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# Linguistic And Extra-Linguistic Factors in Bilingual Texting

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## Abstract

This paper investigates the linguistic and extra-linguistic factors involved in bilingual Texting in general and bilingual Short Message Service (hereafter, SMS) in particular.[1] It has two dimensions: first, it presents a survey of scriptal, phonological and pragmatic factors involved in SMS and texting. Second, it looks into the effect of bilingualism while performing SMS based tasks. The questions that it seeks to address include the following: What scriptal, phonological and pragmatic factors are involved in texting and SMS activities? How are text messages in two different writing systems coded and decoded?[2] How does bilinguality of an SMS impact its efficiency as a means of communication? In order to address these questions two SMS based experimental studies were conducted on 40 post-graduate and research students at the University of Hyderabad. Both the studies focused on the intricate and essential relationship between SMS strategies and bilingualism. The present work reflects the texting behaviour in general, though its focus remains on SMS texts and bilingualism in Hindi-English (hereafter, HE) and Malayalam-English (hereafter, ME) texts. A

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[1] 'Texting' serves as an umbrella term for SMS, Online chat, IM, tweets etc.

[2] An earlier version of this paper titled Coding and Decoding of Text Messages was presented at 34AICL, Shillong. (1-3 Nov, 2012).

study related to this theme titled '*the effect of bilingualism on communication efficiency in text messages'* was conducted by Carrier and Benitez in 2010. Their study was based on English-Spanish speakers' texting patterns, wherein the script of the text is more or less same and the criterion employed by them was size of the texts. However, the criteria proposed in this paper include the time consumed in keying and processing the text, ratings by peers and prospective recipients and the size of the text. The findings of this study contradict the previous work. This paper looks into the factors that could have resulted in the dichotomous results between the two studies. The Introduction deals with the ways in which various technical terms and expressions have been used in this paper. Following that a review of literature dealing with text messages' past, present and future has been presented. The next section deals with text entry methods and bilingual texting. This section is followed by the two experiments. That is followed by the conclusions and references.

**Keywords:** (Extra) linguistic Factors, Bilingualism, Texting, SMS, Writing Systems

## Introduction

The wide spread use of mobile phones and internet has resulted in two special developments. The first is the proliferation of communication style known as SMS, Chat, Instant messaging (IM), Tweets etc. The second is the proliferation of bilinguality in these. Their speciality emerges from the fact that all of them involve reconfiguration of redundancies present in natural languages for the purpose of brevity. However, this reconfiguration is in tandem with the phonology and writing system(s) of the language(s) in concern. Given this, the following questions form central objective of this paper: How do bilinguals adapt their bilingualism to SMS based communication? What similarities or differences are observed in terms of technique and style of writing? What are the (dis)advantages of code-mixing while performing an SMS task? Before moving into the sections on SMS and experimental studies ; it is important to develop a resonance with the ways in which various terms and expressions like {texting, SMS & Chats}, {script & writing system}, {SMS language & Language of the SMS} and {involving with text messages} have been used in this paper.

The term '*text messages*' in general parlance refers to Short Message Service (SMS). However, it stands as an umbrella term for the kind of interactions that happen in virtual space. For instance, SMS, Online Chats, Instant Messaging (hereafter, IM), Tweets etc.It is in this wider context that the term 'text messages' has been used in this paper. Thus, this paper attempts to study the language use not the technological space, for instance mobile or Internet, where it is used.

The terms '*script*' and '*writing system*' are often treated differently. The authors would like to mention that this distinction is maintained throughout this paper. Accordingly, the text messages discussed in this paper are in singular script (Roman) but dual writing systems (Hindi & English or Malayalam & English). Comparison of participants' coding and decoding performance based on separate scripts is an interesting issue but beyond the scope of this paper.

From a linguistic point of view both the term '*SMS language*' and the expression '*language of text messages*' are misnomers. They are basically newer ways of representation. Thus, mere change in writing styles or communication cannot be treated as language per se. This paper treats them in this very 'graphic' sense.

The expression '*involving in text messages*' has been used in the paper to refer to all instances of sending and receiving SMS, online chat and IM. This is so because in all of these activities one is either coding or decoding text messages. The strategies involved in these tasks remain more or less same. The figures assigned to participants' involvement in text messages have been calculated on the same basis.

**Text Msessages – Past, Present and Future**

The first SMS message was sent over the Vodafone GSM network in the United Kingdom on 3 December 1992, from Neil Papworth of Sema Group (now Mavenir Systems) using a personal computer to Richard Jarvis of Vodafone using an Orbitel 901 handset. The text of the message was "Merry Christmas." Initial growth was slow, with customers in 1995 sending on average only 0.4 messages per GSM customer per month. By

the end of 2000, the average number of messages reached 35 per user per month, and by Christmas Day 2006, over 205 million messages were sent in the UK alone. In 2010, 6.1 trillion SMS text messages were sent. This translates into 193000 SMS per second.[3]

Thus, the proliferation of text messaging happened with same rapidity as that of internet or mobile phone. Research findings compiled by Sriram Vadlamani (at vitalanalysts.in) hold that SMS could be the single most important invention after the mobile phone. Though it allows only 160 characters per SMS it has taken the mobile world by storm, more so after the advent of Twitter. An interesting question that he raises is; how are people in India using this technology? The answer is quite simple; extremely well. In fact India ranks third after China and Philippines in terms of SMS usage. An average Indian sends about twenty nine (29) SMS per month.[4]

Chen et al. (2009) reports that several search engines have developed SMS based search capabilities in recent years. Other positives include the development of text-to-speech applications which are of immense utility to the visually challenged persons. Some automobile industries are trying to integrate this technology with their products so that persons on driver's seat can hear and dictate text messages without taking their hands off the steering.

Keeping these developments in mind one can easily say that this style of communication is going to stay, however, can it also be predictively said that it is an alternative to orthography in virtual/ digital space? Is it emerging in such a strong way that any writing on mobile and internet would be required to wear the looks of text messages?

**Text Entry and Time Consumption**

[3] Source of data: Global Key Trends and Statistics in Telecom Industry.

[4] http://trak.in/tags/business/2009/06/23/report-onhow-what-indian-mobile-phone-services-vas/

There are two prevalent methods for text entry; multi-tap text entry method and predictive text entry method. In case of multi-tap method the users arrive at the set (of letters a, d, g, j, m, p, t and w and their corresponding letters in languages other than English) by a single press. However, s/he may need to press a button 3-4 times to arrive at the set (of letter c, f, i, l, o, s, v and z and their counterparts in languages other than English). So, the time consumed in creating a text may increase. In case of predictive text entry method the users arrive at words instead of letters. The device enabled by applications like T9 dictionary predicts the target word by the sequence of the key-stroke. This seems to be time saving. However, the funny aspect of this method comes into open when a user attempts to write a proper name. The device will not predict the desired word unless it is stored in the active dictionary. That means any new word should be made saved in order to be available in the dictionary predicting the word. Also, one needs to use the option key (most often *, the key on bottom left of traditional keypads) in order to get other combinations with the same stroke sequence. For instance, given the sequence of strokes, words like 'card, care, in, book and gone' will require the use of this key once or twice or even thrice. A significant flaw of this method is that the words displayed by a sequence of strokes are not based on frequency of their occurrence in the concerned language. Needless to say, both methods of text entry have their pros and cons as they rely on 12 keys for all functions. The arrival of QWERTY keypads and virtual keyboards seems to have cut down time consumption in both the methods. However, the actual time consumption will depend on users' familiarity and comfort with the device.

**Texting and Bilingual Texting**

Grinter and Eldridge (2003) propose four methods for generating text messages: (a) Using traditional (known) or ad-hoc abbreviations; (b) dropping a single letter, (c) using letters, symbols or numbers to make an appropriate sound; and (d) using standard or ad-hoc acronyms. Carrier and Benitez (2010) present a commendable survey of the available literature on the linguistic aspects of SMS. Shortening of expressions holds an important position in text messages. Thurlow (2003) proposes three sociolinguistic maxims affecting a person's texting behaviour; (i) Brevity

and speed, (ii) Paralinguistic restitution and (iii) Phonological approximation. Needless to say Thurlow's maxims work in tandem. Brevity in a text message is achieved through simplification of words that in turn employs respelling, use of short forms and alpha-numeric homophones.

The bilingualism situation in India is distinct in the sense that bilingual SMS communication in India involves at least two writing systems if not two scripts. This is expected to have its effects on the size of texts messages as well as coding and decoding them. Given this, will the brevity techniques of the languages and writing systems involved cooperate towards the total efficiency of communication or compete with each other and cause delay and difficulty in interpretation?

In the languages concerned here, it is expected that the brevity techniques of Hindi and English will work towards the efficiency of HE texts while that of Malayalam and English will work towards the efficiency of ME texts. The challenges that arise in such forms of communication include: competition between similar word forms and the possible delay in inferring the intended meaning in a given text message. It is interesting to see how cell phone users overcome these challenges. What they apply as strategies turns out to be our model for bilingual text messages.

**Experimental Studies**

The experiment reported here is based on the findings of two studies comprising of three tasks each. These studies were conducted with an aim to capture texting behaviour including language and script preferences and texting strategies including styles and techniques.

**Participants**

20 HE and 20 ME bilinguals participated in the study reported here. All persons who took part in pilot study as well as the main experiment belong to Post Graduate and Research Programmes at the University of Hyderabad. The sets of 20 participants had an equal number of males and

females, all ranging between 20-30 years of age.[5] Their participation was voluntary in nature and didn't involve any financial return or gifts. All of them own handsets for over 5 years and have been sending and receiving text messages on a regular basis (average about 190 messages per week). Both the studies were conducted in October, 2012 at the University of Hyderabad, India.

**Study 1**

Study one followed a survey method. For the same, a questionnaire was circulated among the HE and ME bilingual subjects. The questionnaire collected information mainly on the following three fronts: (1) Language preference for text messages (2) Script preference for text messages (3) Factors affecting text messages. The data provided by them was also used to calculate their texting frequency and the enjoyable ingredients of text messages.

In task one of this study set, the HE and ME bilinguals were asked to rate for language choices which included the following: {Hindi, English & Hindi-English mixed} and {Malayalam, English & Malayalam-English mixed} respectively. Again, in task two they were asked to rate the choices for script/ writing system. In task three the participants were asked to rate the factors that affect their texting decisions. The choices included the following: (a) size of the text, (b) time consumed, (c) spelling difficulty and (d) the recipient.

**Findings**

The illustrations given below are based on the data provided by the participants. Illustration 1 depicts the participants' preference on language and script when involved in texting activities. 55% of them chose English in Roman script as their first preference, while 25% percent chose HE/ME in Roman script as their first preference. Again, 15% of participants opted for English in Roman as their second preference while 55% chose code-mixed language in Roman script as their second preference. The reason for

[5] Ms. Sheerin Hena is thanked for her help in reaching out to the participants.

greater preference to English comes from the fact that present day mobiles provide text prediction technology which will not perform in code-mixed messages. Also, the high preference given to Roman script may be due to the fact that SMS technology is designed in such a way that a unit SMS can accommodate 160 Latin character. However, it can accommodate only 70 non-Latin characters. Naturally, Roman emerged as the default script for various tasks in this study.

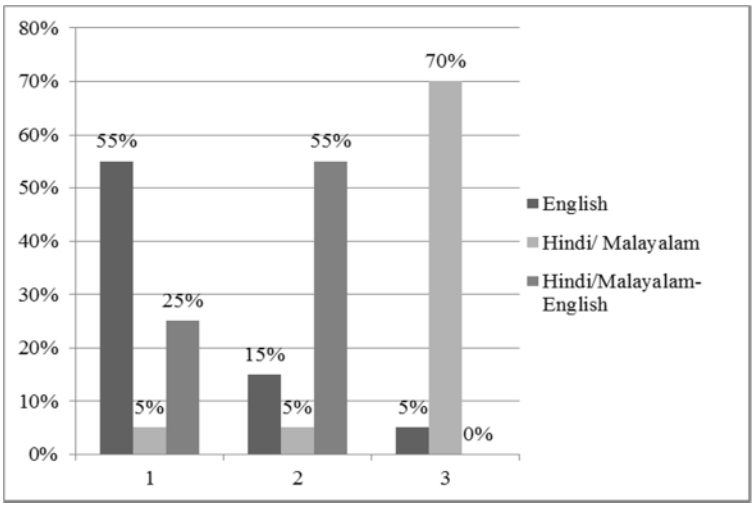


Illustration 1: Preference Order for Language and Writing System

Illustration 2 given below presents a graphical picture of the participants' response to task three which captures the extra-linguistic factors that affect a text message. It can be seen that these factors are in the following hierarchy: Text size (45%), The Recipient (30%), Time Consumed (20%) and Spelling difficulty (5%). Though rated separately, it is often the case that these extra-linguistic factors work together.

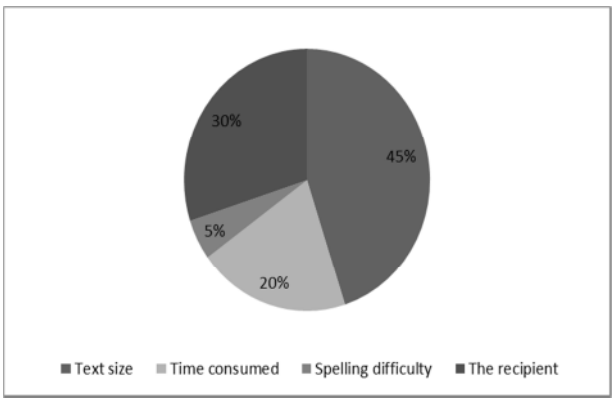


Illustration 2: Factors Affecting the Messages

**Study two**

Study two comprised of a texting game in which two sets of task were to be performed by the participants. In the first set the participants were asked to encode contextualized text messages. In second they were asked to decode that of others. While encoding their texts, they were free to use their preferred styles and techniques. The use of punctuations, capital letters, emoticons, smileys and code-mixing was highly encouraged. Time was not a constraint. However, space was a constraint, for each of the texts had to be drafted in 160 characters (standard limit for a unit SMS). While decoding others' texts the participants were also asked to rate them on easiness. Both HE and ME participants performed three tasks as described in the sets given below.

**Set 1**

Task one – Draft an SMS to guide a friend the route from entrance gate of the university to the library.

Task two – Draft an SMS to share an incident. The incident involving various kinds of emotions was provided to the participants.

Task three – Draft an SMS to narrate a given short story.

**Set 2**

Task one – Draft an SMS to guide a friend the route from library to the entrance gate of the university.

Task two – Draft an SMS to share an incident. A different incident involving various kinds of emotions was provided to the participants.

Task three – Draft an SMS to narrate a story. A different story was provided to them.

The tasks in both the sets were aimed at capturing the strategies employed by the participants while coding text messages. For the same, all these tasks were designed to reflect their natural texting behaviour.

**Findings**

Following ascertainable points about brevity techniques and scriptal and phonological factors emerge from the text samples collected from study two.

Alpha-numeric homophones are used

Example; f9 for *fine*, gr8 for *great*, d8 for *that*, h8 for *hat/height*

Number-letter homophones are used

Example; 2de for *today*, 1derful for *wonderful*, 4m for *from*

Letters for words substitution

Example; u for *you*, y for *why* and k for *okay*

Avoidance of geminates

Example; batl for *battle* and buk for *book*

Formation of newer clusters by dropping the vowels

Example; ppl for *people* and wrk for *work*

The letter ‘h’ used for aspirate sounds is generally dropped

Example; nai for *nahi* (meaning ‘no’) and kana for *khana* (meaning ‘food’)

Word medial and word final Nasals are written without ‘n’ or ‘ng’

Example; Doin for *doing* and writin *writing*

Geminates are written with single consonant letters

Example; atack, baloon, clas for *attack, balloon* and *class*.

Use of capital letters for emphasis.

Example; I said NO/YES

Vowels are usually dropped and long & short vowels are represented by same letters.

Example; abi for *abhI* (meaning ‘now’)

**Discussion**

This study has two dimensions: one linguistic and the other extra-linguistic. First it looks into the strategies that HE and ME bilingual participants employ during texting activities. Second it looks into the brevity techniques licensed by each of the languages in concern. The messages created by the participants provide evidences for the following strategies being employed in coding of text messages: (1) Shortening of words and expressions; (2) Creative blends; (3) Letter-number interplays; (4) Simplification of structure & grammar and (5) Reconfiguration of redundancies. Shortening of words and expressions, simplification of spelling, abbreviations etc., are simple examples of how redundancies existing in general language use can be utilized in special communication. This is not to say that text messages, especially SMS communications, are free from the above mentioned redundant features. The redundant features found in the natural languages are basically reconfigured during texting

activities. The communication variety analyzed in this paper, by norm makes use of these features and also have redundancies of their own kind.

The cross-checking, comprehension and rating tasks were designed to understand the decoding strategies involved in the texting activities. All the text messages that were created by the participants were deciphered with an ease. The space constraint and code-mixing did not seem to be resulting in obscure messages. Some of the reasons that could be assigned for this success are as under:

**Phonological Rules are Applied**

Abbreviations and shortenings are not arbitrary in texts. They are based on phonologically permissible word forms in language.

**Use of Context and Pragmatic knowledge**

Context is utilized to bring meaning to the seemingly obscure expressions. The sender believes that the receiver would be able to comprehend the message, while the receiver also tries a bit extra to extract out the meaning. Texting appears to be a cooperated game where both parties should win.

**Acquisition of Newer Sets**

Newer sets of styles and symbols are devised or acquired, as comfortably as newer words

**Shared Understanding**

The style in its entirety exists on a shared basis. What is practiced is not unique to an individual, rather it is accepted and shared by the texting generation.

Some of these strategies are employed simultaneously, while others sequentially or alternatively. The strategies as such do not change much with language; seems there is some universal principle governing them across languages. Communication technique as a whole is slightly modified, but not completely different from the natural type. Also, it cannot be compared with communication in degraded conditions (as pointed in Shieber & Nelken 2006). It can be understood as an axiomatic

fact that all kinds of text messages follow the principle of shortening and simplification. It is a fact that people who involve in text messages are aware of space limitations. So, the users adapt their texting habits to the styles and techniques shared by all. In this study, every message had to be drafted within the limits of 160 characters. The variegated messages created by one set of participants were comprehended and rated by the other set of participants. The space limitation acting as a constraint in coding of the messages does not seem to have negative effect on their decoding. This contradicts the previous study conducted by Carrier and Benitez (2010).

## Conclusions

This study renders insights into the linguistic and extra-linguistic strategies involved in text messaging at the general level. While, in particular, it paid attention to the arcane nature of bilingual SMS. It shed light on the scriptal, phonological and pragmatic factors involved in texting and the cooperative principles involved in such activities. By taking into consideration the criteria like interpretability, comprehensibility and ratings of prospective recipients this study shows that bilingualism has positive effects of bilingualism on text messages. It refutes the claims made by Carrier and Benitez (2010). However, wider survey, experiments with varied groups and larger data will be required to further establish the positive effects of bilingualism on text messaging. The texting experience and along with it the texting behaviour has undergoing tremendous changes. The arrival of newer technological applications render it more dynamic than it was thought before or is generally assumed today. It is important to assert the fact that SMS based interaction is a fine mix of generic brevity techniques as well as personally shared lexical and semantic cues. The familiarity with the device as well as the context also affects the SMS behaviour of an individual. These findings may be useful in the development of SMS based search engines, applications and gadgets.

By the time this paper was ready for public viewing Texting Service is celebrating its 20$^{th}$ birthday, the news of SMS powered Audi cars and SMS through Gmail had already arrived. The authors would like to maintain that

this pace of development in SMS based services cannot sustain unless they acquire a truly bilingual character.

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