-tap system is a non-intuitive one. Therefore, only the participants who were familiar with the system were able to successfully carry out the banking functions. James and Reischer (2001) also criticise the multi-tap system. They contend that because multi-tap is more concerned with the placement of letters in the mapping key sequence rather than the number of letters in a word, the workload level is unpredictable. For instance, words with the same number of letters can utilise varying amounts of effort to enter. A typical example is that of the four letter words "bear" and "soil". The word "bear" requires eight (8) keystrokes while soil requires thirteen (13). This unpredictability, in James and Reischer's view, is due to the oversimplification of assigning multiple letters to limited keys.

Multi-tap also becomes challenging when the word contains subsequent same key characters or SSKC (Marila & Ronkainen, 2004). In this case the word contains several letters that are mapped to the same key, for example the word "back" which has three (3) of its letters on the number two (2) key. In order to differentiate between the letter keys, the mobile phone employs a "time-out" process which requires the user to wait for a specified time (usually between 1 to 2.5 seconds) before entering the next letter. Alternatively, the user can choose to press a key which stops the time-out allowing the user to select the displayed character. This is referred to as "time-out kill" (James & Reischer, 2001:366; Marila & Ronkainen, and 2004:111). Time-out kill manually aborts the time out process. A time-out, then, according to Marila and Ronkainen (2004), is a mechanism or process which automatically changes the user interface from one modal stage to another.

Marila and Ronkainen (2004) also examined the relationship between the user's reaction time and time-out lengths. They postulate that devices which use time-out based interactions are prone to two major errors: late selection and early selection. With late selection, the user chooses the character after the time-out period ends. This, according to Marila and Ronkainen (2004), is due to the lack of either visual or auditory feedback resulting in the user estimating the end of the time-out period. A typical visual feedback mechanism is the blinking cursor on the screen indicating that the time-out period has ended. Contrarily, with early selection the user, anticipating the device's next state, chooses the operation before the time out period is completed. This results in incorrect characters being entered. This also increases the user's cognitive load and prolongs the text messaging process. However, Marila and Ronkainen (2004) conclude that in order for the user to master the time-out technique, he or she must either learn the ''rhythm of the system" or rely heavily on the feedback (whether visual or auditory) provided by the device (p.110). Although their research did not specify the extent to which time-out periods can be learned and mastered, it clearly indicates that precision is required from the user in order to master the time-out technique. With precision and familiarity, usability increases and errors decrease.

Butts and Cockburn's (2001) findings were similar to those of Marila and Ronkainen. They compared text entry with time-out with two other text entry methods (multi-tap with next button and the two key method). Their subjects were required to type five sentences using each of the methods. Butts and Cockburn (2001) conclude that although the participants found all three methods frustrating, the multi-tap with next button proved most successful because the user was able to override the time-out (using the next button) rather than estimate it. Oniszczak and MacKenzie (2004) also conducted a similar experimental investigation comparing the effectiveness of text entry methods. Their study also revealed discrepancies with time-out and claims that it is problematic.

Researchers note that teenagers are experts at multi-tap and quickly learn the keystrokes (Faulkner & Caulwin, 2005; Grinter & Eldridge, 2002; Thurlow, 2006; Carroll et. al., 2002; Schneider-Hufschmidt, 2005). Some teenagers, according to Grinter and Eldridge (2001), are so proficient that they can enter text without looking at the keypad as they quickly become familiar with the system. Schneider-Hufschmidt (2005) claims that some teenagers can even text faster than they can type on the keyboard. Myung (2004) conducted a keystroke-level analysis in order to predict text entry performance time among Korean youths. Using Fitts' Law (the time required to move to a target area is a function of the distance and size of the target) he measured the finger movement times on the keypad. He concluded that Korean youths are entering even English texts faster than they were before. This proves that text messaging may not be a complex task for teenagers as they devise ways to overcome inherent complexities.

The predictive text system, according to Ling (2006) was designed to simplify the text entry process and facilitate interaction. With the predictive text system, as the name suggests, the user is able to select the first letter of the word he or she is trying to enter. The user is then prompted with a list of possible words from which he or she can scroll and choose. For instance, if the user wants to type the word "later" he or she would press the five (5) key three times. This restricts the legitimate words stored in the predictive text dictionary to those

beginning with "I" only. The user may only be required to press the two and eight keys once before the desired word appears on the list- a total of four (or less) strokes. Predictive text, then, reduces the number of times the user has to cycle through the keypad thus resulting in an increase in the speed of the text messaging process. Also dubbed the T9 (texting on nine keys) system, iTap (Motorola) and eZiText (Zi Corp) predictive text operates by analysing a large collection of documents called a corpus (McKenzie & Soukoreff, 2002). This analysis establishes the frequency of characters or groups of characters, words and phrases of the language. This system, according to Ling (2006) proved more advanced and efficient than the multi-tap system as it addresses important text entry issues such as speed, length and quantity of texting. However, it is not foolproof.

According to Nesbat (2003) the cognitive load imposed by predictive text is heaviest when the user attempts to enter words or characters that are not found in the dictionary or word list. These can either be words from a foreign language (later amigo), unfamiliar or obscure abbreviations (ttyl that is, talk to you later) or slangs or made up words (frenemy; wazzup). He claims that in these situations the disambiguation system fails and the user resorts to the slower multi-tap method. According to Ling (2006) this affects the practicality of predictive text since "predictive text favours those who use standard forms of written language" (p.1). Nesbat (2003) is of the opinion that predictive text systems, in order to reduce the unreasonable cognitive loads they induce, should focus on the different rates at which letters occur in text messages and more frequently used letters (such as i and u) should be mapped in such a way that they require fewer taps. As such, he designed the MessageEase system which rearranged the letter assignment on the keypad based on an analysis of the frequency of letters that occur in text messages. Although this is plausible and a novel idea, this system will require the user to learn the new key assignment and present a steep learning curve for the new user.

How and Kan (2005) conducted a similar experiment. They remapped the keys on the keypad and compared the effectiveness of each new model. They

conclude that newer models had no effect on the cognitive load with the predictive text entry system. They also found that persons who were familiar with predictive texting (experts) were better able to cope with the changes than those who were not familiar with predictive texting (novices). Ling (2006) also agrees that the predictive text system becomes problematic when the user attempts to enter a word that is not found in the corpus as this system does not include "complex words that are not commonly used" (p.2). However, Ling (2006) cites another key issue – the laborious effort that goes into scrolling for the desired word. He pinpoints a typical example from the Norwegian version of predictive text. According to Ling (2006) if the user wishes to type the (Norwegian) word "you" the word "it" appears first in the list. Ling (2006) purports that teenagers, in order to save time, do not scroll further and transmit "it" instead of "you" in their messages. This has become customary, understood and accepted among them. So "Do it like him?" is read and interpreted as "Do you like him?" Hard af Segersatd (2003) cited in Ling (2006) reports the same issue with the Swedish version of predictive texting.

The most disadvantageous feature of predictive texting is fact that more than one word can be possible from a given key sequence. Dunlop and Masters (2008) argue that this can lead to unrelated predictions that go undetected as most users do not monitor their screens when texting. For instance, the key sequence for the word "lunch" would be the same for the word "human". Since the word lunch may occur more frequently in messages, the dictionary would suggest this word although the user may want to enter the word human (Dunlop, 2004). This leads to changing of the contextual meanings of words in some social settings. As with the effects of laborious scrolling, therefore, same key sequence may also lead to words being substituted and becoming accepted both in texting and in speech.

Most of these studies, though informative, were conducted using adults as participants and therefore do not take into account how younger mobile phone users overcome the complexity of user interface. These studies, then, do not account for the implications of the digital divides (in terms of usage, not

necessarily access) that exist among mobile phone users. Rice and Katz (2003) postulate that age is a major predictive factor in determining the ease of use of new media as there are distinct behavioural patterns between adult and teenager use of the mobile phone. Kurniawan's (2008) study shows that there is a marked difference between the roles the mobile phone plays in the life of an older person when compared with that of younger people. For example, teenagers and young adults tend to attach social identity to their mobile phone (Haddon, 2007; Ling, 2003; Katz, 2003) while older adults view their mobile phones as tools of convenience. Livingstone, Bober and Helsper (2005) also stress that differences exist even among teenagers as some are more proficient than others.

Interestingly, Kurniawan notes that younger people preferred a more complicated device with advanced features as owning a more complex device places them in a higher social standing among their peers. This begs the question: do teenagers and young adults find the mobile phone complex at all? It seems as if familiarity with the device decreases its complexity. And, researchers note that teenagers, because of early introduction, are quite familiar with the mobile telephony (Lenhart, Ling &Purcell, 2010). Further, because of the importance of mobile phone in teenagers' lives, they seem to find ways of overcoming otherwise complex tasks. Typical examples are learning the "rhythm" of the time-out sequence, decreasing the reading distance when using small screens (Wantanabe et. al) and learning the numerous short-cuts that can be employed.

Additionally, these studies do not account for the real-life issues and idiosyncrasies associated with text messaging. Real-life issues such as differential manual dexterity, sophistication of software and time needed to overcome learning curve, according to Ling (2006) are critical to understanding the complexity of the mobile phone as they determine predicted ease of use and adoption.

Another real-life issue is the role peers play in overcoming the complexity of the mobile phone. Research shows that teenagers are constantly discussing new mobile and text messaging features with each other (Haddon, 2007). They

explain seemingly complex tasks to their peers and this is through this kind of interaction and interrelationship, some teenagers are able to quickly overcome seemingly complex text messaging tasks.

Generally, however, it must be noted that concerns about the mobile phone's complexity are decreasing as modern day third and fourth generation (3G and 4G) mobile phones are being introduced. For instance, some devices already have QWERTY keyboards on which the user can type using their thumbs. With the proliferation of these devices, concerns related to text entry will drastically decrease, if not become obsolete and new concerns may arise. Further, some modern devices have larger screens so readability and drastic information change may no longer be challenges in the near future. The question still remains, though, as to why teenagers adopted text messaging and mobile telephony in general. Perhaps, the answer can be found by examining the theories and models that govern ICT adoption.

2.1.2 Theories and Models of Mobile Phone Adoption

Researchers have long shown interest in how information and communication technologies (ICTs) have interwoven themselves in society. In fact, from as early as 1943, research into how people adopted technological devices started to emerge (Ajzen, 1991; Rice & Rogers, 1980). Both industry and academia have sought to understand and track patterns of ICT adoption: industry, for the purpose of developing their products to suit the needs of the consumer and academia for the purpose of understanding how the adoption of new media and technologies affects its systems (Pedersen & Ling, 2003). Both perspectives are necessary since current mobile phone behaviours represent the convergence of the influences of both industry (products) and academia (education systems). As such, several theories and models of ICT adoption have materialized. This section examines these theories and models in order to gain a deeper understanding of, and possibly an answer to, why teenagers adopted text messaging. By examining these theories and models, it is also hoped that a pattern for ICT adoption can be established so that the question of *how*

teenagers adopt text messaging can be addressed against a backdrop of empirical evidence. According to Sarker and Wells (2003) both the how and the why of mobile phone adoption needs to be addressed since there is no mobile commerce (m-commerce) without the proliferation of device adoption.

Studies of mobile and ICT adoption have taken three general approaches: a diffusion approach, a domestication approach and an adoption approach (Pedersen, 2003). The diffusion approach, Pedersen claims, "describes the aggregate of the adoption process…as an S shaped function of time that may be used to categorize adopters of different kinds" (p. 4). The S shaped curve was first put forward by Tarde (1943) and developed by Rogers (1962). It represents a cumulative frequency of the number of individuals adopting a new idea plotted against the time at which it takes to adopt the new idea. Rogers also posited a bell-shaped curve that predicts the adopter distribution of a successful innovation.

However, Moore (2002) challenges this concept and purports that there are two major cracks in the bell curve. The first crack, according to Moore, occurs between the innovators and the early adopters. Moore explains that this gap is created when a new device "cannot be readily translated into a major new benefit" (p.17) as the innovator may display enthusiasm about the product, but the early adopters may not be able to know how to make the device functional. The second crack occurs between the early and late majority groups. By this point, Moore claims, the device is already interwoven into the mainstream of the society. However, the late majority is less willing to become as technologically competent as the early majority. Moore also notes that there is a significant gap that exists between the early adopters and early majority group. The cause of this chasm, Moore claims, is the early adopters and early majority groups have different expectations of technological devices and as such the hype created by the early adopters may not readily pass on the early majority group in a timely fashion. It must be noted that Moore's discussion of Roger's bell curve is entrenched in marketing and has been widely accepted by businesses worldwide.

The adoption approach "describes and explains the adoption decision of users" by applying a variety of social and decision making theories (Manueli, Latu

& Koh, 2007: 176). Several theories and models have emerged from adoption studies.

The TAM underwent several extensions especially in the areas of its antecedents and determinants of perceived user friendliness, social determinants of use and intent of use and behavioural control as a key issue in ascertaining actual use.

2.1.3 The Theory of Reasoned Action (TRA)

The theory of reasoned action was developed by Martin Fishbein and Icek Ajzen in1975 and 1980 in an attempt to expand and redefine Expectancy Value Models (which state that behaviour is the product of expectancy and goals). It is a more general theory that the TAM as the TAM was drawn from it. However, the TRA includes the *subjective norm* component. The main focus of the TRA is explaining behaviour beyond adoption and is based on the premise that behavioural intentions are a function of pertinent information or beliefs about the possibility that adopting a particular behaviour will result in a specific outcome (Madden, Ellen & Ajzen, 1992). In other words, the TRA suggests that a person's behaviour is driven by his/her intention to perform the behaviour. This intention is dependent on the potential adopter's attitudes and subjective norms. However, the TRA is not limited to post-adoption behaviours and behavioural intentions as it can also be applied in order to explain use and present adoption behaviours (Pedersen, 2002). As such, the TRA incorporates two general concepts: behavioural attitudes (personal beliefs about the value associated with a particular behaviour and its outcomes) and subjective norm (perception of how others view the behaviour that influences choice to participate in the behaviour). Subjective norm is influenced by user perceptions, intention to use and actual use. The TRA, however, does not generally posit particular determinants of behavioural attitudes but rather implies that use leads to specific outcomes and the evaluation of the desirability of these outcomes (Pedersen, 2002).

Well embedded in the tenets of social psychological, sociological and behaviourist research, TRA studies attempt to explain the adoption of complex ICT applications and systems. Usually, according to Sheppard, Hartwick and

Warshaw (1998)'s meta-analyses, TRA studies are applied in three main situations: when the prospective user has no volitional control over the expected target behaviours, when the situation involves a choice and when adopters' intentions are assessed based on the possibility of them having all the necessary information in order to make an informed decision. Studies that employ the TRA, then, provide insight into the relationship between behaviour, intention and subjective norms (Stead, 1985) and more importantly, explain and predict behaviour across a wide variety of genres (Ajzen, 1991).

An examination of the conceptual model of the TRA clearly shows that both beliefs about behaviour and evaluation of the behaviour influence the individual's attitudes about the behaviour. Subjective norm, on the other hand, is influenced by the opinions of referent others and, interestingly, the motivation to comply. Ajzen claims that motivational factors indicate the extent to which a person is willing to exert effort and time to perform the behaviour. The model further demonstrates the core concept of the TRA, that is, that attitude and subjective norm determine intention and intention, in turn, determines, and even leads to behaviour.

On the other hand, however, both the TAM's and TRA's claim of predictability is often criticised. Some researchers claim that the TAM and the TRA may be able to predict intention to use in some situations, but may fail to do so in others as there are critical principles that apply to behaviour that are not accounted for by the TAM (Silva, 2007; Argawal & Karahanna, 2000). Silva particularly argues that the predictability prowess of the TAM might be challenged since it is based on perceptions from observation. Drawing on Popper's principle of demarcation (observations do not necessarily confirm theory) Silva notes that observed behavioural intentions may not necessarily lead to the corresponding outcomes, even if these behaviours are repeated. Silva illustrates that a farmer may consistently care for his animals and upon observation may be perceived as caring, but that does not necessarily mean that the farmer is caring because his care for his animals may be driven by his need

to kill and gain a profit from them. Therefore, observed behaviour may not be a good basis for theoretical predictions.

Further, Salovaara and Tamminen (2008) cited in Saariluoma and Isomaki (2008) contend that the TAM's, and possibly TRA's predictability may be weakened in situations where they fail to recognise the possibility that users can appropriate (formulate new uses for the device) technology in a variety of situations. Salovaara and Tamminen argue that this can lead to the erroneous assumption that adopters are "passive absorbers of technological products" (p.157). They purport that technology use should be observed in a heterogeneous manner recognising that the user may find different products useful in a variety of ways. Salovaara and Tamminen conclude that the possibility of different users appropriating the device differently poses an inherent problem especially with the TAM as the real antecedents of acceptance cannot be totally defined. It must be noted, however, that most researchers agree that both TAM and TRA are very powerful predictability tools. These adoption models were also praised for their applicability ((Nysveen, Pedersen & Thorbjornsen, 2005; Yang, 2005; Pedersen, 2005).

2.1.4 The Theory of Planned Behaviour

Adoption research also employs the theory of planned behaviour (TPB) to explain teenagers' adoption of the text messaging and mobile telephony in general. This theory, which was developed by Ajzen in 1985, is an extension of the TRA and was particularly designed to "predict and explain human behaviour in specific contexts" (Ajzen, 1991: 181). Ajzen's main thrust was that human behaviour is complex and thus difficult to understand. He was of the opinion that cognitive self-regulation (control of cognitive strategies for learning, Zimmerman, 1995) is an important predictive and explanatory element of human behaviour and if analysed could provide invaluable answers. Ajzen believes that although aggregate analyses provide insight into general societal behaviours, they lack the ability to explain and predict a variety of behaviours in specific situations and therefore the need existed for a model that can be used in situation-specific

circumstances. The TRA was therefore limited in that it did not account for situations in which the individual does not have total control over his/ her behaviour (Pedersen & Nysveen, 2004), a phenomenon which Ajzen terms "incomplete volitional control" (p.181). As such, the TPB included the *perceived behavioural control* element so as to reflect both the internal and external constraints on behaviour. Ajzen defines perceived behavioural control as the person's "perception of the ease of difficulty of performing a behaviour of interest" (p.183). Perceived behavioural control is, according to Pedersen and Nysveen, "directly related to both behavioural intention to use and actual use" (p. 6). The TPB then, provides a link between attitudes and behaviour.

Studies that employ the TPB usually operate on three main assumptions. The first assumption is that perceived behavioural control and intention can be used to predict behaviour. This is hypothesised because, according to Ajzen, perceived behavioural control can be used as a substitute measure for actual control. The second assumption is that behaviour is the product of perceived behavioural control and intentions. Ajzen, however, notes that perceived behavioural control and intentions differ across situations and behaviours and as such either one can be used to predict behaviour. The third assumption is that accurate behavioural prediction requires that perceived behavioural control must remain stable during the period between the assessment and the observation of the behaviour. But, is this possible? Can researchers ensure that perceived behavioural control remains stable? Ajzen admits, however, that there will be several intervening factors that will influence the subject's perceptions and as such an accurate prediction of behaviour may be unreachable.

An examination of the Fishbein / Ajzen conceptual model of the TPB (Fig. 2.13) shows that the beliefs antecedent is divided into three distinct conceptual facets: normative, behavioural and control. Behavioural beliefs are said to be the undergirding feature that influences an individual's attitude toward performing a behaviour. Normative beliefs, on the other hand, manipulate the individual's subjective norms about performing a particular behaviour. Control beliefs, as the name implies, influence the perceived behavioural control. Further, the TPB's

conceptual model shows that there exist three (not two as suggested by the TRA) boundary conditions that determine the extent of the relationship between behaviour and intentions: attitude toward behaviour, subjective norm and perceived behavioural control. Although these conditions are not interrelated, they each can influence the adopter's intentions. However, perceived behavioural control seems to have some degree of direct influence over actual behaviour. This is so since, according to Ajzen (drawing from Bandura's self-efficacy theory), the more a person believes that he or she can perform the task, the more likely the person is to succeed at performing the task. The conceptual model also shows the fabric of the TPB, that is, that intentions determine behaviour (Ajzen, 1991).

The theory of planned behaviour is often praised for being a "reliable predictor of behaviour and intentions over time" (Armitage & Conner, 1991: 35). In fact, Armitage and Conner's (2001) quantitative meta-analysis shows that the perceived behavioural control element of the TPB alone, independent of other TRA factors, accounts for considerable amounts of variance in intention and behaviour. Giles, Mc Clenahan, Cairns and Mallet (2004) also found that perceived behavioural control accounted for a significant amount of the variance and proves that the TPB is very useful for predicting intentions. Their study investigated the role self-efficacy plays in determining intentions within a TPB context and blood donation. They note that self-efficacy is a major determinant of intention. Giles et. al., however, warn that self-efficacy and perceived behavioural control are two different entities and should not be used interchangeably. Ajzen and Madden (1986) also reveal that perceived behavioural control significantly added to the prediction of intentions when compared with the TRA. Their experiment investigated goal-directed behaviours of students. They conclude that the "addition of perceived behavioural control [to the TPB] greatly improved the model's predictive power" (p. 463).

While this is a plausible experiment that provided useful information on the relationship between goals and behaviour, it seems as if goal-directed and driven individuals possess higher intentions to use than those who are not goal-directed.

The consequences of the perceived success or failure of goals drive intentions (Perugini & Bagozzi).Obviously, therefore, goal-directed individuals are more likely to display the behaviours to which they strive. Guo et. al. (2007) also agree that the TPB is a powerful predictive tool because of the perceived behavioural control component. Their investigation into the utility of the TPB for predicting adolescent smoking in China clearly depicts that the TPB accounted for a significant amount of the variance. They further note that that "perceived behavioural control significantly interacted with attitudes and social norms" and as such the TPB was useful for predicting behaviour (p. 1066). Here again, it can be argued that intentions do not always result in behaviour. In this specific case, because of peer pressure and other external factors, teenagers may display an intention to participate in smoking. However, parental guidance, counselling and a plethora of other factors may intervene and the intention to smoke remains just that, an intention, and may not be transferred into observable behaviour. It is for this reason that the TPB is often criticised for not being applicable to some health related behaviours. Stead, Tagg, MacKintosh and Eadie (2005) however prove that the TPB is useful for explaining a number of health behaviours. Generally, however, the TPB seems to be accepted among researchers as powerful tool of prediction.

While the TPB is revered for its ability to predict user intentions and behaviours, it is rivalled for its inability to account for emotion variables such as fear or threat in the intention- behaviour process. This criticism is based on the principle that purposive behaviours are instigated by desires (Perugini & Bagozzi, 2001) and that the current variables represented by the TPB do not cater for how desires affect intentions and behaviours. Desires, according to Perugini and Bagozzi, are the determinants of emotions that "provide the direct impetus for intention" (p.80). Employing theory deepening and theory broadening strategies, they developed the model of goal directed behaviour (MGB) as an extension of the TPB so as to cater for the influence of emotions and desires on intentions and behaviour. When the MGB was tested against the TPB in two experimental situations, it was found that the MGB accounted for a significantly greater

variance than the TPB. Perugini and Bagozzi therefore conclude that in order to fully comprehend the intention-behaviour process, the potential adopter's desires and emotions must be taken in consideration.

Bendixen and Ramsvik (2006) also claim that "coercive and strongly emotional behaviour is less likely to be explained by the core TPB predictors" since the TPB is based on intentions which are determined by attitudes, subjective norms and perceived behavioural control. They investigated the aggressive behaviours of partners. Their results showed that variance was significantly increased when the past behaviour component was added to the TPB. They conclude that TPB needs to be extended in order to cater for strongly emotional behaviour. Further, Conner and Abraham (2001) posit that the TPB tends to ignore emotional determinants of behaviour such as threat and worry. Their experimental research proved that emotional determinants, when added to the TPB, strengthened its predictive ability. However, the issue of emotion may not be foolproof with itself. Emotions vary greatly in situations and gender is an important determining factor as males and females depict emotions in different ways. It may be quite difficult to accurately predict intentions based on observed emotions.

The theories and models of mobile phone adoption have definitely highlighted key issues related to mobile phone adoption. As most of these theories are sociological and behavioural in nature, they explain and describe the processes potential adopters undergo in the adoption process. These theories can undoubtedly be applied to present teenage adoption behaviours. The TAM for instance provides great insight into how external variables such as perceived usefulness and perceived ease of use influence the intention to adopt. Researchers agree that most teenagers do not find mobile text messaging and its feature difficult to use (Ling, 2003). Therefore, because the perceived ease of use is high, the intention to adopt is also high and this in turn leads to adoption.

The TRA also provides an answer to the question of why teenagers adopted text messaging as it makes allowances for the examination of intention behaviour in the context of attitudes, beliefs and subjective norms. The subject

norm component of the TRA, especially, has definitely shed more light on the issue of why text messaging has become an integral part of teenagers' daily lives. Teenagers are at an interesting phase where being part of the social group is important. Therefore, as their peers adopt text messaging; most teenagers may want to adopt also so as to not be viewed as odd or out of the mainstream behavioural group. It must be noted also that the TRA suggests that the referent opinions of others influence the subjective norm. This is also very true of teenage behaviours as they seem to always want to adjust their text messaging behaviours in order to keep in step with or a step ahead of their peers. For instance, a teen may observe his her friend with a newer version of a particular application and strive as hard as possible to get the same one or even better not necessarily for functionality, but so that they can appear to be part of the mainstream group.

The theory of planned behaviour, with the inclusion of perceived behavioural control, also describes present text messaging behaviours although it was not designed to study texting in particular. Again, because the perceived behavioural control is high among teens, their intentions to adopt will be high and therefore they may more readily adopt the device.

Although all behaviours may not be portrayed at all times and all intentions may not lead to the corresponding behaviours, it seems safe to say that the theories and models of technology acceptance have provided valuable insight into the question of why teenagers adopted text messaging. However, some other critical factors account for teenagers' adoption of text messaging.

2.1.5 Affordability: The Cost Factor

Researchers generally agree that teenagers initially adopted text messaging because of the cost factor (Grinter & Eldridge, 2002; Qiao, 2009; Ling, 2003;   Grinter, Palen & Eldridge, 2006; Ling, 2004; Oksman & Rautiainen, 2006; Grinter & Eldridge, 2003; Faulkner & Culwin, 2005; Ling & Baron, 2007). According to Grinter, Palen and Eldridge (2006) "SMS did not take off with teenagers until a certain type of calling plan made mobile phones affordable to

teenagers" (p. 425). Ling (2006) agrees with Grinter et. al. and posits that no analysis of mobile use among teenagers is complete without an examination of the economic aspects. Oksman and Rautiainen (2006) also support the notion of teenagers' rapid adoption of mobile phone use because of affordability. After conducting a study in Finland, they conclude that the rapid adoption of mobile phone use to younger age groups " began in 1997 as new, inexpensive mobile terminals came on to the market and mobile competitors introduced more competitive prices for their services" (p. 25).

Faulkner and Culwin (2005) confirm Oksman and Rautiainen's conclusion and show (with reference to the United States) that "… the rise in text messaging owes its popularity to the growth of cheap pre paid phones" (p.168). Grinter and Eldridge (2001) also affirm that British teenagers and young adults prefer text messaging because it is cheaper than other means. In fact, according to Grinter and Eldridge, the teenagers in the sample felt that they could exercise greater control over their finances by using text messaging as the pre-paid system provide a financial boundary that cannot be crossed. Ling and Baron (2007) also support the notion that teenagers and young adults quickly adopted text messaging and mobile phone use because of its affordability. They profess that the "popularity of texting …has been especially high among teenagers and young adults: texting is cheaper than voice calls…" (p. 292). It is evident that most researchers agree with the fact that teenagers and young adults adopted widespread use of the mobile phones and text messaging because of the affordability factor.

2.1.6. Social Networking and Social Status

Researchers also clearly agree that most teenagers and young adults use text messaging mainly for the purpose of social networking (Faulkner & Caulwin, 2005; Ling, 2004; Grinter & Eldridge, 2001, 2003; Grinter, Palen & Eldridge, 2006; Oksman & Rautiainen, 2007; Haddon, 2007; Oksman & Turtiainen, 2004). Further, research indicates that this is true for most parts of the world. According to Ling (2006) "teens in Scandinavia, Italy, Japan, and Korea have all adopted

the mobile phone to facilitate their social interaction" (p. 85). Faulkner and Culwin (2005) posit that "the success of SMS could be seen as a result of the desire of individuals to unite others into a closer circle of communication" (p. 170).

Oksman and Turtiainen (2004) describe the complex nature of the social networking by means of SMS. They point out that not only do Finnish teenagers and young adults use SMS for the maintenance of their social networks but also to form new relationships, build on existing relationships and co-ordinate events in real-time with their peers. Ling (2006) as well as Ling and Yttri (2002) support Oksman and Turtiainen's view and refers to this co-ordination of events in real-time as micro-coordination and hyper-coordination. Micro-coordination, according to Ling and Yttri, is the "co-ordination of interaction without the need for larger nodes or centralised bases of operation" (p. 6). Hyper-coordination, on the other hand, refers to a type of instrumental co-ordination that encompasses two facets: expressive use and presentation of self (Ling & Yttri, 2002 cited in Katz & Aakhus, 2002: 140). Grinter and Eldridge's British study also confirms Ling's perception that social networking is main reason for prevalent SMS use among teenagers and young adults.

However, Haddon raises the issue of privacy with reference to social networking and reports that teenagers and young adults can now network with their peers without the knowledge of parents even when they are banned from landline use. Dunnewind (2007) confirms Haddon's viewpoint and informs that "nearly a quarter of teens in a relationship have communicated with a boyfriend or girlfriend hourly between midnight and 5 a.m. via cell phone or texting." (p.12). Oksman (2006) however reports that because text messaging and mobile telephony foster quick and easy social interaction, teenagers and young adults in a British study "felt that the device added personal security" (p. 10). Ling (2004), Grinter and Eldridge (2003) and Oksman and Turtiainen (2004) all concur that a sense of security results from teenagers' social networking via text messaging and that even introverted teenagers and young adults are now sharing thoughts through the use of SMS.

According to Grinter and Eldridge (2001) the sense of security that results from personal social networking helps teenagers and young adults to define their personal space. Ling (2004) agrees with Grinter and Eldridge and accounts for this definition of personal space because of the asynchronous nature of text messaging. (p. 145). It seems as though researchers generally agree that teenagers adopted text messaging because texting provides an opportunity for ubiquitous and asynchronous social networking. However, there are concerns about the security and degree of freedom that accompanies text messaging.

While social networking definitely accounts for the widespread adoption of mobile phone use among teenagers and young adults, it is not the sole determining factor. Researchers also account the seeking of social status and social identity among teenagers and young adults as another determinant of their widespread adoption and subsequent use of mobile phones and text messaging (Ling, 2006; Oksman, 2006; Rice ,1999; Grinter & Eldridge, 2003; Green, 2003 cited in Katz, 2003; Ling, 2001 .). Rice (1999) purports that "adolescence is a period in which individuals develop their identity and sense of self-esteem" (p.85). Rice (1999) examining the issue from a social psychology perspective, agrees with Ling (2006) who accounts this phase of adolescent life for the use of mobile telephony to show one's status. Ling (2006) analysed the results from a focus group comprising of young adults and reports that most of them thought that their mobile phones were fashion accessories, indicators of social status and even social identity. Ling quotes some responses from the study and most of the teens expressed that "mobiles are a fashion thing...mobiles are status- the more expensive the cooler you are… mobiles are like status" (p.85).

Grinter and Eldridge's (2003) analysis also concords with Ling and Rice's findings. They (Grinter & Eldridge) highlighted that it was the teenagers' perception that the volume of the contact list in the address book directly related to popularity and social status especially among girls. This perception, according to Grinter & Eldridge, caused young girls especially to rummage through each others' contact lists so as to establish popularity and social status. Oksman (2006) also conducted a comprehensive study among Finnish teenagers and young

adults and reports that the Finnish word for mobile phone can be interpreted in English as "an extension of the hand or an extension of self" and therefore represents one's social status. Haddon (2007) cited in Johnson and Ensslin (2007) also postulates that teenage and young adult girls tend to make their mobile phones "technocute" so as to seek social status among their peers- as most girls of the opinion that the cuter the phone the more stylish the owner seems. Oksman & Rautiainen (2006), however, challenge the perception of mobile phone use for social status with relation to Finland. They agree that seeking of social status could have been an initial influence on teenagers' widespread adoption of mobile phone use and consequent discovery of texting.

However, Oksman & Rautiainen purport that this cause has since evolved and that "the mobile phone can be interpreted as an organic part of everyday life rather than an indication of status" (p. 324). Although most researchers agree that the seeking of social status is a factor for the pervasive adoption of mobile phones by teenagers and young adults, there still remains a plethora of unanswered questions with reference to the gender differences and the issue of social status. For instance, is the seeking of social status greater among males or females? And, in what ways do males seek social status through text messaging and mobile telephony? Perhaps an examination of the gender differences among adopters will provide some insight.

2.1.7 Gender Differences among Adopters

Another clear theme that emerged from reviewing several pieces of research on the topic of texting messaging among teenagers and young adults is the issue of gender differences. Researchers ascertain that teenage and young adult males and females utilise text messaging and mobile telephony in general in different ways (Haddon, 2007; Grinter & Eldridge, 2001; Faulkner and Culwin, 2006; Oksman & Turtiainen, 2006). Faulkner and Culwin (2006) examined the frequency of sending text messages between genders and provide conclusive evidence that both males and females are equally likely to send text messages. They however note that "females are more active in their use of all

communication tools" (p. 8). The females in the study averaged 6.3 messages per day while males averaged 4.8. Grinter and Eldridge (2001) also note the degree of difference between gender behaviours with reference to text messaging. "We also observed that the five girls sent longer phone- and Internet-based messages (80 and 141 characters) than the five boys (55 and 98 characters)" (p.2). Further, Haddon (2007) views these differences between the genders as owing to the fact that the mobile phone represents disparate perspectives between males and females.

Generally, according to Haddon's Norwegian study, females tend to "downplay the technical dimensions" of the mobile phone while males may adopt the use of mobile because of its technical features and because of peer pressure (p.99). Oksman and Turtiainen (2006) agree with Haddon and report that in Finland "girls express more reservations about developments in technology and the appliances produced by it" while male adoption was mainly due to the opinion that mobile phones seem to posses a "technological, masculine air" (p. 333). Oksman and Turtiainen (2006) conclude that boys tend to be more technologically optimistic while girls' interests tend to lie in the aesthetic and communicative features of the mobile phone.

Interestingly, Balakrishnan and Yeow (2007) postulate that gender differences even exist with reference to text entry speeds and methods. They note that females tend to be more satisfied with their text entry than males. They further note that gender (and age) also had a great effect on learnability as females tended to navigate more than males. Igarashi, Takai and Yoshida (2005) examined the gender differences in social network development via text messaging. The results of their longitudinal study reveal that females tend to expand their social networks more than males. However, they note that these patterns reflect the gender differences of general communication. For instance, females generally tend to self-disclose more to their friends, are generally more sociable and form more socio-emotional relationships than males. Therefore, it seems as though general patterns of interpersonal communication among males and females are being transferred to the text messaging arena. This is a

noteworthy issue for deeper exploration. However, most researchers seem agree that the likelihood of sending text messages between teenage boys and girls is equal but girls tend to send more messages and longer messages than boys. However, the issue of stylistic and linguistic differences between the genders still needs to be researched as there may be distinctions between the text messaging features that boys employ than those that girls employ.

2.1.8 Independence

Researchers also agree that teenagers rapidly adopted mobile telephony, especially text messaging, because it provided them with a degree of independence (Edwards & Grinter, 2001; Ling & Baron, 2007; Lang & Jarvenpaa, 2005; Spero & Stone, 2004; Oksman, 2006). Harris (2005) maintains that internet and communication technologies provide teenagers with a type of independence that is not otherwise afforded. Harris explains that messaging technologies, like text messaging are especially useful in providing independence in that they "can be used outside the times that teenagers are normally permitted to be together" (p.54). Harris further pinpoints that since text messaging may be less obtrusive than a landline phone call and privacy breaches such as eavesdropping are obliterated, teenagers tend to feel a sense of control over their private lives and are better able to keep parents at bay.

Haig (2002) agrees with Harris' perspective and observes that texting provides an opportunity for teens to have their most desired attribute – independence as well as giving them a distinct opportunity to control their communication. Further, Selian and Srivastava (2004) point out that the independence sought and achieved through text messaging represents a type of circumvention from the control of parents. Interestingly, Edwards and Grinter (2001) claim that parents tend to provide their teenager children with mobile phones as a signal of giving them independence. Edwards and Grinter highlight that this practice is seen as proper parenting in Europe. Kasesniemi (2001) cited in Furlong and Guidikova (2001) also agrees that teenagers adopted text messaging as a means of achieving independence. Her study exposes the fact

that since the mobile phone was usually connected to the adult world, owning a mobile (for most teens) symbolises independence and maturity.

Thurlow and McKay (2003) explored the concept of independence among teenage adopters. They also note that apart from text messaging providing connectivity, it gives youths a sense of independence, freedom from parents and other adults. Lang and Jarvenpaa (2005) however question the idea of mobile telephony providing independence. They argue that although the mobile phone provides independence (from parents and other adults) it induces a new form of dependency that co- exists with the independence. Lang and Jarvenpaa argue that this co—existence is just one of the numerous paradoxes of mobile telephony and is evident all over the world.

2. 2. Does Text Messaging Really Affect Language Skills?

Perhaps the greatest argument concerning text messaging refers to its influence on language especially how text messaging influences normative writing structures and abilities (Thurlow & Poff, 2010 cited in Herring, Stein and Virtanen, 2010). This argument exists since some fear that teenagers' text messaging jargon is butchering the core foundations of the English language as text messaging jargon involves writing shortened forms of words and phrases (Craig, 2003). Is English language becoming obsolete? Will text messaging be the language of the future or is it a phase that will fade into obscurity? This section of the review presents a comprehensive overview of the literature concerning text messaging and formal language. It is hoped that as this section unfurls, more light will be shed on the research question. It presents the three major debates regarding texting and formal language. The first is that texting has no effect on teenagers' writing skills. The second advocates that text messaging has adverse effects on language and the third stipulates that texting is a form of digital or "new" literacy and therefore should be used as a tool in the classroom.

Several researchers believe that young peoples' text messaging behaviours do not affect their writing skills and abilities and traditional English as a whole. For instance, Baron (2005) reveals that teenagers' text messaging

behaviours need not spell the "demise" of the English Language as we know it (p.29). She maintains that the long term effect on language will only occur if teenagers' "traditional linguistic role models" (parents and teachers) allow text jargon to creep into formal writing situations. Further, Baron upholds that teachers should focus on developing "a solid grasp of writing conventions" (p. 31) so that teenagers can separate formal and informal writing situations.

Thurlow's (2007) findings cited in Johnson and Ensslin (2008) agree with Baron's and view the debate as to whether text messaging influences writing skills and abilities as the media's attack on youth culture. He notes that historically, the media has been misrepresenting what they do not understand about youth culture and the text messaging phenomenon is no exception. Interestingly, Thurlow believes that the debate about whether text messaging affects written language is a highly exaggerated one that emerges from the adult society's fear and the media's "moral panic" (p.216). By "moral panic" Thurlow means a disposition to believe that new or emergent phenomena will somehow threaten normative social order. Cohen (2008) interestingly explains that this fear of the shredding of social order exists in every generation. He illustrates that when erasers were introduced as an accessory to the pencil, moral panic erupted as there were concerns that children will deliberately make mistakes. Then, the introduction of the ball point pen was criticised for the fear of the death of penmanship. Text messaging, he concludes, adds to language in a creative manner and more so exposes language problems rather than create them.

Manzo (2008) also argues that teenagers' text messaging language has little or no effect on their formal writing skills and abilities. Her research which utilised the results from National Assessment of Educational Progress (NAEP) for 2008 indicates that formal writing skills are being mastered by 8th and 12th graders even in an age where computer mediated communication (CMC) consumes their lives. However, she notes that a very small amount of them show aptitude in the subject. This aptitude, though, may or may not be related to the frequency of use of text messaging jargon.

The survey conducted by Pew Internet and the American Life Project also concurs with Manzo's view and reports that only thirty eight percent (38%) of the sample reported that they used text acronyms in their formal writing, while twenty five percent (25%) unwittingly used emoticons in their formal assignments. Incongruous with the conclusion of the findings, however, fifty percent (50%) of teens were found to use informal styles such as poor punctuation and capitalisation in their written assignments.

Plester, Wood and Bell (2008) also conclude that pre-teens' knowledge of "textisms" has no adverse effects on their literacy attainment nor on their formal writing skills. Their research required pre-teens to convert a set of "textisms" to formal language. This study, therefore, focussed heavily on knowledge of text messaging abbreviations and the pre teens' ability to translate "text-speak" to formal language rather than the effects of techspeak on formal writing structures. Further, it was heavily dependent on the pre-teens' interpretation of the textisms and therefore the construct validity of the study is threatened. It also lacked a holistic view of the phenomenon since according to Grinter and Eldridge (2003) text messaging employs a myriad of shortened forms of words and unfamiliar terms that were created and developed by teenagers. This study also ignored the critical elements of "culture texting" which may include textisms developed by friends and heterogeneous societies. Culture texting is based on the premise that not all teens in all communities use the same set of jargon. The social culture determines the textese. This does not, however, negate the fact that there are some universal structures. Texting, then, is highly stylistic and idiosyncratic. This notion is supported by Ling and Baron (2007) who summarised the linguistic features of text messages in four languages and report that "among the stylistic features noted are abbreviations, acronyms, emoticons, misspellings, and omissions of vowels, subject pronouns, and punctuation" (p.292). Texting is more than just words; it involves a more complex set of structures or jargons excluded by Plester, Wood and Bell's study.

Perhaps, a more recent study conducted by two of the same researchers (Plester, Wood & Joshi, 2009) holds stronger the notion that text messaging does

not influence formal writing skills and abilities as knowledge of textisms is related to literacy attainment (p.145). In this study, the pre-teen participants were required to record their text messages. These were then coded for density of textisms and compared with the total number of words in the text. This was then used as a predictor for reading ability. Plester, Wood and Joshi conclude that "the idea that the use of textisms when text messaging may be positively, rather than negatively, related to reading attainment in children is not an illogical proposition" since most of the textisms employ phonological and orthographic conventions (p.147). However, do pre-teens see this connection between their knowledge of textisms and literacy attainment? Or, do pre-teens see texting as education at all? Texting is mainly done for the purpose of fun-filled communication. Lenhart (2009) reports that most teenagers do not view their text and instant messaging as writing [at all], but as communication. This begs the question as to the role the teacher plays in helping students transfer from the informal to the formal. Yancey (2009) stresses that students must be aware of the connection between formal and informal language in order for their writing skills to be improved. Further, do teenagers employ or apply the strategies used for developing textisms in their spelling, per se? It must be admitted that it takes quite a great knowledge of language to create shortened forms and develop creative alphanumerisms, read, analyse and respond in order to maintain conversation. Is not this what language is? And, is the reading of text messages viewed by teens as reading at all, or even reading comprehension? Can text messaging and CMC as a whole be contributing to language development rather than impairing it? At least, teenagers are reading and writing and moreso, creating.

Varnhagen et. al., (2009) concur with conclude that there were "few relationships exist between new language use and spelling ability" and language development (p.731). Their study focussed on examining the relationship between what they describe as "new language" and spelling ability. They report that when a spelling test was administered to teens in the study, few spelling errors were identified in the corpus. When compared with other features such as

pragmatic lengthening and emoticons, the spelling errors were the least on the list and recorded a standard deviation of 1.5 (Range= 0-6). Though this was a plausible study and matches work done by Manzo; Plester, Wood and Bell and Lenhart, its main focus was spelling. While the study revealed that most of the errors made were in the area of shortcuts including word combinations, phonetic spellings and alphanumerisms (sd= 9.3; Range= 4-43). Therefore, even though casualty was established with reference to spelling, other linguistic factors were evident. High incidence of phonetic spelling, for example, was not included as spelling errors. But, is phonetic spelling entirely bad? Phonetic spelling (actually) shows prowess in the basic tool needed for spelling; a knowledge of speech sounds. Studies of this sort, though, need to inspect language as a whole rather than examining its components. Further, the spelling test was given to the learners rather than looking at their regular/formal writing pieces for evidence of spelling errors. Participants were able to think about and focus on their spelling and maybe, this accounted for the low occurrence of misspellings.

Drouin (2010) interestingly pinpoints that "text messaging and textese have separate, and significantly different, relationships with literacy" (p. 73). By separate and different it is meant that the participants who sent more text messages were more proficient in language (especially in the areas of spelling and reading) and vice versa. This study seems to suggest that those who know the language use the language in texting and are better able to create. Drouin's study also examined the use of textese in communication with superiors (lecturers and professors) and reports that frequent texters were able to separate formal and informal writing situations. This study, however, was conducted with College age participants who are probably more able than their teen counterparts to separate writing situations because of an increased awareness of writing contexts. But, what about teenagers; secondary school students? Are they able to separate formal and informal situations so that that textese is not evident in their formal writing pieces? Durkin, Ramsdent and Walker (2010) experimented with adolescents who have specific language impairments (SLI) and those who display typically developing (TD) language. Their research finding strongly echo

Druoin's and found that adolescents with language impairments were less reluctant to utilise language and be creative in texting than their typically developing counterparts.

Tagliamonte and Denis (2008) also report that text and instant messaging need not spell "linguistic ruin" (p.3). The main focus of their research was to examine over millions of natural words used in CMC aand their influence on the four areas of grammar. They purport that this form of language is a "unique new hybrid register" which exhibits a combination of formal and informal language structures (p.3). Since formal language, then, is the basis for text messaging, Tagliamonte and Denis put forward that some amount of formal language knowledge is necessary for its creation. Therefore, supporting the notion of Druoin as well as Durkin, Ramsdent and Walker, the more knowledge the texter has of formal language structures, the more able the texter is to maintain his/her knowledge. Proving, probably, that text messaging does not necessarily impede language, but enhances it.

Wood , Jackson, Hart, Plester and Wilde (2010) also advocate that text messaging does not affect preteens' literacy abilities. Interestingly, a corpus of one hundred and fourteen preteens who had never owned a phone were given mobile phones and placed either in the intervention group or in the control group. The phones, which were loaned to the preteens on weekends and school breaks for a ten-week period, were only capable of sending text messages. In fact Wood et. al. postulate that the "results show that text messaging does not adversely affect the development of literacy skills within this age group, and that the children's use of textisms when text messaging is positively related to improvement in literacy skills, especially spelling" (p.28). Though credible in a plethora of ways, this study has some gaps that are worth mentioning. First, the participants had limited time with the mobile device. This limited time with the device could have lead to less frequent use as Campbell and Park (2008) aver that teenagers' mobile phones are "highly individualised and regarded as extensions of themselves" (p. 372). So, because of the impersonalisation of the device, teenagers might not have texted as much as they would have with their

own devices. Also, teenagers utilise the mobile phone in a variety of ways (such as playing games and taking photos) and limiting the use just to text messaging might have made the device otherwise uninteresting to the teens. Also, the teens were aware of the analysis of their messages and may have tailored their activity to suit the researchers' expectations. Then, since the participants were first time users, it could have taken a while to adjust and adapt to owning a mobile phone. Hence the emphasis might not have been on text messaging only, but on exploring the other features of the phone. Therefore, can it be deduced that text messaging does not have an effect on language? And, have first time users had enough experience with texting to measure its impact in this way? What about the frequency factor? As texting frequency increases, does language ability increase or decrease? What really is the relationship between frequency of text messaging and literacy skills and abilities?

The arguments presented (somewhat) prove that text messaging has no (or a negligible) effect on language skills and abilities. The main theme seems to be that teenagers with comparatively on language skills retain those skills irrespective of text frequency and jargon. On the other hand, those with limited language ability do not explore with jargon but communicate more. Either way, language ability is not affected. However, most of the studies did not actually examine the participants' formal writing pieces to perceive if jargon creeps into formal situations. and, very few studies spoke (whether oral or written) with the participant themselves so as garner key facts about their writing habits.

Further, while some studies analysed their text and instant messages and others analysed their abilities to transfer text messaging jargon to conventional language, the question of frequency of text messaging and its relation to language still remains unanswered. For instance, do teenagers who often text "u" in their texting discourses subconsciously use it to mean "you" in formal writing situations? Then, what about language ability? Are those who are more proficient in language more able to control or create jargons? And, what about those who are less competent in language; does text messaging hinder or enhance their language skills and abilities? Do language skills increase or decrease with jargon

use for teens with developing or underdeveloped language abilities? Then, what about the teenagers themselves? Do they think that text messaging affects their language and writing abilities? Do they find themselves unwittingly writing textese in their formal pieces? The answers to these questions are pertinent to the discourse about text messaging and its influence on language since they shed light on the issues from a holistic point of view.

2.2.1: The Raping of the Language?

Some researchers, however, adamantly challenge the notion that text messaging has a positive influence on teenagers' formal writing skills and abilities (Ross, 2007; O'Connor, 2008; Berman, 2009; Humphrys, 2007). The perception that text messaging negatively influences teenagers' and young adults' formal writing skills and abilities mainly stems from the media, teachers, other educators, and parents who frequently pinpoint evidence of text jargon in formal writing situations.

Humphrys (2007) a Media Online journalist stresses the "raping" of the English language due to text messaging. He dramatically states that text messaging is "pillaging our punctuation; savaging our sentences and raping our vocabulary" (p.1). Humphrys further states that text messaging is doing to language what Genghis Khan did to his neighbours in the past. His article mainly focuses on the changes made by the Oxford English Dictionary to accommodate text messaging lingo. For example, some words are no longer hyphenated in Oxford English Dictionary since hyphenations are not used in texting. Humphrys blames this proliferation of non-hyphenated words solely on CMC and text messaging. Freiss (2003) also reports that some adults opine that text messaging is ruining children's language skills. His paper, "Yo can u plz help me write English" draws mainly on the experiences of parents and teachers who have evidenced netspeak in their children's writing. Freiss reports the experiences of a parent, Carl Sharp who reviewed his fifteen year old daughter's job applications and observed text messaging language use. Textisms such as "2" for to, "b" for be and "i" for I were written in her application. Freiss confirms that

the experts he interviewed for his article think that textspeak is acceptable for texting, but not for formal writing and text messaging affects language because teenagers who write it find it difficult not to write it in formal writing situations.

According to Ross (2007), an English teacher, the language used in text and instant messaging is "negatively affecting students' writing quality on a daily basis" (p.4). Ross came to this conclusion after detecting text messaging jargon and the constant error of same correction while marking formal writing pieces.

Further, the University of Alabama's Computers and Applied Technology Programme (2009) conducted several case studies so as to ascertain the extent to which text abbreviations affect teenagers' grammatical structures and depth of writing. The results were consistent with Ross' and the case studies show that "breezy shortcuts" related to text messaging consistently appear in teenagers' formal writing (p.2). Further, as reported by teachers and parents, the sentence structures written by students who text frequently were found to be "short and choppy" (p.2). Like Plester et. al.'s study, this focussed heavily on text acronyms and abbreviations and ignored the other crucial elements such as punctuation, syntax and the use of emoticons. However, it begs the question as to whether text messaging is solely responsible for "breezy shortcuts". What are some other factors that can contribute to such a phenomenon? Are there other underlying, but ignored, factors that are causing the presumed language decline? Or, is it a combination of factors? If so, what are the combinations? And, what about the comparisons of students' performance? What instruments were used to measure and compare this (presumed) language decline? Obviously, time, in terms of frequency is a great factor in the issue of text messaging and language. Were textisms observed once or over a period of time? And, did the textese observed increase or decrease with frequency of text messaging? These very important questions remain unanswered by research.

A sector of Irish educators also claims that fifteen year olds in Ireland demonstrate this ostensible lack of prowess in grammar and punctuation that seems to be related to text messaging. This was highlighted by Dublin's State Examination Commission in 2007. The Commission reports that students were

excessively dependent on short sentences, unduly simple tenses and limited vocabulary. The results were compared with those of 2003 when Ireland was among the top ten performers in the Organisation for Economic Co-operation and Development's literacy standards. Some Australian politicians and educators share the Irish experience and also fear that text messaging is depleting teenagers' formal writing skills and abilities. (Weerakkody cited in Cohen, 2008). But, is the concern really about text messaging or about the maintenance of International Literacy Standards and "bragging rights"? Or, are educators playing the age-old blame game? And, what are some other variables that might have contributed this decline? Are students more or less inclined to language? Do teachers' methodologies create an interest in literacy? Surely, text messaging alone cannot be viewed as the sole contributor of declining literacy standards all over the world.

O'Connor (2008), an American English teacher, also reports that teenagers and young adults are so accustomed to writing shorthand that even those who claim to proofread their writing, read right past the text messaging lingo present in their formal work. Further O'Connor, like Freiss, raises the concern of text (and instant) messaging lingo being observed not only in school settings, but also in teens' job applications. Interestingly, O'Connor notes that "heavy IM use actually changes the way students read words on a page" (p.225). However, this is highly opinionated and not founded on evidence-based research.

Berman (2009) also examined the overlap between the informality of email communication into written legal discourse and agrees with O Connor's observations. She notes that several of her Israeli law students wrote entire sentences in their case notes using the informal language structures associated with text messaging. Berman concludes, quite interestingly, that in her situation text messaging has a profound impact on "accurate student writing in English within a proscribed format" (p.1). Acton (2009) also reports that text messaging lingo is evidenced in job applications made by teens. She puts forward that some teens are lessening their chances of employment by using text messaging lingo

(and emoticons) in their job applications as employers tend not to hire such persons.

Reyes' (2008) study follows the same trends as Berman's and purports that detailed writing and elaboration of points have become lost arts due to the succinct nature of text messages. Her study also indicates that teenage students rely heavily on the Auto Correct feature when typing documents in Microsoft Word. According to Reyes, this feature may automatically highlight acronyms like ttyl (talk to you later) or idk (I don't know) but may completely miss commonly used symbols such as ampersand (&), percentage (%) and asterisk (*). Myhill and Jones' (2007) post hoc study on teenagers' revision process during online writing challenges Reyes' findings and establishes that revision occurs at several stages of the writing process and is complex in nature. Further, they claim that revision of writing involves several cognitive processes that might be absent in some teenage learners.

There seems to be a great fear among parents, teachers and other educators that text messaging may destroy the foundations of the English language. Again, most of these qualms are based on observation rather than empirical evidence from research. Further, these fears are not based on a thorough, holistic examination of teenagers' formal pieces neither do they take into account the frequency with which teenagers send and receive text messages. Therefore, does higher frequency of texting mean more textese in informal writing and vice versa? Then, what about the idiosyncrasies such as gender differences? Are girls more likely to write textisms than boys or vice versa? Do students who have a better grasp of the English Language tend to write less (or more) text jargon in formal writing? These are pertinent questions that remain unanswered and represent gaps in the literature. The correlation between frequency of text messaging and the instance of jargon in formal compositions therefore is crucial to such arguments.

Then, text messaging is complex and dynamic and specific to social groups. Some teenagers who text use a particular text messaging lingo more often than others. For instance, among teenagers in a specific school (or district)

the use of emoticons and alphanumerisms might be more popular than the use of lexical shortenings, per se. Therefore, it cannot be concluded that language difficulties in every place and for every teen is based on text messaging. If text messaging is related to language decline, it is a part of a myriad of other factors and probably not the only factor.

2.2.2. Text Messaging as a Tool in the Classroom

Perhaps, the greatest debate about texting and language lies in its use in the classroom to enhance language and other abilities. Its proponents claim that since teenagers and young adults are utilising this tool on a large scale, it can be integrated in educational contexts. Its opponents decry its use and posit that it informalises communication and crosses boundaries.

Some researchers are of the opinion that text messaging can be used as a tool in the classroom to aid writing and language skills in general. This viewpoint is based a the conceptual framework developed by Prensky (2001b). Prensky (2001a) propagates that the millennial generation is a "wired generation" and as such they "think and process information in fundamentally different ways from their predecessors" (p.1). Prensky advocates that today's teenagers are Digital Natives and their educators are Digital Migrants. As such, an education system that serves Digital Natives must be presented in a language and manner which they understand. As a result, several researchers have explored the possibility of infusing technology-based activities in the classroom. It is upon this premise that the exploration of using text messaging as tool in the classroom was developed.

Fallakhair and Pemberton (2004), for example, conducted a focus group study in order to investigate the possibilities for supporting language learning through CMC. Their results show that "a large number of desirable attributes for learning environments emerged" (p.1). Markett, Arnedillo-Sanchez, Weber and Tangney (2006) also experimented with using text messaging as a tool in the classroom. They developed the PLS TXT UR Thoughts Project which was designed to foster greater "interactivity" in the classroom. Markett et. al. posit that

"greater feedback for lecturers" and "greater motivation among students" were the utmost results of the project (p.290). However, this concept may be slightly flawed since researchers clearly agree that most teenagers and young adults employ text messaging mainly for the purpose of social networking with their peers (Faulkner & Culwin, 2005; Ling, 2004; Grinter & Eldridge, 2001, 2003; Grinter, Palen & Eldridge, 2006; Oksman & Rautiainen, 2007; Haddon, 2007; Oksman & Turtiainen, 2004). Therefore, introducing SMS as a method of "interacting" with lecturers may prove to be self destructive. Further, Johnson (2006) criticises this type of learning and states that "learning involves human interaction" (p. 46). And, with this method teachers cannot be sure if their teenage students are the ones sending them the messages. The reliability of this project is therefore threatened.

Thornton and Houser (2005) also conducted an experimental research among Japanese College students and rates the employing of SMS to teach the students one hundred English words as being highly effective. However, Kiernan and Aizawa (2006) conducted a similar research in Japan and note that there were a few beneficial outcomes; and admit that using text messaging for task based English teaching "moves the learners away from verbal and visual forms of communication and are not useful for foreign language teaching" (p. 80). Naismith (2007) also experimented with employing text messaging to support administrative communication in higher learning. Naismith notes that this project was successful as students were satisfied with the "quantity and content" of the text messages and tutors observed behaviour changes (p.155). Naismith however points out an important issue with mobile learning: the role staff members play in the process. She notes that "text messaging must be integrated into both the staff and student experience" since some of the staff members in the experiment found it difficult to compose appropriate text messages (p.155).

Childress and Braswell (2006) employed technology-based learning strategies in the classroom. They designed a massive multiplayer online simulation game in order to increase realism and interactivity in the online or virtual learning environment. Employing co-operative learning strategies in their

design, their research reveals that students were motivated and the blur of face-to-face interaction in virtual classrooms was eradicated, even if the interaction was implicit. The research seems to suggest that students prefer the anonymity of online communication environments.

Tomita's (2009) investigation pinpoints that text messaging can be employed as a tool in the classroom. Tomita emphasises that this practice has benefits for both the students and the teachers. He notes that texting allows students to write while providing opportunities for the teachers communicate with the students resulting in effective "communities of practice" (p.184). However, Hall (2010) warns that ICTs should not be employed in the classroom "just for the sake of it" (p.15). Hall recommends that teachers should carefully consider if using the ICTs would facilitate teaching that could not be achieved through traditional methods, improve students' work quality and enable the learner. These key factors must be attended to before the decision is made to use a particular technology-based medium.

Some researchers, however, raise concerns about employing ICTs in the classroom. Kennedy, Judd, Churchward, Gray and Krause (2008), for instance, question if today's teenagers and young adults are really digital natives. They conducted a large scale survey of first year Australian university students. Although they admit that the students proved to be "highly tech-savvy" they highlight that that these skills, when examined beyond the point of entrenched technology and tools "show considerable variation" (p. 108). But, could these variations be related to individual differences? Were all participants equally "tech savvy"? It is highly likely that some of the students would have had more experience with and exposure to a wide variety of technological tools and as a result would have been more proficient than those who were not. This exposes yet another critical flaw with Prensky's concept which seems to be highly westernised and rigorously dependent on access to technological devices. For instance, would Prensky label the children from the Wana tribe in Poso, Indonesia Digital Natives? Further, are the Patamona children from Guyana's rainforest Digital Natives? Would they prefer to learn with technology rather than

by traditional methods? These children, by age, qualify Prensky's definition of a Digital Native, but not by experience. Experience with and access to digital devices should also be determining factors for qualifying someone as a Digital Native. This begs the question, then, based on experience with and exposure to technology, are some of today's teenagers really Digital Migrants and vice versa are some adults really Digital Natives? Prensky's definition, then, lacks universality. Perhaps this is an iniquitous comment since no one definition or concept can be entirely and inherently universal.

Sternberg, Kaplan and Borck (2007) also purport that adolescent literacy can be enhanced through computer mediated communication. Their paper mainly focussed on improving adolescents' literacy through e-mail, text messaging and instant messaging. They put forward that since "text messaging and cell phone talking require skills in reading, writing, listening and speaking" it can be used as a way of developing the very skills it requires (p.417). Shen, Wang and Pan (2008) also report that the use of text messaging increases adolescents' literacy skills especially in the area of interactivity. They report that in blended Chinese classrooms there is "a pedagogically detrimental lack of interactivity" (p.1074). Further, Shen, Wang, Gao, Novak and Tang (2009) claim that the lack of interactivity in Chinese classrooms is a long-standing feature especially in blended classrooms. Using text and instant messaging, students were able to ask and answer questions and make suggestions to which their instructors replied. In fact, when the instructor asked a question, the students were given an opportunity to answer using text messaging. Shen, Wang and Pan found that there was greater interactivity and describe the mobile learning system utilised as "intrinsically motivating" to the students (p.1079). Further, Haggan (2010) also alludes that text messaging is motivation to learners and that the "medium may not be as linguistically damaging as is commonly thought" (p.150). But, is mobile interaction really interaction? And, what were some of the causes of the lack of interaction in blended classrooms? Was the text messaging band aid applied to the wrong bruise? Donato (2009) states that "instead of interacting and developing social skills at an early age, kids are willing to isolate themselves"

and "although the people on World of Warcraft may seem like friends, nothing can replace face-to-face interaction" (p.12). However, Campbell and Park (2008) argue that mobile interaction is part of the rise of the personal communication society and "the assertion that mobile communication contributes to an entirely new form of social order would be an overstatement" (p. 381). Further, Quigley (2010) notes that "the digital world for all its benefits limits opportunities for young people to develop the social interaction skills that are critical to their overall emotional and social development" (p.749). Further, other researchers allude that employing text messaging and other forms of ICT in the classroom are depleting face-to-face teacher pupil interaction (Hauser, 2010) and causing learners to become mentally lazy, technology-dependent cyberkids (Mc Auliffe, 2001).

So, are teens becoming less proficient at carrying out regular face-to face conversations and language skills altogether? Is text messaging really replacing talk? Do teenagers prefer texting even in situations where they can interact face-to-face? These are pertinent questions that are being asked in society today (Thulin & Vilhelmson, 2009). Some researchers highlight that text messaging is influencing the way teenagers communicate as some teenagers have become less prone to engage in face to face conversations. For instance, McKay, Thurlow and Zimmerman (2005) cite Palfini (2001) and reveal that today's teens communicate via internet and communication technologies more than they do face to face. Gormly (2009) confirms this view and reports that today's teenagers seem to be losing basic face-to-face communication skills. Bauerlein (2009) also agrees that teenagers prefer text messaging rather than face to face interaction and as a result are losing the ability to read and interpret basic non-verbal cues. Lenhart, Ling, Purcell and Campbell (2010) also report that teenagers communicate mainly through text messaging rather than by face-to-face interaction. Their study of the mobile behaviours of American teenagers clearly reveals that for each age group, all teens communicate more by text messaging than by face-to-face contact. Reid and Reid (2004) however emphasize that "the fact that some people prefer texting to talking suggests that they get something out of texting that they cannot get from taking" (p. 7). The question is, then, what

features of text messaging make it a preferred medium for communication? Reid and Reid highlight that the main reason why some of the teens in their large scale study preferred text messaging was because of the fact that they could express issues that they would not readily address in a face-to-face situation. The teens reported that it was better to deal with certain difficult situations through text messaging rather than face-to-face. Further, Lenhart et. al. reveal that the teens in their focus group reported that they preferred texting because of its impersonal nature. The teens in the focus group revealed that through text messaging they could have related experiences to their friends without the pressure of their tones and gestures being misinterpreted.

Pierce (2009) also notes that some teens experience social anxiety, a form of shyness and such prefer text messaging rather than face-to-face interaction. Pierce interestingly observes that in some cases, text messaging replaces face-to-face contact as it allows those who experience social anxiety to avoid the aspects of face-to-face interaction that challenge them. Interestingly, Pierce notes that more females preferred texting rather than face-to-face interaction than the males in the study. Pierce concludes that a positive relationship exists between social anxiety and communicating via text messaging.

However, some researchers propose that text messaging is not necessarily replacing face-to-face interaction, but enhancing it (Katz, Rice & Aspden, 2001; Thompson & Cupples, 2008). For instance, Bryant, Sanders-Jackson and Smallwood (2006) advocate that several teenagers utilise socially interactive technologies (SITs) such as text messaging to co-ordinate their peer networks. Further, Kenyani and Farham (2005) cited in Harper, Palen and Taylor (2005) highlight that through mobile telephony, co-ordination of activities becomes simpler and faster. In fact, Kenyani and Farham assert that "this newfound ease of mobile communication is creating new opportunities for meaningful social interaction" (p.287). Their research supports Byant et. al's viewpoint and reveals that the time their participants spent text messaging was positively correlated with the time they spent interacting face- to- face as participants often utilised text messaging to arrange face-to-face meetings. Bajarin (2007) also notes that

today's teenagers are not losing the art of face-to-face social interaction. Actually, Bajarin points out that teenagers are becoming more adept at expressing themselves physically during social interaction and are observed greeting each other by hugging. Bajarin argues that it is not possible for social misfits to express themselves this way neither it is possible for socially odd persons to manage conversions like most of today's teenagers do. Bajarin particularly points that communication and social interaction are basic human needs and as such teenagers will employ any means necessary to stay connected. Interestingly, Bajarin notes that text messaging enhances social and face-to-face interaction because teenagers find out and know much more about each other through texting as compared with face-to-face conversations. He concludes that internet and communication technologies "will add to and enhance our core desire of humans to socialize and communicate" (p.1). Ling (2007) also claims that teenagers' social interaction seems to be strengthened by text messaging. Ling cites research from several countries and postulates that mobile telephony facilitates informal social interaction since the "threshold for interaction has been lowered" (p.7). By this Ling alludes to the fact that through text messaging teenagers can share their thoughts at any time and in any place and do not have to wait for a face-to-face opportunity. Ling further reveals that teenagers (through mobile telephony) have learnt the art of co-ordination (employing mobile telephony to arrange c-present activities). Most crucially, however, Ling pinpoints that text messaging promotes, enhances and fortifies social cohesion. However, Ling warns that this can be both positive and negative (gang violence) in nature. In his book, *New Tech, New Ties,* Ling (2008) further stresses the concept of social cohesion through mobile communication and notes that mobile communication strengthens the ties and social bonds among family and friends. It seems as if researchers are divided on the issue of whether text messaging and mobile telephony in general impede or enhance teenagers' ability to interact in a social setting. Both sides of the debate put forward key and critical arguments on the subject. This suggests that the phenomenon may be situational and not general in nature. Some teenagers may frequently text but are

still able to carry out conversations and interact socially. However, others may become entangled and usurped by text messaging and as a result become socially crippled. Further, several intervening factors (family relationships, for example) other than text messaging may directly impact how a teenager interacts socially and therefore it may be difficult to decipher whether text messaging alone impedes (or enhances) social interaction. Further, what role does personality play? Does the teenager's personality change with increased text messaging? Does the teenager move from a social butterfly to a social misfit with increased text messaging? These questions are also critical to the debate and should be explored.

Du Vall, Powell, Hodge and Ellis (2007) also explored the use of text messaging to improve social presence and communication in online learning. They advocate that "one approach for enhancing interaction and communication among students and between an instructor and students is through text messaging" (p.26). Interestingly, however, this study assessed the mobile learning needs of the students before engaging them in mobile learning. They report that one hundred percent (100%) of the respondents felt comfortable participating in courses using text messaging and almost ninety six percent (95.8%) felt comfortable expressing their feelings. This study is plausible because it sought to explore students' ideas before embarking on the project. But, is the interaction through texting between lecturers and students crossing personal and ethical boundaries? And, is this interaction transferred to face-to-face interaction? According to Broinowski (2006) SMS can be used in the classroom in four main ways. These are: administration, resource information, coursework and provoking thought. Broinowski stresses that since text messaging is a "useful adjunct to teaching" protocols need to be established for its use (p.35). He developed five protocols; the first of which is permission and reiterates that "it is very important that students feel comfortable with the ways they learn" (p.35). Broinowski's greatest concern though is swamping: inundating students with text messages that they "turn off metaphorically and literally" (p.35).

Broinowski provides sensible research on the use of text messaging in the classroom.

According to Harley, Winn, Pemberton and Wilcox (2007) text messaging can be employed to support students' transition to University. Like Broinowski's study, their research sought students' views on using text messaging as a way of social integration into the University. The research proves that students were very comfortable using the tool as it informalised student-instructor relationship. However, Henley (2009) questions if this blurring of the boundaries between students and teachers safe. And, what about language use? Should language in this case be formal or informal? Also, will such practices help young adults to discriminate between formal and informal writing situations?

Sweeny (2010) advocates that using text messaging in the classroom helps teachers to form a bridge for emerging forms of communication. This act, Sweeny states, will "engage learners and make writing more meaningful" (p.129). as mentioned, teens mainly text for fun-filled communication with those whom they have existing relationships and feel the need to communicate with. Should every fad and passing craze be included in education systems? Or, should educators allow a natural infusion?

The debate as to whether or not text messaging and mobile telephony in general are tools to be used in the classroom is an ongoing one. There are still uncertainties and it seems as if concerns about the bandwagon effect are rife. Maybe, there is a concern that all educators may want to adopt text messaging in the classroom whether or not it is necessary or beneficial to the learner (Hall, 2010). However, how do teenagers feel about using text messaging in the classroom? And, what happens when text messaging becomes obsolete, outdated and boring? It must not be assumed that because text messaging consumes their out-of-school life (as texting is banned in some schools) that it would be suitable to bring it into the classroom. It may be interesting to find out the teenage learners' views on the issue. Research in this area, then, should focus on the general principles of employing technology in the classroom rather than focussing on the specific technological devices.

Generally, however, most researchers agree that distinct linguistic forms have evolved as a result of text messaging. (Ling, 2004; Ling & Baron, 2007; Grinter & Eldridge, 2003; Thurlow, 2003). There is nevertheless a need for in depth studies on each linguistic feature. For example, are emoticons more prevalent than acronyms? And, are lexical shortenings evolving at a faster rate than abbreviations? These questions are still unanswered. Also, demographic variables such as age and gender require further attention. Additionally, since the text messaging language is an evolving one and new linguistic features are introduced every day, there is also need for follow-up studies so as to keep the information current.

Several of the studies, except for a few, were conducted without actually interfacing with the teenagers and young adults themselves and without the examination of their writing samples. Thus, the teenagers' and young adults' perspectives and opinions were not represented and probably this is the greatest gap in the literature.

As mentioned at the beginning of the review, the literature on this relatively new area of research is (obviously) quite sparse. Additionally, only a few researchers have studied this area. Generally, the text messaging phenomenon among teenagers and young adults, because of its rapidly evolving nature, remains understudied (Thurlow & Poff, 2010).

2.3 The Present Study

The purpose of this study was to investigate the relationship between text messaging and formal writing skills of high school students. The research question is, "Is there a relationship between text messaging frequency and the use of text messaging jargon in formal writing compositions?" There are three possible relationships. Firstly, it is possible that there is a negative relationship between the frequency of text messaging and the use of text jargon in formal writing. This means that it is likely that as the frequency of text messaging increases, the use of text jargon in formal writing decreases. This possibility exists since in some cases, secondary school students are able to separate formal and informal writing and as such use text messaging language when

texting and formal language when writing; an ability Walling (2009) refers as code-switching. Walling defines code-switching as "moving fluidly from one form of speech or writing to another" and claims that "most students are adept at code-switching" (p.95).This is particularly true with reference to learners who possess a good command of the English Language (Lan, 2000). Therefore, there is a possibility that as the frequency of text messaging increases, the instance with which text messaging jargon appears in formal compositions decreases.

A second possibility is that a positive relationship exists between text messaging and formal writing. That is, as the frequency of text messaging increases, the use of text jargon in formal writing also increases. This prediction stems from a body of research conducted by Ream (2008) which states that secondary school students' text messaging behaviours are damaging their language skills. According to Ream (2008) "text messaging and the internet are destroying the way students read, write and think…" (p.6). Ream further contends that only twenty five percent (25%) of secondary school students are able to detach themselves from words such as "soz' (sorry) and acronyms such as "tlgtg" (talk later, got to go) in formal writing situations. Therefore, this suggests that as the frequency of texting increases, so does the frequency with which text messaging jargon appears in formal writing.

A third possibility is that no relationship exists between the frequency of text messaging and the use of text jargon in formal writing. In other words, there is no discernable relationship between the frequency of text messaging and the use of text jargon in formal writing. This is based on the premise that today's societies are undergoing dramatic sociocultural changes and as such are becoming informal (Baron, 2005). These changes are portrayed in the societies' language forms and patterns. Tagliamonte (2006) purports that over the years the language of societies has undergone so many "morpho-syntactic and discourse-pragmatic" changes and as such today's language is far different from the language of previous generations (p.309). He concludes that "these sociocultural changes may have added to the influence of youth as drivers of current linguistic change" (p. 310). Baron confirms Tagliamonte's notion and

informs that "many [teenage] students of this age are alliterate" (p.1). That is, students have the ability to read but are choosing not to. Therefore, frequency of text messaging may not be the sole causal factor of the instance of jargon in formal writing situations. Other forms of computer mediated communication (CMC) such as instant messaging (IM), e- mailing, social networking and web logging (blogging) can account for the instance of jargon in formal writing. These forms of CMC rely on informal jargon use and can be another reason why jargon appears in formal writing. Therefore, a myriad of other intervening factors can account for the instance of text messaging jargon in formal compositions rather than the frequency of text messaging itself. This does not, however, erode the fact that text messaging may or may not have an impact on formal writing skills and abilities. The possibility therefore exists that as the frequency of text messaging changes (increases or decreases) the instance of text jargon in formal writing does not change.

To take into account individual differences in participants, language skills were measured independently of writing skills. This was done so that the researcher could have had an overview of the participants' language skills since learners with low language skills may write what resemble "textisms" in formal writing compositions. For instance, a learner might use phonetic spelling for certain words. On the other hand, learners with high language ability may be able to accurately discriminate between formal and informal writing situations and maintain a separation between the two. Examining the learners' language scores also formed a backdrop for the scoring and analysis of the formal writing pieces.

CHAPTER THREE
Methodology

3.1 Participants

The sample consisted of 152 Year 11-13 secondary school students (68 males and 84 females) from ages 13 to 18 from three Secondary Schools and Colleges in the greater Wellington area. Thirty participants is considered an adequate sample size for correlational research (Mertler & Charles, 2010; Creswell, 2008; Cohen, Manion & Morrison, 2002). The schools were chosen based on three criteria: decile, location and gender composition. The researcher used these criteria to ensure variability among participants. The researcher also selected co-educational schools to ensure gender balance as previous research has shown differences between males and females with reference to text messaging. For instance, Grinter and Eldridge (2001) reveal that girls tend to send more text messages per day than boys while boys' text messages tend to be more succinct in nature than girls'.

3.2 Design

This study was based on a non-experimental quantitative design; more specifically correlational research design. With this type of design, the researcher investigates the relationships between specified variables (Creswell, 2008). Simply put, changes in one variable are related to changes in another variable. According to Mertler and Charles (2010) correlational research attempts to measure the nature of the relationship between two or more variables. Creswell describes this relationship as the covariance between two variables.

Mertler and Charles (2010) purport that correlational research is useful because it allows researchers to explore relationships between variables and can be used to inform future research. De Vaus (2001) however warns that it should not be suggested that because a variable predicts another that a causal relationship between the two can be established as "good prediction does not depend on causal relationships" (p.4). Further, Cohen, Manion and Morrison

(2002) authenticate correlational research for its ability to extrapolate simple relationships between factors that are perceived to be related to the phenomenon.

More specifically, the explanatory correlational design was utilised in this study. According to Creswell (2008) explanatory correlational design is a type of "correlational design in which the researcher is interested in the extent to which two variables co-vary" (p.358). Explanatory correlations, Creswell avers, involve a simple association between two or more variables. This particular design methodology was employed in this study for two main reasons. First, the nature of the study did not involve manipulation of the independent variable (frequency of text messaging) neither was an intervention introduced. This study was designed to describe the naturally-occurring relationship between variables rather than to introduce an intervention to influence that relationship. Correlational studies are particularly useful in situations where the manipulation of the independent variable is not or should not be manipulated. Johnson and Christensen also postulate that in some research situations, it is not feasible to manipulate the independent variable and as such correlational research designs become applicable. This study was typical of those situations.

It is important to note that correlations provide evidence of relationships between variables, which may or may not be causal. However, several researchers emphasize that correlation does not imply causation (Mertler & Charles, 2011, Mertens, 2005, Johnson & Christensen, 2008, Cohen, Manion & Morrison, 2002). Johnson and Christensen, for instance, warn that concluding that variable A causes a variable B because A precedes B is a post hoc fallacy. Mertens also highlights that the post hoc fallacy regularly occurs in non-experimental research, especially when the researcher attempts to identify group differences and as a result makes an "inappropriate attribution of causation" (p.150). Nonetheless, correlations are useful for highlighting relationships and the strength and direction of those relationships.

3.3 Instruments

The following instruments were developed for this study. Examples or outlines of these materials are found in the Appendices.

3.3.1 Questionnaire. A ten-item questionnaire (see Appendix A) was used to measure teenagers' text messaging behaviours. Only two of the items (i.e., items 7 and 10) required the participants to write brief responses. In each case, the researcher provided two lines to signal the length of the response and to diminish the perceived burden of the written responses. The researcher deliberately ensured that the questions were brief, clearly understood (since the language used was simple and unambiguous) and presented on one side of an A4 page. According to Bell (2007) questionnaires designed for youth must contain clear questions and scales, brief questions with brief responses, and pose limited cognitive demands on the participant. These criteria were taken into consideration when designing the questionnaire. A pilot of the questionnaire prior to the research showed that potential participants were able to complete the questionnaire in approximately two to four minutes. Seven of the other items were dichotomous (simple yes and no) in nature. One closed format item required the participants to select one of four answers. The question formats were also intentional since the researcher was aware of the varying skills and abilities of the participants.

3.3.2 Formal writing samples. The researcher examined two writing samples from each participant to measure the instance of text messaging jargon in formal writing. The samples were taken from the participants' recently submitted short stories and compositions and were no longer than two pages. The samples were equivalent is some way since all of the schools were working with the same curriculum and Unit Standards. These samples were scored for the presence of text jargon features such as alphanumerism, use of acronyms, emoticons and alternative phonetic spellings. The researcher highlighted these jargon features using a pencil. This information was tabulated using a Scoring Table (See Appendix B). The marks were erased before the samples were returned to the students.

3.3.3 Language scores sheet. The participants' language scores were also measured. In order to ensure consistency among scores for each participant, the researcher recorded students' National Certificate for Educational Achievement (NCEA) scores for 2008 and 2009 for English Language. These scores were recorded on the Language Scores Sheet (see Appendix C).

3.4 Procedures

First, the researcher sought ethical approval from the Victoria University of Wellington's Faculty of Education Ethics Approval Committee. Next, approval was sought from the school principals and teachers (mainly Heads of English). This was done by initial face-to-face visits in which the research was introduced and explained. The researcher also addressed any questions at those times. Then the official signing of consent forms (See Appendices D and G). The next step involved seeking consent from the parents and assent from the participants (see Appendices E and F). This was done by having the Heads of English and the English teachers provide these forms to the parents and students.

Following collection of the consent and assent forms, the researcher (along with the teacher) collected the writing samples. In some cases, these were the students' notebooks and in others these were photocopies of pages from their notebooks. Using pencil, an alphanumeric code was placed on the samples so that anonymity was assured. This code consisted of the first two initials of the name of the school and the student's numeric position. The code was then written on the questionnaires. The students were then asked to complete the questionnaires (see Appendix A). In some cases, the students took their questionnaires home and returned it the next day. The completed questionnaires were then attached to the formal writing pieces with the corresponding code. The researcher analysed the samples by using a pencil to lightly circle any distinct text messaging features. After each writing sample was analysed, the data was entered into the Scoring Table (see Appendix B). The samples were returned within one to three days. The language ability scores were obtained from the

schools'/teachers' records. These scores were entered on a table (See Appendix C).

3.5 Ethical Issues

The researcher considered ethical issues related to this research. One such issue was that of participants' names and other identifiable characteristics being traced back to them. In order to keep students' identities confidential, the researcher assigned each participant an alphanumeric code. These codes were used throughout the research. However, in some cases, the teachers could identify students based on traits such as handwriting and writing style. And, in some cases where their notebooks were used, the researcher had knowledge of some of the names. However, this information was not used in any way that would link the results to the students. Another ethical consideration is that of sharing information among schools. That is, the passing on of crucial and personal information (such as NCEA scores) about one school on to another. The researcher was careful to keep each school's information in separate files both on soft and hard copies.

A third consideration was that of the exposure of personal information. The researcher was careful not to expose students' individual responses to teachers, parents and principals who may be able to identify the participant. In one case in particular, however, the teacher examined some of the responses as he served as the liaison between the students and the researcher. The review the schools received was generic and cannot in any way be traced back to a particular participant, teacher, school or parent.

3.6 Scoring

3.6.1 Questionnaire. The questionnaire used for this study provided insight into the participants' text messaging behaviours such as frequency of texting, instance of jargon in formal writing and instance of error correction in formal writing. It was therefore pertinent that this instrument was accurately

scored. The dichotomous (items with only two answer options) items were scored by allotting one point or mark for each response. These points were totalled at the end of each column and represented as a percentage. This percentage gave the researcher an overview of the responses to each question and also served as a quick reference.

     3.6.2 Formal writing samples. The writing samples were scored for text messaging jargon features. These features, which were discussed in detail in Chapter One, are based Hard haf Segerstad's (2005, p. 37) coding scheme, are as follows: (a) acronyms and initialisms (i.e., using the first letter of each word in a sentence or phrase; e.g., ttyl – talk to you later), (b) alphanumerisms (i.e., use of letters and numeric graphemes in the place of words; e.g., gr8r – greater, 2nite-tonight), (c) alternative phonetic spellings (i.e., spelling words phonetically without paying attention to spelling conventions; e.g., skool, - school, fone - phone), (d) lexical shortenings which involves vowel deletion and the use of letters for words (e.g., rdr –reader, c u – see you), (e) emoticons (i.e., the use of symbols to indicate the texter's mood; e.g.,:) – smile or happy, :(– sad, =)) rolling on the floor laughing (rotfl) and omission of punctuation. With text messaging, punctuation marks such as capital letters, end marks and commas are omitted (mr hdly is so fyn- Mr. Headley is so fine.). Each feature was awarded a score of one point. The points were summed for each feature type individually and the feature type totals were summed to create a composite score.

CHAPTER FOUR

Results

The aim of this study was to investigate the correlational relationship between the frequency of text messaging (the independent variable) and the instance of text messaging jargon in formal writing (the dependent variable). The correlation between the students' language ability and instance of text jargon was also measured. The data was analysed using Pearson's Product Moment Correlation Coefficient which is a measure of correlation between two variables giving a value between +1 and -1. This was calculated using IBM SPSS 18 (Statistical Package for the Social Sciences) formerly known as SPSS. The significance of the correlation was tested by calculating the probability (p) value. The p-value is a measure of how much evidence one has against the null hypothesis. The p-value usually ranges from 0 to 1. Bivariate scatter plots were also used to depict correlations. Bivariate scatter plots are simply graphs with x and y axes that show the relationship between two values. Descriptive statistics (statistics used for describing the main features of data collected in a simple, visual manner) will be used to show the frequency of text messaging and the instance of text messaging jargon for each text messaging jargon feature.

This section presents the results of the analyses. Firstly, the correlations are reported followed by the general trends in the data.

4.1 Correlations

Correlation coefficients were computed for the two variables (frequency of text messaging and instance of text jargon features in formal writing Compositions). The results show that frequency of text messaging was negatively correlated (-0.01) with instance of text jargon in formal writing (Table 1). This represents a weak or trivial correlational relationship according to the De Vaus correlation scale. The following bivariate scatterplot (Fig. 4.1) depicts the relationship between the variables.

Table 1: Correlations among Variables

Variables	Frequency of Text Messaging	Instance of Text Jargon in Formal Piece	Language Ability
Frequency of Text Messaging	1.00	-0.01*	-
Instance of Text Jargon in Formal Piece	-0.01*	1.00	-.901
Language Ability	-	-.901*	1.00

*Correlation significant at the .05 level (2- tailed)

Figure 4.1 Bivariate Scatterplot Depicting Relationship between Variables
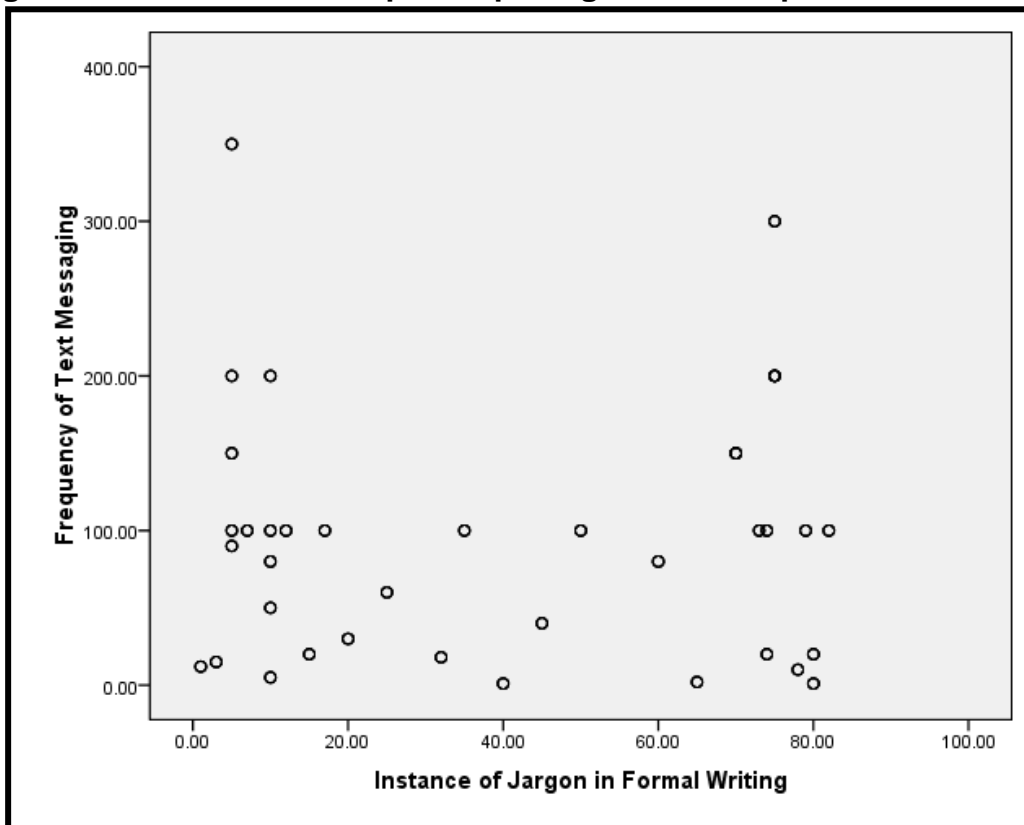
Further, the results of the correlations show that language ability and instance of jargon in formal writing were also negatively correlated (-.901). This correlation was strong and showed that instances of jargon in formal writing decreased as

language ability increased. The bivariate scatterplot in Fig. 4.2 gives a pictorial representation of this. The coefficient indicates a very strong linear correlational relationship between the two variables.

Figure 4.2: Bivariate Scatterplot Showing Direction of Relationship between Language Ability and Instance of Jargon in Formal Writing.
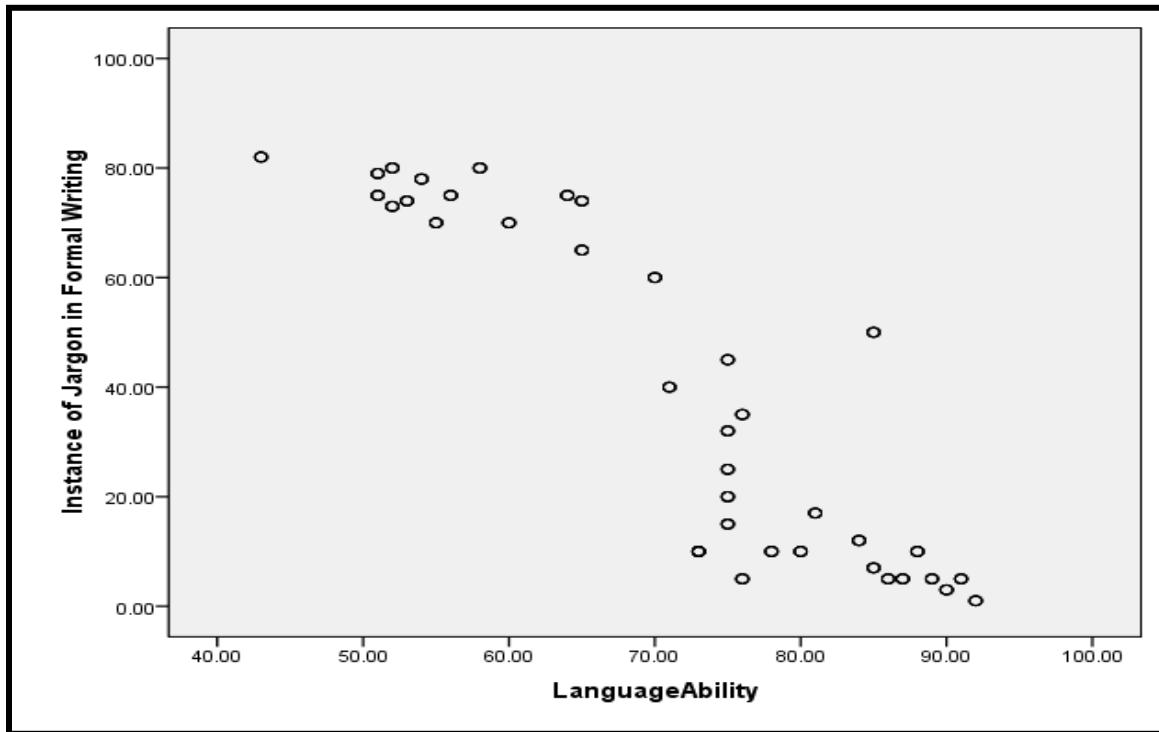
4.2 General Trends in the Data

The data show that the teenagers in the study sent, on average, 95 text messages per day with girls averaging a total of 126 messages per day, whereas boys averaged 64 messages per day. Younger teenagers generally sent more texts per day than older teenagers as illustrated by the graph (Fig. 4.3).

From the graph it can clearly be seen that the fifteen years olds in the study were the most frequent texters and the seventeen year old boys were the least frequent of all the texters. This result is inconsistent with Lenhart et al.'s study of American teenagers which showed that older teenagers text more than younger teenagers as they tended to have more friends and social networks.

The data also show that 18% of the respondents reported writing text messaging jargon in formal writing. All of these respondents (n=28) were high frequency texters who had five or more years experience with text messaging and averaged more than one hundred text messages per day.

Figure 4.3 Average Number of Text Messages Sent Per Day Based on Age

Number

Of Texts

Sent Per

Day

(Bar chart: Average Number of Text Messages Sent Per Day by Age. X-axis: ages 14, 15, 16, 17. Y-axis: 0 to 180. Blue bars = Males, Red bars = Females.)

- Age 14: Males ≈ 50, Females ≈ 98
- Age 15: Males ≈ 138, Females ≈ 162
- Age 16: Males ≈ 62, Females ≈ 82
- Age 17: Males ≈ 38, Females ≈ 123
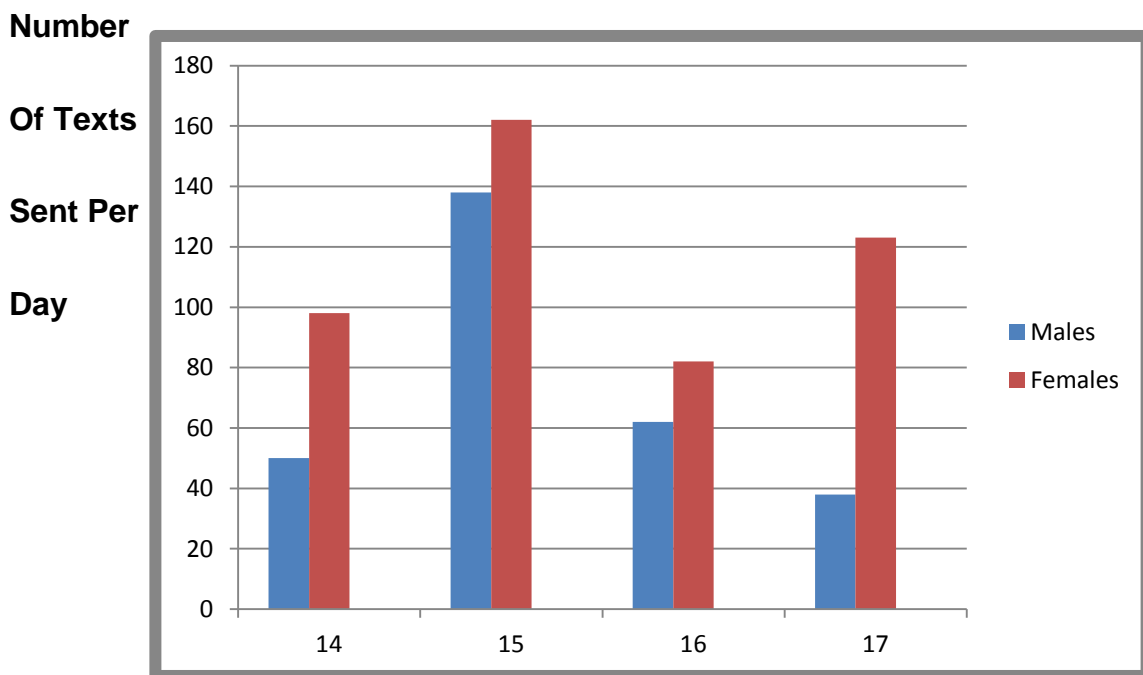
When asked if teenagers should be given the opportunity to use text messaging jargon in formal writing situations (Question 7), all but four participants responded "no". This was striking. The teen contributors posited several reasons for their agreement or disagreement. Some of the responses are as follows:

> *17-year-old female high frequency texter*: "Because its not proper english and allows you to get away with spelling mistakes"

Note that "its" was not punctuated and "english" was not capitalised.

> *16-year-old male high frequency texter*: "Because it kills the point of formal writing"

> *14 year old female low frequency texter*: "Entirely informal and teachers may not understand"

> *15 year old male high frequency texter*: "its bad"

> *16 year old low frequency texter*: "it doesn't support good grammar only bad habits and is not at all readable

Several responses alluded to teachers, parents and even examiners not understanding text language and as such a lower than deserved mark may be allotted.

Question 8 was "Do you think that text messaging affects your conventional writing skills (spelling, punctuation, Grammar, vocabulary, sentence structure, etc)?" Most (55%) of the respondents did not think that their text messaging affected their conventional writing skills while 45% thought that text messaging affected their formal writing. Actually, 53% of the male participants and 57% of the females thought that text messaging had no effect on their conventional writing. Further, 48% of the male respondents and 52% of the female respondents were of the opinion that their formal writing skills were affected by their messaging. It was interesting to note that some of the respondents thought that some of their conventional writing skills were always poor and thought that text messaging neither enhanced nor impeded their formal writing. For instance, a 15-year-old high frequency texter who responded "no" to the question wrote, "Well sometimes punctuation but very little. I've never been good at punctuation." And, a 16-year-old low frequency texter wrote, "I've always had bad spelling and grammar so…"

More of the high frequency texters reported that their text messaging affected their conventional writing skills (See Table 2). However, there was some amount of variation in the ways in which their writing was affected. Of the 42% of high frequency texters who responded "yes" to Question 8, 18% of the respondents reported that frequent text messaging affects their spelling ability, 12% agree that texting affects their punctuation, and another 12% attribute their constant lexical shortening of words by using phonetic graphemes (readN – reading) to frequent text messaging.

Table 2: Frequency of Text Messaging and Opinions about Its Influence on Formal Writing.

Frequency of Text Messaging (in times per day)	Opinions About the Influence on Formal Writing	
	Yes	No
1 – 40 (n=60)	46%	54%
41 – 80 (n=16)	50%	50%
81 – 120 (n=40)	60%	40%
More than 120 (n=36)	78%	22%

The respondents put forward some interesting reasons for their opinions about text messaging and its influence on their writing skills. Some of these responses are as follows:

-*16 year old male high frequency texter* who answered yes:

 "I used to spell allowed aloud because of texting"

-*17 year old female* who answered no to the question:

"Because after a while of texting you get used to it and end up writing it for everything"

-16 year old male high frequency texter who answered yes to the question: "spelling, shortening things down, spelling how they sound (not correctly), being lazy with spelling"

-17 year old female high frequency texter who answered yes to the question:
 "I do not use text language, either in text message or in any writing I do."

-16 year old male who answered no to the question: "I myself find it easy enough like second nature to switch between the two and check if spelling seems out of place."

The participants were also asked if they usually review their work before submitting it and if this review involved the changing of text jargon to conventional structures. The majority of the respondents (84%) reported that they reviewed their work before submitting it; 38% males and 62% females. Interestingly the data show that for few (n=12) of the respondents the reviewing of their work involved the changing of text messaging jargon to formal language. This was particularly true for those high frequency texters who responded yes to Question 8 (text messaging influences their formal writing).

4.3 Text Messaging and Language Ability

It was predicted that students with high language ability would be better able to separate formal from informal writing situations and therefore text messaging jargon (or other informal structures) would occur less frequently in their work. It must be noted that in this case, participants with high language ability were those who scored above 70 marks and those described as low language ability scored below 70 marks. The data show that the high frequency texters averaged a total of 73 marks ranging from 51 to 91 out of a possible 100. Strikingly, the low frequency texters also averaged 73 marks; however their range was from 42 to 92. However, the data show that 90% of the high frequency

texters who scored 80 marks and above (n=40) had little or no informal structures in their formal writing. Further, 75% of the high frequency texters who scored below eighty had some amount of evidence of text messaging jargon in their formal pieces but not a significant amount. The other 25% of this group showed considerable punctuation and spelling errors associated with text messaging (lack of capitalisation was most prominent). It can be deduced, therefore, that among the high frequency texters, as the scores moved away from 80, the instance of jargon decreased.

Among the low frequency texters who scored more than 80 (n= 8: 13%) little or no text jargon was found in their formal pieces. However, those who scored below 80 showed similar phonetic spelling and punctuation errors as the high frequency group. The matrix in Figure 4.5 shows a comparison between the participants' language ability and jargon use.

Figure 4.4 Comparisons between Language Ability and Jargon Use

	High	Low
	Language Ability	

Jargon Use		
High	40	44
Low	56	12

4.4 Summary of Findings

Overall, the results of the study show that high frequency texters generally tended to have more text jargon in their formal writing. This was particularly typical of those high frequency texters with low language ability as the high

frequency texters with high language ability showed little or no evidence of jargon in their formal writing.

Teenagers with low language ability generally displayed more text messaging jargon in their formal writing whether they are high or low frequency texters. These findings support the prediction that teenagers with high language ability are able to separate formal from informal writing situations and as such informal structures are not evident in formal writing pieces.

The results also showed that in general, teenagers do not think that text messaging influences their formal writing skills. However, most of the high frequency texters who had more than five years of experience with text messaging thought that their text messaging affected their writing.

The correlations reveal that frequency of text messaging was negatively correlated with instance of text jargon in formal writing. The correlation, however, was not significant. However, language ability was strongly, negatively correlated with instance of text jargon in formal writing.

CHAPTER FIVE

Discussion

5.1 General Discussion

This study investigated the relationship between teenagers' frequency of text messaging and the instance of text jargon in formal writing. Further, this study examined the relationship between frequency of texting and instance of jargon in formal writing for students with higher and lower language ability.

This study is unique in that it sought to get the teenagers' perspective on how text messaging affects their writing. From the researcher's knowledge, no other studies (except for Pew Internet and the American Life Project) sought to ascertain teenagers' opinion about their text messaging behaviours and its influence on their writing. Rather, adults' (teachers, parents, researchers) perspectives on teenagers' text messaging behaviours were presented. The results reveal that 55% of the participants thought that texting does not influence their writing. There are two possible reasons for this. Firstly, in some cases the students' responses might have been influenced by their teachers and parents (for the few participants who took their questionnaires home). Since the teachers acted as the liaison in each case, this was difficult to avoid. Also, it was easier and more time sufficient, although not ideal, for some participants to take their questionnaires home. In one case the researcher even observed a spelling correction (made by someone else) on one of the questionnaires. Probably if the research had employed mixed methods, follow-up focus group discussions would have revealed the teens' perspectives more clearly since casual interactions with teenagers outside of the sample show that most of them are of the opinion that text messaging affects their writing in some ways.

The results generally showed that seventeen year old males were the least frequent texters (refer to Fig. 4.1). A possible reason the data revealed this is because this demographic was larger than any other age groups in the study thus decreasing the average. However, another possibility exists. It is also possible that most 17 year old New Zealand teenagers are responsible for paying

their mobile bills (personal communication, Ian Frater: 18th April, 2010) and as such tend to be more frugal with their text messaging.

The results also revealed that frequent text messaging was weakly correlated with jargon in formal writing, suggesting that there is little or no relationship between frequency of text messaging and instance of jargon in formal writing. Further, it can be deduced that frequency of text messaging does not influence the degree of jargon in formal pieces for this particular sample. One possibility for this result that the teenagers in the sample may have generally been able to separate informal and formal writing structures and as such were able to avoid informalities in their formal compositions. Secondly, based on informal conversations with the teachers, it was revealed that students are often informed about the differences between formal and informal writing situations especially with reference to examination standards. For NCEA Level One (for example), which all of the participants had completed, one of the unit standards for English is for the learner to be able to produce formal writing. Based on personal communication with the teachers, points are usually deducted for informality and therefore students are coached to avoid informal structures in their formal pieces so as to evade being allotted lower than deserved scores. Also, during the drafting process, for one school in particular, students are usually encouraged to change informal structures to formal structures. Perhaps, because some teens are reluctant to carry out the painstaking practice of presenting several drafts before the final product, they generally avoid writing informal structures in their formal pieces. It would have been interesting to find out why these teens were able to separate formal and informal writing situations since some researchers (O'Connor for example) suggest contrarily. However, this result must be discussed in the context of language ability.

Students with high language ability (despite their frequency of text messaging) showed little or no evidence of jargon use and those with low language ability generally showed much jargon use (despite their frequency of text messaging). A possibility for this trend may be that some teenagers with low language ability wrote structures that resemble textisms that may not be due to

text messaging. For instance, several punctuation and phonetic spelling errors were noted especially among the high frequency texters with low language ability. There was therefore no way of determining whether these were due to frequent text messaging or other factors. Perhaps, if the study had employed mixed methods, in-depth interviews with this cohort could have revealed more critical information.

5.2 Limitations of the Study

There were general limitations indicative of correlational studies and limitations specific to this particular study. First, the study was limited in that it could not determine cause and effect. Although a relationship between frequency of text messaging and instance of text jargon in formal writing (though weak) was established, the research failed to determine what were the underlying factors that caused some students to be able to separate formal and informal writing situations and why some were not able to do so. Further, the research was limited in that it neglected to make causal inferences. It would be erroneous to claim that (based on the results) as frequency of text messaging increases that the instance of jargon in formal writing decreases or vice versa. Also, from the research it cannot be inferred that as students improve their language ability the instance of jargon will decrease and vice versa. Therefore, although a correlation exists between the two variables, the research did not take into account extraneous and intervening variables that may have impacted the result. However, this is characteristic of most correlational researches.

A second limitation is that the research could never be sure if the scores represented the students' true language ability. In some cases, because of examination jitters and a multitude of other factors, students with great ability perform poorly on examinations. Therefore, using examination scores as the single measure of language ability was defective. It would have been helpful if there were other ways of determining the students' language ability. Perhaps, if the researcher were the class teacher, then based on cumulative observation as well as language scores, a truer picture of language ability could have been

represented. However, because of the nature and constraints of the research, using the examination scores was the best, though limited, option.

Initially, the researcher had set out to examine the participants' recently submitted formal compositions. However, with one school in particular, there was a strict drafting process in which all the informal jargon was extracted and as such no informal structures were present in the pieces examined. Therefore the researcher reverted to examining some of the students' drafts. This was a limitation since the drafts examined tended contained more jargon use than the other pieces from other schools. This presented an inconsistency.

The research was also limited in that it ignored the differences in paragraph length when assessing the instance of text jargon in formal writing even though the researcher restricted the examination to two page lengths. Some students wrote far more words in two pages than others and therefore more jargon features were highlighted. However, their scores were treated as the same. Therefore a person who wrote 1000 words with 25% jargon use was treated the same as a person who wrote 800 words with 25% jargon use. It would have been quite helpful and more statistically accurate if the paragraph lengths were within a defined range. However, it would have been quite difficult to have all students from all the schools with the same number of words within a range in their paragraphs especially since the research examined paragraphs already submitted.

Another limitation of the study is that it was conducted only in the Wellington Region with a non-representative sample. Therefore, the results can only be generalised to the sample and not the entire population although the sample may have some characteristics of the wider population.

5.3 Future Directions and Recommendations

Research findings can be strengthened by replication (Mertler & Charles). Therefore it is recommended that this study is replicated using greater amounts of participants and a wider population spread. The researcher should pay keen attention to the role the teachers play in the study and the nature of the study

(especially its expected burden) should be carefully explained to teachers and principals. More technically, however, future studies of this nature should try to achieve as much consistency as possible. By consistency it is meant that the pieces to be examined, as far as possible, should be within a particular word range.

5.4 Conclusion

Teenagers frequently text message (Grinter & Eldridge, 2001) and the rest of the world seems to have recognised this. Today, text messaging is employed for almost anything and everything. For instance, one can send a text message to vote for their favourite contestants in reality shows such as American Idol and games shows such as Wheel of Fortune. One can send text messages to pizza franchises and have their pizzas delivered and in some countries, one can even receive times for (Islamic) prayer via text messaging. Further, there are several text messaging competitions held every year. In fact, in the USA, a fifteen year old Iowan girl is the National Texting Champion (Kessler, 2009). She "out-texted" more than 25 000 other participants with her "texterity" (Kessler, 2009: 1). The teens were judged based on speed and accuracy of texting (including a blindfolded round) and knowledge of acronyms. Text messaging has definitely overtaken the world's systems and has emerged as a key area of research.

This study explored the relationship between text messaging and formal writing. Through the use of questionnaires, text messaging behaviours were highlighted as well the frequency of text messaging. The data generally showed that there was a trivial relationship between the two variables. However, a strong relationship between language ability and instance of jargon was found. Generally, the study provided great insight and is definitely pioneering in nature.

APPENDICES

Appendix A

Questionnaire

This questionnaire consists of ten items. Please respond to these items by placing a tick (√) in the box (□) where necessary or by legibly writing short answers to the questions asked. Thank you.

1. Gender: Male □ Female □

2. Age: _____

3. On average, how many text messages do you send per day? _____

4. How old were you when you sent your first text message? _____

5. Have you ever written text jargon in formal writing?

 Yes†   No†

6. Should teenagers be given the opportunity to use text messaging language in formal writing situations (assignments, projects, exams, etc.)?

 Yes   □   No □

7. Why or why not?

_____

8. Do you think that text messaging affects your conventional writing skills (spelling, grammar, vocabulary, sentence structure, punctuation, etc)?

 Yes†   □   No†   □

Please give an example:

_____

_____

_

9. Do you usually review your papers before handing them in?

 Yes □   No □

10. Does this review usually involve changing text messaging jargon to formal language? (Please ignore this item if you answered "no" to item 9.)

Yes †   No †

Appendix B

Scoring Table

Text Messaging Jargon (Features) →		Acronyms and Initialisms	Alphanumerisms	Alternative Phonetic Spelling	Lexical Shortenings	Emoticons	Omissions of punctuation	TOTAL
Numbers ↓	Frequency of Texting							
↓								

Appendix C

Language Scores

Students' Numbers (as assigned by researcher)	Language Scores FOR 2008		Avg.	Language Scores FOR 2009

Appendix D

TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI

VICTORIA
UNIVERSITY OF WELLINGTON

COLLEGE OF EDUCATION

Project Title: A correlational study of the relationship between the frequency of text messaging and instance of text jargon in formal writing.

Ethics Application #: XXXX

Thank you for your interest in our project. The purpose of this study is to examine the relationship between the frequency of text messaging and the instance of text jargon in formal writing of secondary school students. It is hoped that this information will inform practice and provide valuable insights into the formal and informal writing behaviours of New Zealand secondary school students. The research will be conducted by a Master of Education candidate from the School of Educational Psychology and Pedagogy of Victoria University of Wellington.

Participation: If you choose to participate in this study, your students will be asked to complete a ten item questionnaire about their text messaging behaviours. Further, their recently submitted short stories may be analysed for text messaging jargon features. Then, their NCEA scores for 2008 and 2009 will be recorded. The questionnaires will take approximately 5 minutes to complete. However, the recording of the scores and the analysis of the writing pieces will take 3 days.

Confidentiality: Any information that is obtained in connection with this study and that can be identified with you will remain confidential. The results of this project will be presented in a written report,
but we will not use your name in any written or oral reports. We will not provide any personal information that would enable anyone to identify you in any reports.

Please note that you are under no obligation to complete the study. Your decision about whether or not you want to participate in this project will not affect your present or future relationship with Victoria University of Wellington or with your school. If you decide to participate, you have the right to withdraw your consent at any time and discontinue your participation. Your decision to discontinue participation will not affect your present or future relationship with Victoria University of Wellington or with your school.

Ethics: The project has received approval from the Victoria University College of Education Ethics Committee. If at any time you have any questions or concerns about your treatment as a research participant in this study, please feel free to

contact Dr. Judith Loveridge, who is the current Chair of the ethics committee (telephone: +64 4 463 6028).

Data Storage and Deletion: Once the study is finished the information collected in the study will be entered into a personal computer belonging to the researcher. These data will not be identifiable in any way. The data will be stored in a locked office in the College of Education building for 3 years after the completion of the study and will then be destroyed.

Reporting/Dissemination: The results of this study may be submitted for publication in research journals and may be presented at a conference. If you are interested in receiving a copy of the final report from this study then please contact Mrs. Bridget Lewis-Mohabir.

If you have any questions about the study now or at any time in the future, please feel free to contact the primary researcher using the following contact information: Bridget Mohabir on telephone number 463 5233 ext 9853. Mails can be sent to The Manor Postgraduate Office, 31B Campbell Street, Karori,Wellington, New Zealand or bridgetmohabir@yahoo.com.

Sincerely,
Bridget N Mohabir.

Teacher consent form

Project Title: Correlational study of the relationship between the frequency of text messaging and the instance of text messaging jargon in formal language.

Ethics Application #: XXXX

I agree to take part in the above research. I have had the project explained to me and I have had a chance to ask questions. I understand that agreeing to this means that I will be willing to do the following: (please tick circle)

- o   I agree to take part in this research project and to allow my students' answers to be collected and analysed.
- o   I understand that I don't have to take part in the research and that I may withdraw from this project without having to give a reason.
- o   I understand that any information I provide will be kept confidential to the researcher and that I will not be identified in the research or any reports on the project or to any party.
- o   I understand that any information from this project will be destroyed after three years.

Name:_____   Date: _____

Signature:_____

TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI

VICTORIA
UNIVERSITY OF WELLINGTON

COLLEGE OF EDUCATION

<u>Project Title</u>: A correlational study of the relationship between the frequency of text messaging and instance of text jargon in formal writing.

Ethics Application #: XXXX

Thank you for your interest in our project. The purpose of this study is to examine the relationship between the frequency of text messaging and the instance of text jargon in formal writing of secondary school students. It is hoped that this information will inform practice and provide valuable insights into the formal and informal writing behaviours of New Zealand secondary school students. The research will be conducted by a Master of Education candidate from the School of Educational Psychology and Pedagogy of Victoria University of Wellington.

Participation: If you choose to participate in this study, your child will be asked to complete a ten item questionnaire about their text messaging behaviours. Further, their recently submitted short stories may be analysed for text messaging jargon features. Then, their NCEA scores for 2008 and 2009 will be recorded. The questionnaires will take approximately 5 minutes to complete. However, the recording of the scores and the analysis of the writing pieces will take 3 days.

Confidentiality: Any information that is obtained in connection with this study and that can be identified with your child will remain confidential. The results of this project will be presented in a written report
but we will not use your child's name in any written or oral reports. We will not provide any personal information that would enable anyone to identify your child in any reports.

Please note that your child is under no obligation to complete the study. Your decision about whether or not you want your child to participate in this project will not affect your child's present or future relationship with Victoria University of Wellington or with his/her school. If you decide to participate, you have the right to withdraw your consent at any time and discontinue your child's participation. Your decision to discontinue participation will not affect your child's present or future relationship with Victoria University of Wellington or with your school.

Ethics: The project has received approval from the Victoria University College of Education Ethics Committee. If at any time you have any questions or concerns about your child's treatment as a research participant in this study, please feel free to contact Dr. Judith Loveridge, who is the current Chair of the ethics

committee (telephone: +64 4 463 6028).

Data Storage and Deletion: Once the study is finished the information collected in the study will be entered into a personal computer belonging to the researcher. These data will not be identifiable in any way. The data will be stored in a locked office in the College of Education building for 3 years after the completion of the study and will then be destroyed.

Reporting/Dissemination: The results of this study may be submitted for publication in research journals and may be presented at a conference. If you are interested in receiving a copy of the final report from this study then please contact Mrs. Bridget Lewis-Mohabir.
If you have any questions about the study now or at any time in the future, please feel free to contact the primary researcher using the following contact information: Bridget Mohabir on telephone number 463 5233 ext 9853. Mails can be sent to The Manor Postgraduate Office, 31B Campbell Street, Karori,Wellington, New Zealand or bridgetmohabir@yahoo.com.

 Sincerely,
Bridget N Mohabir.

Parental consent form

Project Title: Correlational study of the relationship between the frequency of text messaging and the instance of text messaging jargon in formal language.

Ethics Application #: XXXX

I agree that my child may take part in the above research. I have had the project explained to me and I have had a chance to ask questions. I understand that agreeing to this means that I will be willing to do the following: (please tick circle)

- o I agree to allow my child to take part in this research project and to allow my students' answers to be collected and analysed.
- o I understand that my child does not have to take part in the research and that I may withdraw from this project without having to give a reason.
- o I understand that any information my child provides will be kept confidential to the researcher and that he or she will not be identified in the research or any reports on the project or to any party.
- o I understand that any information from this project will be destroyed after three years.

Name:_____ Date: _____

Signature:_____

TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI

VICTORIA
UNIVERSITY OF WELLINGTON

COLLEGE OF EDUCATION

<u>Project Title</u>: A correlational study of the relationship between the frequency of text messaging and instance of text jargon in formal writing.

Ethics Application #: XXXX

Thank you for your interest in our project. The purpose of this study is to examine the relationship between the frequency of text messaging and the instance of text jargon in formal writing of secondary school students. It is hoped that this information will inform practice and provide valuable insights into the formal and informal writing behaviours of New Zealand secondary school students. The research will be conducted by a Master of Education candidate from the School of Educational Psychology and Pedagogy of Victoria University of Wellington.

Participation: If you choose to participate in this study, Year 11-13 students will be asked to complete a ten item questionnaire about their text messaging behaviours. Further, their recently submitted short stories may be analysed for text messaging jargon features. Then, their NCEA scores for 2008 and 2009 will be recorded. The questionnaires will take approximately 5 minutes to complete. However, the recording of the scores and the analysis of the writing pieces will take 3 days.

Confidentiality: Any information that is obtained in connection with this study and that can be identified with you will remain confidential. The results of this project will be presented in a written report in which,
but we will not use your name in any written or oral reports. We will not provide any personal information that would enable anyone to identify you in any reports.

Please note that you are under no obligation to complete the study. Your decision about whether or not you want to participate in this project will not affect your present or future relationship with Victoria University of Wellington or with your school. If you decide to participate, you have the right to withdraw your consent at any time and discontinue your participation. Your decision to discontinue participation will not affect your present or future relationship with Victoria University of Wellington or with your school.

Ethics: The project has received approval from the Victoria University College of Education Ethics Committee. If at any time you have any questions or concerns about your treatment as a research participant in this study, please feel free to contact Dr. Judith Loveridge, who is the current Chair of the ethics committee (telephone: +64 4 463 6028).

Data Storage and Deletion: Once the study is finished the information collected in the study will be entered into a personal computer belonging to the researcher. These data will not be identifiable in any way. The data will be stored in a locked office in the College of Education building for 3 years after the completion of the study and will then be destroyed.

Reporting/Dissemination: The results of this study may be submitted for publication in research journals and may be presented at a conference. If you are interested in receiving a copy of the final report from this study then please contact Mrs. Bridget Lewis-Mohabir.

If you have any questions about the study now or at any time in the future, please feel free to contact the primary researcher using the following contact information: Bridget Mohabir on telephone number 463 5233 ext 9853. Mails can be sent to The Manor Postgraduate Office, 31B Campbell Street, Karori,Wellington, New Zealand or bridgetmohabir@yahoo.com.

Sincerely,
Bridget N Mohabir.

Principal consent form

Project Title: Correlational study of the relationship between the frequency of text messaging and the instance of text messaging jargon in formal language.

Ethics Application #: XXXX

I agree to allow staff of my school to take part in the above research. I have had the project explained to me and I have had a chance to ask questions. I understand that agreeing to this means that I will be willing to do the following: (please tick circle)

- o I agree to take part in this research project and to allow my students' answers to be collected and analysed.
- o I understand that I don't have to take part in the research and that I may withdraw from this project without having to give a reason.
- o I understand that any information I provide will be kept confidential to the researcher and that I will not be identified in the research or any reports on the project or to any party.
- o I understand that any information from this project will be destroyed after three years.

Name:_____   Date: _____

Signature:_____

TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI

VICTORIA
UNIVERSITY OF WELLINGTON

COLLEGE OF EDUCATION

<u>Project Title</u>: A correlational study of the relationship between the frequency of text messaging and instance of text jargon in formal writing.

Ethics Application #: XXXX

Thank you for your interest in our project. The purpose of this study is to examine the relationship between the frequency of text messaging and the instance of text jargon in formal writing of secondary school students. It is hoped that this information will inform practice and provide valuable insights into the formal and informal writing behaviours of New Zealand secondary school students. The research will be conducted by a Master of Education candidate from the School of Educational Psychology and Pedagogy of Victoria University of Wellington.

Participation: If you choose to participate in this study, you will be asked to complete a ten item questionnaire about your text messaging behaviours. Further, your recently submitted short stories may be analysed for text messaging jargon features. Then, your NCEA scores for 2008 and 2009 will be recorded. The questionnaires will take approximately 5 minutes to complete. However, the recording of the scores and the analysis of the writing pieces will take 3 days.

Confidentiality: Any information that is obtained in connection with this study and that can be identified with you will remain confidential. The results of this project will be presented in a written report,
but we will not use your name in any written or oral reports. We will not provide any personal information that would enable anyone to identify you in any reports.

Please note that you are under no obligation to complete the study. Your decision about whether or not you want to participate in this project will not affect your present or future relationship with Victoria University of Wellington or with your school. If you decide to participate, you have the right to withdraw your consent at any time and discontinue your participation. Your decision to discontinue participation will not affect your present or future relationship with Victoria University of Wellington or with your school.

Ethics: The project has received approval from the Victoria University College of Education Ethics Committee. If at any time you have any questions or concerns about your treatment as a research participant in this study, please feel free to contact Dr. Judith Loveridge, who is the current Chair of the ethics committee

(telephone: +64 4 463 6028).

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Reporting/Dissemination: The results of this study may be submitted for publication in research journals and may be presented at a conference. If you are interested in receiving a copy of the final report from this study then please contact Mrs. Bridget Lewis-Mohabir.

If you have any questions about the study now or at any time in the future, please feel free to contact the primary researcher using the following contact information: Bridget Mohabir on telephone number 463 5233 ext 9853. Mails can be sent to The Manor Postgraduate Office, 31B Campbell Street, Karori,Wellington, New Zealand or bridgetmohabir@yahoo.com.

Sincerely,
Bridget N Mohabir.

Student consent form

Project Title: Correlational study of the relationship between the frequency of text messaging and the instance of text messaging jargon in formal language.

Ethics Application #: XXXX

I agree to take part in the above research. I have had the project explained to me and I have had a chance to ask questions. I understand that agreeing to this means that I will be willing to do the following: (please tick circle)

- o I agree to take part in this research project and to allow my students' answers to be collected and analysed.
- o I understand that I don't have to take part in the research and that I may withdraw from this project without having to give a reason.
- o I understand that any information I provide will be kept confidential to the researcher and that I will not be identified in the research or any reports on the project or to any party.
- o I understand that any information from this project will be destroyed after three years.

Name:_____   Date: _____

Signature:_____

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