The Relationship Between Text Messaging and Young People's Grammatical Understanding

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Abstract

Previous research has shown positive relationships between the use of 'textisms', spelling and reading ability in children, but has not yet considered the potential relationships between SMS use and grammatical understanding. This project investigated whether a relationship exists between texting behaviour and understanding of written and spoken grammar in adults and children. Adults and children provides samples of their texts, and completed a battery of tests assessing understanding of written and spoken grammar, orthography and spelling ability. Preliminary results show that there is some evidence of an association between the tendency to make certain types of error when sending texts and understanding of grammar in its written and spoken forms one year later, and that these relationships appear to be reciprocal. However, this does not appear to be the case for the children.

Introduction

Mobile phone use and text messaging is part of young people's everyday activity. However, there is concern about the impact that texting may have on individuals' use of formal written English. As a consequence, research by the applicants has considered how knowledge of texting slang ('textisms') is related to 'traditional' literacy. They have found that:
1. There is a positive relationship between verbal reasoning ability and knowledge of textisms, and between use of textisms and both reading and spelling ability in primary school children (Plester, Wood, & Bell, 2008; Plester, Wood, & Joshi, 2009).
2. Textism use is predictive of growth in spelling ability in 8-12-year-old children over the course of an academic year (Wood, et al., in press).
3. Giving mobile phones to 9-10-year-old children for texting does not significantly improve their literacy skills (Wood, Jackson, Hart, Plester and Wilde, 2011).
4. There are significant relationships between morphological awareness, reading and spelling ability and the speed and accuracy with which undergraduates can read and compose text messages (Kemp, in press).

One area of language development that has yet to be examined is the impact of text messaging on grammatical development. Although Tagliamonte and Denis (2008) looked at the grammatical construction of teenagers' instant messages (IM), there is no study of the inter-relationships between texting, understanding of grammar and spelling ability. However, there is a popular belief that texting harms grammatical development (Maples, 2009) and an edutopia poll revealed serious concerns expressed by teachers (http://www.edutopia.org/poll-text-messaging-writing-skills). So, how might use of text message abbreviations adversely affect grammatical understanding? There are three main ways in which we can see this occurring:

i. Spelling of individual words: In English, the spelling of many words is partly determined by morphology, which is one aspect of grammar. For example, some word suffixes (inflections) are always spelled in the same way despite differences in pronunciation, to reflect their shared grammatical structure: although the endings of *walked, warned*, and *waited* are pronounced differently, they are spelled the same to signal that they are all past-tense verbs. Children often start spelling these patterns just as they sound (*walkt* for *walked, keez* for *keys*) and have to learn grammar-based spelling consistencies (Kemp & Bryant, 2003; Nunes, Bryant, & Bindman, 1997). Further, grammar-based spelling can distinguish words which sound the same but which differ in grammatical status: *tax* and *tacks* sound the same, as do *mist* and *missed*, but the fact that plurals end in *-s* and past-tense verbs in *-ed*, and other words generally do not, determines the spelling of their endings. Textisms are commonly phonetic spellings (*hafta, pix, frendz*), and young children who text message may find it difficult to learn these grammar-based consistencies. Adults may use phonetic spelling in formal writing, in a way that makes their grammatical understanding look diminished.

ii. Spelling of word combinations: In speech, the pronunciation of many words is reduced and words are combined to create common phrases, such as *gonna, wanna, useta, hafta, would've, you're, we're*. When text messaging, children are exposed to many examples of phonetic spellings for these word combinations, and subsequently may find it difficult to learn that in formal writing, they need to be written in full, as *going to, would have* (not *would of*) and/or abbreviated appropriately, as *you're, we're* (not *your, were*). Adults who text-message may come to believe that it is less important to differentiate them appropriately.

iii. Correct use of orthographic and punctuation conventions: In text-messaging, it is common to omit capitalisation of sentence-initial words, proper nouns, and the subject pronoun *I*. It is also common to omit punctuation (e.g. Rosen et al., in press) or use unconventionally large numbers of exclamation marks or question marks, and symbols such as emoticons. Children and adults who become used to the non-regulated use of capitalisation and punctuation in text messages may become less focused on using them correctly in formal writing.

This poster reports on the relationships between grammatical understanding, spelling and text messaging concurrently in children and young adults. It will consider whether text messaging behaviour is linked to grammatical understanding, and whether spelling ability mediates this relationship. Three age groups were recruited to consider whether relationships that are observed between variables in the early stages of literacy development (primary school) are also observed in intermediate (secondary school) and skilled / consolidated (adult) stages.

Research Question

• Can the nature of participants' grammatical violations when texting predict individual differences in the development of grammatical understanding in any of the three age groups

Method

Participants

210 participants were recruited to the study, comprising 83 primary school children, 78 secondary school children and 49 adults. The average age of the primary school children was 9 years, 11 months old; the secondary school children were on average 12 years, 10 months old and the average age of the adults was 20 years, 11 months. The children were recruited from primary and secondary schools around the West Midlands of the UK, and the adults were undergraduate students at Coventry University.

Assessments

Test of Receptive Grammar II (TROG II).
This measure is included as a widely used, standardised assessment of children's and adults' understanding of spoken grammar. This measure will also indicate how typical our participants are relative to age-related norms. (α= 0.909)

Non-word Orthographic Choice Task (Mitchell, Kemp, Dawson, & Bryant, submitted).
This task tests the ability to use the grammatical structure of a sentence to select a grammatically appropriate word from two plausible-sounding nonwords. For example, the sentence *I have two prex / precks* cues the plural spelling (*precks*), whereas *I like this preeze / prees* cues the singular spelling (*preeze*). (α= 0.874)

Wordchains with Articulatory Suppression
Wordchains was used here as a measure of orthographic processing ability. The task was administered as per the standardised instructions but participants were additionally required to repeat the syllable 'la' repeatedly during the activity so that the contribution of phonological processing was minimised during the task.

Wechsler Abbreviated Scales of Intelligence (WASI)
This task produces a measure of the participants' general cognitive abilities. This is included in the study as a control variable: both the participants' age and IQ will be controlled in any analysis of the data.

Wide Range Achievement Test IV (WRAT IV) – Spelling Subtest
This task is a standardised assessment of children's and adults' spelling ability. As with the TROG II, this task will also provide an indication of how typical our participants are relative to age-related norms. Spelling is included in this study because we have theorised that the mechanism by which participants' grammar may become compromised is via their spelling violations when texting (see Background).(α= 0.930)

Grammatical Violations in Text Messages
The participants' text messages were analysed and coded for the number and nature of grammatical violations that were observed. The total number of grammatical violations relative to the number of words used in the messages was then calculated for each of three broad categories of grammatical violation: Punctuation and Capitalisation Errors; Word-Based Errors; and Unconventional Grammatical Forms.

Results & Discussion

Tables 1-3 show the correlations between variables at Time 1 and one year later at Time 2 for each of the three age groups. The correlations presented are nonparametric as the grammatical violation variables were skewed by a number of zero values (which indicate that those participants were not making errors). With respect to whether the proportion of grammatical violations at Time 1 were related to participants' understanding of grammar, spelling or orthographic ability at Time 2 an interesting picture emerges. That is, for adults we can see that the tendency to make punctuation and capitalisation errors was associated with performance on the TROG, spelling ability and the non-word orthographic choice task at Time 2. This pattern was not apparent within the data from the secondary school children. For the primary school children, punctuation and capitalisation errors at Time 1 were associated with spelling and Wordchains at Time 2, but not with TROG performance or the orthographic choice task, suggesting that these types of grammatical violation were not related to grammatical understanding but were more related to understanding representation of print. The other types of grammatical violation were not related to the grammar, spelling or orthographic processing variables.

When we reversed the analysis the relationships observed within the adult data appeared to be reciprocal: TROG scores and performance on the orthographic choice task were related to the tendency to make punctuation and capitalisation errors when texting.   For the secondary school children, only orthographic processing (Wordchains) was related to punctuation and capitalisation errors. For the primary school children, punctuation and capitalisation errors were associated longitudinally with orthographic processing, orthographic choice performance and TROG scores at Time 1.

A measure of consistent use of punctuation and capitalisation errors was calculated by subtracting the proportion of Time 2 errors from those made at Time 1. This calculation resulted in a normally distributed variable suitable for inclusion in regression analyses, Regression analyses were conducted to consider whether this variable could account for individual differences in grammatical understanding at Time 2 after controlling for IQ and autoregressors. These analyses found no significant predictive relationships within any of the three age groups when TROG and the orthographic choice task were used as outcome variables.

This preliminary analysis suggests that for adults there may indeed be evidence of some reciprocal relationships between texting errors and appreciation of written and spoken grammar, but this is a weak relationship. The data suggest that there is some evidence that understanding of grammar develops independently of texting behaviour in childhood, and this may then contribute to the tendency to make some forms of grammatical error when texting by early adulthood, and these errors might then also, in turn, impact on further understanding of grammar in adulthood. However, more detailed analyses arerequired to examine specific forms of violation in relation to outcome variables.

Table 1. Correlations for adult sample

ADULTS	Full IQ	T1 Spelling	T1 TROG	T1 Wordchains	T1 Orthographic Choice	T1 Unconventional grammar	T1 Punctuation + capitalisation errors	T1 Word Errors
T2 Spelling	.280	.614**	.176	.273	.430**	.131	-.283*	-.022
T2 TROG	.362*	.066	.416**	.067	.381**	.193	-.421**	-.125
T2 Wordchains	.498**	.316*	.291*	.696**	.305*	.074	-.151	0.85
T2 Orthographic choice	.438**	.240	.229	.249	.764**	0.59	-.365**	-.137
T2 Unconventional grammar	.228	.227	-.184	.144	-.018	.382**	-.169	.402**
T2 Punctuation + capitalisation errors	-.298*	-.246	-.168	-.217	-.404**	-.034	.466**	.123
T2 Word Errors	.153	.149	.203	-.084	.138	.287*	-.086	-0.58

Table 2. Correlations for secondary sample

Secondary	Full IQ	T1 Spelling	T1 TROG	T1 Wordchains	T1 Orthographic Choice	T1 Unconventional grammar	T1 Punctuation + capitalisation errors	T1 Word Errors
T2 Spelling	.259*	.604**	.246*	.179	.330**	-.064	-.016	-.017
T2 TROG	.471**	.133	.468**	.325**	.145	-.006	-.004	.000
T2 Wordchains	.457**	.236*	.204	.585**	.160	.158	-.051	-.145
T2 Orthographic choice	.401**	.393**	0.86	.144	.592**	-.012	.175	-.002
T2 Unconventional grammar	.214	.003	.114	.087	.121	.016	-.019	-.022
T2 Punctuation + capitalisation errors	-.174	-.093	.120	-.357**	-.019	.009	.160	.046
T2 Word Errors	-.133	.184	-0.75	-.203	-.091	.024	.128	.070

Table 3. Correlations for primary sample

Primary	Full IQ	T1 Spelling	T1 TROG	T1 Wordchains	T1 Orthographic Choice	T1 Unconventional grammar	T1 Punctuation + capitalisation errors	T1 word errors
T2 Spelling	.369**	.724**	.295**	.659**	.450**	.141	-.306**	.014
T2 TROG	.574**	.299**	.460**	.340**	.332**	-.004	-.169	-.101
T2 Wordchains	.392**	.420**	.276*	.720**	.305**	.132	-.248*	.054
T2 Orthographic choice	.191	0.69	.041	.194	.318**	.117	-.117	-.174
T2 Unconventional grammar	.061	0.39	.044	.143	.057	.116	-.095	-.108
T2 Punctuation + capitalisation error	-.230*	-.186	-.103	-.267*	-.282**	-.026	.224*	.083
T2 Word Errors	-.123	-.246	-.048	-.206	-.134	.171	.040	.118