

University students vary their use of textese in digital messages to suit the recipient

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Background. The casual, abbreviated writing style sometimes known as ‘textese’ (e.g., *sorry im late* ☺) has become widespread with the rise of digital communication. We explored Australian university students’ views on, and use of, textese across three modalities (text message, Facebook post, email) and three recipient types (friends, peers, lecturers).

Methods. In Study 1, 51 undergraduates composed messages across the three modalities to the three recipient types. They also rated the appropriateness of messages written with high, medium and no textese, across modality and recipient types. In Study 2, 37 additional students provided examples of their own sent messages across modalities and recipients.

Results. Overall, participants rated textese use as more appropriate, and used significantly more textese, in messages to friends, than to peers, than to lecturers.

Conclusions. Undergraduates are sensitive to when and where it is appropriate to use textese and vary their use (and opinions) of written language as a function of the recipient.

Implications for Practice

What is already known about this topic

- The casual, abbreviated writing style ‘textese’ is widespread.
- There is concern that young people will not know how to use textese appropriately to different recipients.

What this paper adds

- Undergraduates rated the use of textese as more appropriate in other students’ messages to friends, than to peers, than to lecturers.
- They also used less textese in their own messages to friends, than to peers, than to lecturers.

Implications for theory, policy or practice

- Undergraduates are sensitive to when and where it is appropriate to use textese.

- They vary their opinions on, and use of, textese, according to the recipient.
- Young people have nuanced views on the appropriateness of textese use across recipients.

The daily use of digital communication, including text messaging, social networking and email, is now commonplace for many people around the globe. Worldwide, in 2014, there were subscriptions for nearly 7 billion mobile phones (International Telecommunication Union (ITU), 2014), 3.6 billion social networking accounts and 4.1 billion email accounts (Radicati Group, 2014). Australians have been particularly eager to embrace these forms of digital communication (Australian Bureau of Statistics, 2014). Messages sent in the digital sphere are often written in *textese* (Drouin & Driver, 2014; Kemp, 2010). This abbreviated, casual register is characterised by *textisms* (Grace & Kemp, 2015; Plester, Wood, & Joshi, 2009), including abbreviations (e.g., *txt* for *text*, *u* for *you*), spellings and symbols indicating emotional expression (e.g., *pleeease!!!*©) and the omission of conventional punctuation and capitalisation (e.g., *hi how are you*). Despite a growing body of work on the use of textese (see Wood, Kemp, & Plester, 2014, for a review), there is very little research on whether and how people vary their style of written language to suit their recipient. This is an important question, because the uptake of textese has been seen by some commentators as representing a lowering of literacy standards (e.g., Broadhurst, 2008; Llewthor, 2010). If instead writers can vary their use of textese to suit their audience, this would suggest this phenomenon represented an addition to, rather than a reduction in, people's communication skills. The aim of the two studies reported here was to address this question.

Textese was adapted from earlier forms of computer-mediated communication (Werry, 1996) and arose within the constraints of previous mobile phone models. Until quite recently, users were constrained by a 160-character limit per message and would abbreviate their writing to fit this limit (Ling & Baron, 2007). Further, previous phone screens were quite small, and alphanumeric keypads required multiple key presses to enter the desired letter or number (Crystal, 2008). Technological advances such as full QWERTY keypads, predictive texting and concatenated messages (ITU, 2014; Radicati Group, 2014) have greatly reduced these reasons for abbreviating words. However, the inclusion of textese appears to remain a fundamental aspect of text messaging for many people (Grace & Kemp, 2015). The use of textisms may save some time, but it may also fulfil a need to signal social identity or to create and maintain discourse communities (e.g., Green, 2003; Lewis & Fabos, 2005).

Textisms are not confined to text messages, but also appear in other forms of digital communication, including social networking and email (Drouin & Davis, 2009; Frehner, 2008). Until recently, these kinds of messages were composed most often on a laptop or desktop computer, with a full keyboard, large screen and no 160-character limits. However, in recent years, it has become possible, and increasingly popular, to access a range of digital communication modalities via mobile phone or other small portable device, rather than a larger computer. For example, the worldwide number of email accounts accessed on mobile devices numbered 1.1 billion in 2014, with this number set to double by 2018 (Radicati Group, 2014). The most popular social networking site, Facebook, is now accessed by mobile phone, rather than computer, by 38% of its 1.4 billion active monthly users (Facebook, 2014). Nevertheless, emails and Facebook posts are still more often composed on a larger computer. Thus, the continued use of textese in these modalities would underscore the idea that people use textese for more than just saving time or space when writing to others.

Previous research on people's use of textese in digital communication has usually focused on a single modality, such as text messaging or email. Only a few studies have made comparisons across modalities. For example, Drouin and Davis' (2009) undergraduate sample self-reported that when writing to friends, they used more textese in text messages than in emails and more in emails than in social networking. Studies that have looked at actual sent messages have confirmed that university students use more textese in text messages than in instant messages (Ling & Baron, 2007) or in emails (Frehner, 2008). However, given the recent shift to using mobile phones (rather than larger computers) to access some modalities, further research is required to update our knowledge of the use of textese in different situations.

Although the use of textese in text messaging, emailing and social networking is now widespread, it is still not generally considered appropriate in more formal settings such as school or university assignments or when communicating with teaching staff. However, there is limited research on whether students vary their use of textese with the context to suit these views. Of the undergraduates in Drouin and Davis' (2009) study, 75% considered it appropriate to use textese when writing to friends, but only 6% found it appropriate when writing to instructors. This general pattern was borne out in the emails that these participants were asked to compose for the experiment, with 51% of participants using at least one textism when writing to a friend, but only 18% doing so when writing to an instructor. Taking a slightly different approach, Lewandowski and Harrington (2006) compared university students' perceptions of emails to professors (purportedly written by other students), when some of these emails contained textisms, and others were written in conventional standard English. Emails containing textisms led participants to perceive that the composers of these emails had put less effort into the email, were less dependable, hardworking, intelligent, motivated and responsible than those who had not used textisms.

The two studies discussed previously suggest that adult students do feel that, in general, it is not appropriate to use textisms in a formal academic situation. However, both studies employed very obvious distinctions (messages to a lecturer or a friend; emails with or without textese) that may have led participants to choose what seemed to be the obvious response. Grace, Kemp, Martin and Parrila (2013) asked undergraduates to think about a more graded set of examples, asking students to rate how appropriate they thought it was to use textisms in a variety of modalities: text messages, emails, instant messages and university work, when these were written to a variety of recipients: a friend, a family member, a lecturer or a stranger. There was a clear decrease in appropriateness ratings from less formal (texting a friend, taking lecture notes) to more formal (emailing a stranger, completing university work). However, these ratings were collected by asking participants about the (imagined) general concept of using textisms to different people in different situations. Collecting examples of how students would actually compose messages would give a more realistic measure.

As noted earlier, there has been general concern that the use of textese represents a 'dumbing down' of the standards of written language, especially by young people (e.g., Broadhurst, 2008; Humphrys, 2007; Llewthor, 2010). This concern seems to stem from the idea that textese use is supplanting, rather than supplementing, the ability to write in a formal register. However, the research just discussed seems to suggest that university students, at least, have clear opinions on when it is, and is not, appropriate to use textese. This fits in with a robust body of research that suggests that young adults' use of textese is not obviously related to poor skills in reading or writing (e.g., Grace, Kemp, Martin & Parrila, 2014; Wood, Kemp, & Waldron, 2014). However, the question of how and when people deliberately vary their use of textese to suit the recipient and modality is yet to be empirically tested.

Almost all of the research to date on the written language of young adults' digital communication has relied on samples of undergraduate students, rather than the more general population (with some exceptions, e.g., Rosen, Chang, Erwin, Carrier, & Cheever, 2010). This is usually for the practical reason that it is much easier and less expensive to gather data from pre-existing groups of undergraduates (who often need to participate in research as part of their course requirements) than to try to recruit and reimburse members of the general public. The limited financial resources of the current work meant that we, too, focused on an undergraduate population. However, we acknowledge that this limits the conclusions that can be drawn about the more general use of, and attitudes towards, textese. For example, young adults at university are, on average, more likely to have stronger literacy skills and a better ability to write in different registers than are young adults who have not gone on to tertiary studies.

Another source of bias stemming from the reliance on university samples is that the researchers, and thus their participants, are often based in Psychology or Education. In these disciplines, women are often overrepresented and so, with only a few gender-balanced exceptions (Holtgraves, 2011; Tossell et al., 2012), female participants in this research area have often outnumbered men by about three to one (e.g., De Jonge & Kemp, 2012; Drouin & Davis, 2009; Thurlow & Brown, 2003; Wood, Kemp, & Waldron, 2014). There is some evidence that women tend to use more textisms than men (Grace & Kemp, 2015; Herring & Zelenkauskaitė, 2008; Thurlow & Brown, 2003; although see De Jonge & Kemp, 2012, and Drouin & Driver, 2014 for findings of no gender differences). Thus, although the findings from undergraduate samples are generally consistent, caution must be exercised in generalising these findings to the wider population.

The present study

The overall goal of the current research was to assess Australian undergraduate students' opinions on, and use of, textese in messages to different recipients in different modalities of digital communication. As in previous research, these recipients were friends (socially close to the participant, to whom messages would normally be informal) and university lecturers (socially more distant, to whom messages would normally be formal). However, we also added a third recipient category, of intermediate social closeness/formality: a same-age peer who was not a friend. The three modalities were text messages, emails and public 'wall' posting on Facebook. We did not study Facebook's instant messaging ('Chat') function, as this form of communication is necessarily synchronous and more ephemeral than the three modalities we studied here. Although people may exchange text messages, Facebook posts and emails in real time, this is not required, and the written record of the messages remains re-accessible much more easily than instant messaging exchanges. Given the constantly evolving patterns of technology use, our first aim was to gain a general picture of our sample's use of digital communication across text messaging, Facebook and email.

Our second aim was to assess students' opinions on when they found it appropriate to use textese, by asking them to rate the appropriateness of a range of written messages. Consistent with Lewandowski and Harrington (2006), we included messages that contained textisms and messages that did not, but for the latter messages, we included two levels of textese density, high and medium, to gain a more detailed picture of student opinion. Thus, we were able to investigate students' ratings of textese appropriateness in terms of message recipient, message modality and textese density.

It was hypothesised that there would be an interaction between recipient and textese density. Specifically, we predicted that messages with high textese density would be rated as significantly more appropriate for a friend, than for a peer, than for a lecturer, and messages with no textese would be rated as significantly more appropriate for a lecturer, than for a peer, than for a friend. We predicted that messages with medium levels of textese would be rated as more appropriate for a peer than for either a friend or a lecturer. It was not expected that this interaction between recipient and textese density would vary with modality, as ratings should depend more on whom the message is intended for and how it is written, than the modality in which it is composed.

Our final aim was to assess whether students would vary in their use of textese when they were asked to compose messages to friends, peers and lecturers, via text message, Facebook post and email. Based on the limited previous evidence, it was hypothesised that participants would use significantly more textese when writing to friends than to peers, than to lecturers. It was more tentatively predicted that participants would use significantly more textese in text messages than in Facebook posts than in emails. However, as these forms of electronic communication are now commonly accessed via both mobile phones and computers (ITU, 2014; Radicati Group, 2014), any differences between modalities were expected to be less clear than those observed in the previous research. It was expected that the data collected on participants' digital communication habits would help to interpret this 'blurring' of modality use.

The first study was purely experimental, in that we asked participants to rate the appropriateness of fictitious messages and to compose messages in the lab to recipients who, although real, would never receive those messages. This design allowed us to measure responses to all combinations of message recipient and modality (and textese density, for the rating task). However, it is possible that participants may have responded to perceived researcher demand characteristics, and written messages in a way that they thought would please the researcher, or fit with their perception of the study's goals. Further, there is evidence that university students use slightly higher levels of textese when writing (text) messages in response to an elicitation task in the lab, than in their naturalistic sent messages (Grace, Kemp, Martin, & Parrila, 2012). Thus, we also conducted a second study in which a new group of participants was asked to provide examples of messages that they had previously sent, so as to provide a naturalistic picture of undergraduates' use of textese to different recipients across different modalities.

Study 1

Method

Participants

Participants were 51 first year psychology students (nine men) at an Australian university, with a mean age of 22.2 years ($SD=6.61$). All had English as their first language and received course credit for their voluntary participation. Testing was conducted in mid-2012.

Materials and procedure

All participants completed a message creation task, a questionnaire and a message rating task in that order, as described as follows. These tasks were completed individually, in a single session of about an hour, in a quiet university room.

Questionnaire. Participants completed a basic demographic questionnaire and also provided information on their text messaging, Facebook and email use.

Message rating task. Participants were asked to rate 27 messages on how appropriate they thought each message was for the intended recipient. The messages concerned typical university situations, such as asking a lecturer for an appointment to discuss an assignment. These messages were addressed to three types of recipient: friend, peer and lecturer, and presented in three different modalities: text message, Facebook post and email. For each combination of recipient and modality, there were three messages, of each of the following levels of textese density: high, medium and no textese (see Table A1 for examples). Textese density was manipulated in terms of the number of textisms per number of words. These textisms were drawn from a set of naturalistic messages collected from a similar population (Grace & Kemp, 2015). In the *high textese density* messages, the proportion of textisms to words was 0.6 to 0.7; in the *medium textese density* messages, the proportion was 0.2 to 0.3. The *no textese* messages were written in standard English.

The types of textisms included in these messages were drawn from a taxonomy developed by Thurlow and Brown (2003) and since extended by a number of authors (e.g., De Jonge & Kemp, 2012; Drouin & Driver, 2014; Grace & Kemp, 2015). For both the medium and high textism density messages, we tried to include an even spread of each textism category, which consisted of *shortenings* (letters omitted from word beginning or ending, e.g., *cause* for *because*), *contractions* (letters omitted from within words, e.g., *tmrw* for *tomorrow*), *letter/number homophones* (the pronunciation of a letter or number name is used for its whole-word homophone, e.g., *c u* for *see you*, *gr8* for *great*), *nonstandard spellings* (mostly phonetic, e.g., *fone* for *phone*), *accent stylisations* (spellings portraying a spoken accent, e.g., *wiv* for *with*), *apparent spelling errors* (e.g., *ansxer* for *answer*), *initialisms* (e.g., *btw* for *by the way*), *symbols* (including emoticons ☺ and kisses x), *omitted capitals* (e.g., *ben*) and *unconventional punctuation* (including missing and extra punctuation, e.g., *Can't make it can you tell him?!!*).

Participants were presented with the 27 messages on a computer screen and told that all of these messages had been written by university students. Each message was accompanied by a line of text indicating the message recipient (e.g., 'This text message was written to a lecturer'). The text messages were presented as a screenshot of a text message on a mobile phone screen, the emails in a university email account window and the Facebook posts on a Facebook page set up for this study. Participants were asked to rate each message on how appropriate they thought it was for the intended recipient, on a 7-point Likert scale from 1 (not appropriate at all) to 7 (extremely appropriate). The order in which the messages were presented was counterbalanced across modality, recipient and textese density, to reduce any systematic influence of the opinion formed from preceding messages.

Message creation task. Participants were asked to compose 18 short messages in response to 18 scenarios (see Table A2 for examples). These scenarios consisted of typical university situations, such as organising a study session with a friend, or informing a lecturer that

they would be absent from a class. Participants composed two messages in each of the three modalities: text message, Facebook post and email, for each of the three recipients: a friend, a peer and a lecturer. In order to make the experience as authentic as possible, the participants were asked to compose the text messages on their own mobile phones, the Facebook posts on the Facebook page set up for this study and the emails on their university email account. Participants were asked to address their messages to real recipients from their own lives, even though these messages were then sent/posted to the experimenter, rather than to the named recipients. The order in which participants composed messages was counterbalanced across modalities and recipients.

Results and discussion

Questionnaire

Demographic information about students' use of digital communication showed that, on average, participants had been using both text messaging and email for 7.6 years ($SD=2.8$ years) and Facebook for 3.9 years ($SD=1.2$ years). Their self-reported daily rate of message sending ranged from 29.1 ($SD=44.5$) text messages, to 12.5 ($SD=24.8$) Facebook posts, to 3.1 ($SD=3.7$) emails. Most participants (71%) used a QWERTY keyboard on their phone, and the remainder used an alphanumeric keypad. When texting, participants reported using the predictive text function about half of the time (51%). Access varied with modality: participants reported accessing Facebook 46% of the time on their mobile phone and the remaining 54% on a computer, but accessing their emails 30% of the time on their phone and 70% on a computer.

Message rating task

Participants' ratings of the appropriateness of the presented messages to different recipients, in different modalities and at different levels of textese density are displayed in Figure 1. The figure shows that across modalities, high and medium textese density messages were considered more appropriate for friends than for peers, and for peers than for lecturers, although this pattern was stronger for high textese density messages. No-textese messages showed the opposite pattern overall.

The mean appropriateness ratings were analysed using a 3 (recipient: friend, peer, lecturer) \times 3 (modality: text messaging, Facebook, email) \times 3 (textese density: high, medium, none) repeated measures analysis of variance (ANOVA). Significant main effects were found for recipient, modality and textese density, but there were also significant two-way interactions between all three variables. These were further subsumed by a significant three-way interaction between recipient, modality and textese density, $F(8, 400) = 10.15, p < .001, \eta_p^2 = .17$. This interaction was followed up by simple interaction effects tests, with Bonferroni corrections. High textese density messages were rated as significantly more appropriate for friends, than for peers, than for lecturers, across each modality. The same pattern of means was seen for medium textese density messages, although two differences failed to reach significance (between friends and peers in Facebook posts and between peers and lecturers in emails). In contrast, messages with no textese were rated as more appropriate for lecturers, than for peers, than for friends. All of these differences were significant in each modality, apart from the difference between lecturers and peers

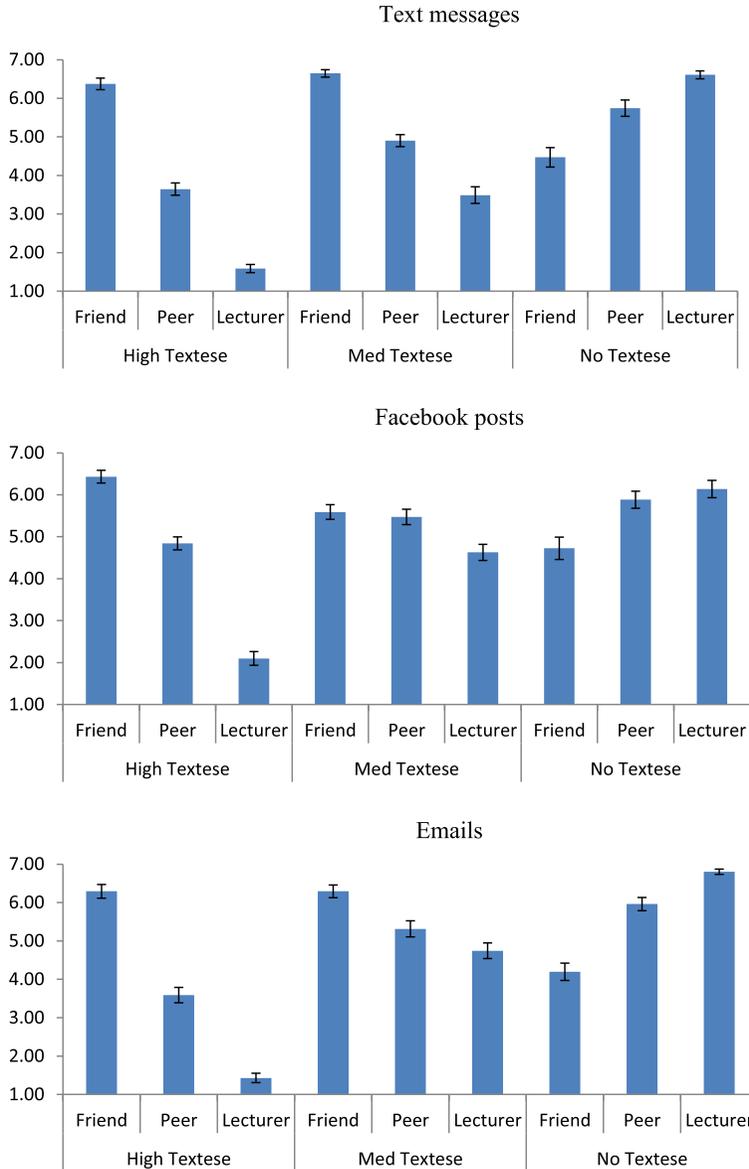


Figure 1. Mean ratings of appropriateness of presented messages across modality, recipient and formality, Study 1 (standard errors of the mean).

in Facebook posts. It is clear that these participants felt that the use of textese was more appropriate in messages written to friends, and to a lesser extent to peers, than in messages written to lecturers.

Message creation task

It was not clear whether these opinions would carry into participants' actual use of textese when composing messages. Textism densities were calculated for the message creation

task, by dividing the number of textisms by the number of words in each message. Textisms were defined as any deviation from standard written English, classified according to the taxonomy described for the message rating task.

Figure 2 displays the mean textism densities and standard errors of the mean for each message type. As seen in the figure, across modalities, participants used more textisms for messages to friends than to peers, and to peers than to lecturers. In general, the use of textisms appeared greater in text messages and Facebook posts than in emails.

Because some of the data were positively skewed, an arcsine transformation was conducted before the mean textism densities were analysed using a 3 (recipient: friend, peer, lecturer) × 3 (modality: text messaging, Facebook, email) repeated measures ANOVA. This ANOVA revealed a significant main effect of modality, $F(2, 100) = 31.95, p < .001, \eta_p^2 = .39$ and a significant main effect of recipient, $F(2, 100) = 121.02, p < .001, \eta_p^2 = .71$. However, these main effects were subsumed by a significant two-way interaction between recipient and modality, $F(4, 200) = 4.57, p = .003, \eta_p^2 = .08$. This interaction was followed up by simple interaction effects tests with Bonferroni corrections. It was confirmed that participants used a significantly higher proportion of textisms in messages to friends than to peers, and to peers than to lecturers, across all three modalities. When writing to both friends and peers, participants used similar levels of textisms in text messages and Facebook posts, but significantly more in both of these modalities than in emails. When writing to lecturers, participants used significantly higher textism densities in text messages than Facebook posts, and in Facebook posts than emails.

As noted earlier, some participants reported accessing both Facebook and email on their mobile phones rather than on their computers. Because the physical constraints of mobile phones are more restrictive than those of computers, textism density may have varied with device as much as with modality used. To explore this possibility, we categorised participants into three groups, first for Facebook and second for email: ‘mostly mobile users’, who used Facebook ($n = 19$) or email ($n = 8$) more than 80% of the time on a mobile phone, ‘mostly computer users’, who used Facebook ($n = 20$) or email ($n = 29$) more than 80% of the time on a computer and the remainder as ‘balanced users’ for Facebook ($n = 12$) or email ($n = 14$). However, the ‘mostly mobile’, ‘mostly computer’ and ‘balanced’ groups used very similar textism densities in their Facebook posts, 0.12 ($SD = 0.07$), 0.11 ($SD = 0.07$) and 0.10 ($SD = 0.06$) and in their emails, 0.06 ($SD = 0.03$), 0.07 ($SD = 0.05$)

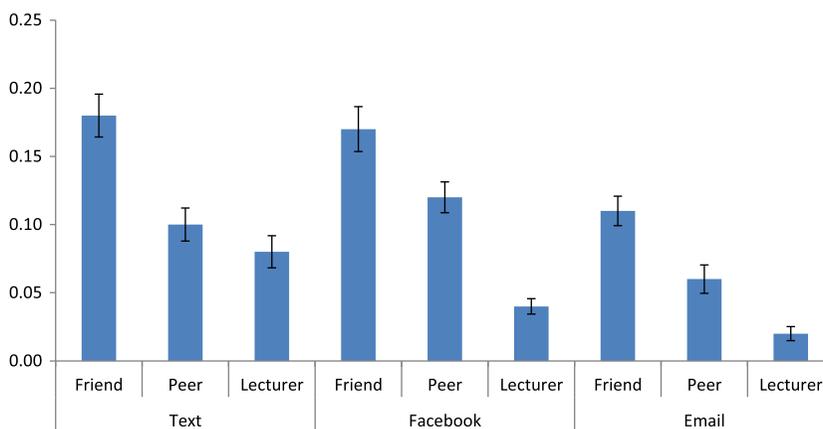


Figure 2. Mean textese density used in elicited messages, Study 1, across message recipient and modality (standard errors of the mean).

and 0.07 ($SD=0.07$), respectively. Thus, it appears that differences in textism use cannot be attributed solely to differences in device.

A limitation of Study 1 is that the message creation task required participants to create messages based on scenarios, rather than to provide examples of naturalistic text messages that they had actually sent. One benefit of this design was that we were able to make a full comparison between all recipient and modality types, even though in real life, for example, it would be unusual for an undergraduate to write a text message or Facebook post to a lecturer, or vice versa. However, it was important to check that the patterns seen in this current study would be borne out in naturalistic messages. Study 2 was designed to assess this question.

Study 2

In the second study, we asked a group of undergraduates to provide examples of text messages, Facebook posts and emails that they had recently composed and sent. As in Study 1, we assessed messages sent to friends (which here could include close family members) and to peers, but instead of restricting the third recipient type to lecturers, we invited messages from 'superiors' in education or at work, including lecturers but also bosses or supervisors.

Method

Participants

Participants were 37 third year Psychology students (seven men) at the same university, with a mean age of 21.5 years ($SD=1.8$ years). All had English as a first language and participated as part of class activities. None had participated in Study 1.

Materials and procedure

Participants completed a brief demographic questionnaire and provided examples of their own sent messages, via an anonymous on-line survey that took about 35 minutes to complete. Data were collected in mid-2013.

Questionnaire. The questionnaire asked for participants' age and sex and their use of text messages, Facebook and emails.

Message collection task. Participants were asked to provide three examples of actual messages that they had recently written and sent/posted in three modalities: text message, Facebook post and email message, to recipients of three different types: friends (including good friends and close family members), peers (including classmates and work colleagues) and 'superiors' (including lecturers and bosses/supervisors at work). Participants were advised to include only those messages that they felt comfortable sharing and to change any names to pseudonyms (retaining capitalisation or lack of it) to maintain anonymity. This method has been used successfully in a range of previous studies (e.g., Drouin & Driver, 2014; Holtgraves, 2011; Wood, Kemp, & Waldron, 2014), with participants providing a wide and candid range of messages and a reliable measure of their textese use (Grace & Kemp, 2015).

Each participant copied and pasted (or typed verbatim) their messages into the on-line survey. Although the preferred number of messages per recipient/modality combination was

three, if students had not written as many as three for each combination, they were asked to provide one or two messages if possible, although it was acknowledged that some cells might remain empty (e.g., it would be unusual for a student to write a Facebook post to a lecturer).

Results and discussion

Questionnaire

On average, participants reported using texting for 8.4 years ($SD=1.8$), Facebook for 4.6 years ($SD=1.8$) and email for 9.2 years ($SD=1.5$). They estimated that per average day, they sent 16.3 text messages ($SD=14.7$), wrote 6.0 Facebook posts ($SD=11.3$) and sent 1.9 emails ($SD=2.4$). Most participants (73%) used a QWERTY keyboard rather than an alphanumeric keypad on their phones. When writing text messages, students stated that they used the predictive text function a little less than half the time (46%). Participants reported that they accessed Facebook about 48% of the time via mobile phone and the rest of the time via computer, but that they accessed their emails only 23% of the time via phone and 77% of the time via computer. Thus, the participants in this second study were quite comparable with those in the first study in terms of their digital communication use.

Message collection

Most people were able to provide messages of all three modalities written to all three recipient types, but there were some exceptions. Specifically, for text messages, all participants (100%) were able to provide examples of messages written to friends, 85% to peers and 78% to superiors. Nearly all (97%) participants were able to provide example Facebook posts to both friends and peers, but only 54% had examples for superiors. Finally, 81% provided example emails for friends, 70% for peers and 87% for superiors. Figure 3 shows the mean textese density for the naturalistic message examples that participants provided. Overall, participants used more textisms in text messages and Facebook posts than in emails and appeared to use more textisms when writing to friends than to peers, and to peers than to superiors.

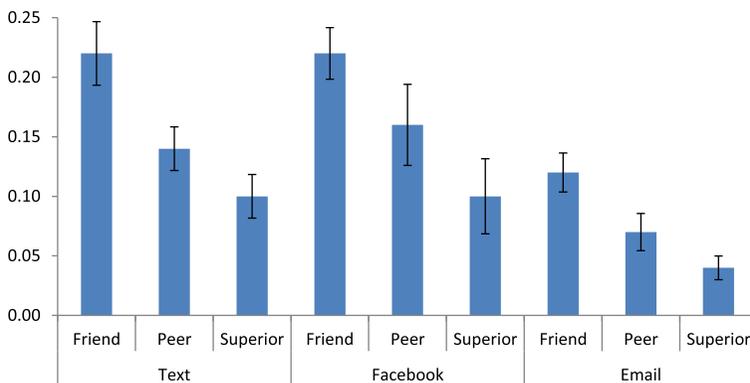


Figure 3. Mean textese density used in naturalistic messages, Study 2, across message recipient and modality (standard errors of the mean).

These impressions were assessed with an ANOVA with two repeated measures: recipient (friend, peer, superior) and modality (text messaging, Facebook, email). Although there were numerically more textisms used in text messages and Facebook posts than in emails, this modality difference did not reach significance, $F(2, 18) = 3.32, p = .059, \eta_p^2 = .27$. However, there was a significant main effect of recipient, $F(2, 18) = 7.73, p = .004, \eta_p^2 = .46$. This was followed up by simple interaction effects tests with Bonferroni corrections. These revealed that there was a significantly higher proportion of textisms in messages to friends than to peers and to peers than to superiors. The interaction between modality and recipient was not significant. Thus, it seems that when writing naturalistic messages, these undergraduates did vary their use of textese to suit their recipient, rather than blindly using abbreviated language regardless of whom they were writing to.

General discussion

These two studies examined undergraduates' opinions on when it is appropriate to use textisms, and their use of textisms in different situations, in experimentally elicited (Study 1) and naturalistic messages (Study 2). It also provided a picture of these adults' use of digital communication. In both studies, participants reported having used texting and emailing for about 8 years and Facebook for about half that time. Students responded that, on average, they sent only a couple of emails a day, but that each day they composed numerous Facebook posts (an average of 13 in Study 1 and 6 in Study 2) and even more text messages (an average of 29 in Study 1 and 16 in Study 2). Participants composed text messages exclusively on their mobile phones and emails 70–77% of the time on their computers (with the remainder on their phones), but Facebook was accessed about half the time via phone and half the time via computer. Thus, all participants were experienced and regular users of multiple digital modalities, and many swapped between devices to access these modalities.

In Study 1, we asked participants to look at messages ostensibly written by university students to various recipients, as text messages, Facebook posts and emails, at three levels of textese density, and to rate the appropriateness of each of these messages. On the basis of a previous work (Grace et al., 2013; Lewandowski & Harrington, 2006), we had hypothesised that our participants' ratings of the appropriateness of each message would vary with both the intended audience and the extent of textisms used in that message. In line with this hypothesis, we found that messages written with relatively high levels of textese were rated as significantly more appropriate for friends than for peers, and for peers than for lecturers. Messages with a medium level of textese were in general rated as significantly more appropriate for peers, than for either friends or lecturers. Finally, messages written in standard English were in general rated as significantly more appropriate for lecturers than for peers, and more appropriate for peers than for friends.

These results converge with those of previous researchers who have found that undergraduates consider it less appropriate to use textisms when writing to instructors than to friends (Drouin & Davis, 2009) and in more formal than less formal writing and messaging contexts (Grace et al., 2013). Our results are also in line with those of Lewandowski and Harrington (2006), who found that undergraduates formed more negative views of other students who used textisms when writing to professors than those who wrote in standard English. It seems clear that adults are able to differentiate between situations where it may, or may not be, appropriate to use textisms.

Participants' ratings of textism appropriateness will not necessarily coincide with their actual textism use. In Study 1, our message creation task was designed to explore how undergraduates would use textisms in elicited messages to different recipients across three modalities. We found that, as hypothesised, undergraduates did differentiate between recipients in their use of textisms: they used significantly more textisms in messages composed for friends than for peers, and for peers than for lecturers. This pattern was seen across text messages, Facebook posts and emails. These findings extend those of Drouin and Davis (2009), who found that adults used more textisms in experimentally elicited emails to friends than to lecturers.

In Study 1, participants used similar proportions of textese in text messages and Facebook posts, but significantly lower proportions in their emails. We initially attributed this pattern to our finding that these students accessed Facebook almost as often on their phones as on larger computers. This may have encouraged participants to use more textese because of the physical constraints of the phone handset. In contrast, emails were accessed much more often via computer, where the space-saving and time-saving need for textese is less. However, further analysis revealed no clear pattern between individuals' tendency to use textese and their phone/computer access preference. Anecdotal comments from students suggested that they saw emails as more formal, and less amenable to including textese, than Facebook posts and text messages, although these differences were not seen in the ratings task.

Despite the clear findings in terms of recipient, it is possible that perceived demand characteristics encouraged participants in Study 1 to use textisms in messages to friends and to avoid them in messages to lecturers, especially as they composed these messages in the presence of the researcher. It was therefore important to see if these recipient-based differences existed also in people's naturalistic messages. Thus, in Study 2, we asked a similar group of undergraduates to provide examples of text messages, Facebook posts and emails that they had already sent to friends, peers and superiors (lecturers, bosses or supervisors). These results confirmed those of Study 1. Specifically, participants used significantly more textisms in their naturalistic messages to friends than to peers and more to peers than to superiors. In this second study, there were no significant differences between the use of textese in text messages, Facebook posts and emails, although there was a trend in the same direction as in Study 1, for the least textese to be seen in emails.

Taken together, these studies suggest that adults at university are able to vary their written language to suit to the situation for which that language is intended. They are able to switch between using or avoiding textisms when they need to and are also able to judge the differences between others' textism use in similarly varied situations. However, it should be noted that although participants used significantly less textese in messages (whether elicited or naturalistic) to superiors than to peers or friends, they still did include some textisms when writing to their lecturers, bosses and supervisors. This tendency might be seen as quite acceptable by some recipients, but others may find it inappropriate for their students or employees to use any textese at all if the communication is formal. Future research should consider whether there are differences in the profile of individual textism types used for different recipients. A preliminary look at the present data suggests that participants did show some such differentiation. Messages to friends seem to include the widest variety of textism types, with more examples of symbols (especially hugs and kisses, *xo*) and nonstandard spellings and accent stylisations (e.g., *da fone* for *the phone*) than messages to peers and superiors. In contrast, messages to superiors (and to a lesser extent, peers) show a smaller range of textism types, with most examples representing omitted apostrophes and capitals (what Drouin and Driver

(2014) refer to as ‘negative textisms’) rather than deliberate or creative changes to spellings (Drouin & Driver’s ‘positive textisms’).

Overall, however, the clear differences that our participants showed in their use of, and attitudes to, textese to different recipients speak against concerns that the widespread use of textese is damaging young people’s literacy skills (e.g., Humphrys, 2007; Llewthor, 2010). Instead, they add to the growing body of evidence that the tendency to use textese is not consistently linked to language skills in adults (e.g., Drouin & Driver, 2014; Grace, Kemp, Martin, & Parrila, 2014; Wood, Kemp, & Waldron, 2014) and may even be linked to superior language skills in children (e.g., Plester et al., 2009; Wood et al., 2011). The current results suggest that young adults are not losing their ability to write formally, but augmenting this ability, by adjusting the formality of their writing style to suit their reader.

Limitations and future directions

A limitation of the naturalistic messages gathered in Study 2 is that although we asked participants to provide examples of messages written for three types of recipient (friends, peers and superiors), these are not homogenous categories. For example, one student’s relationship with a university lecturer or work supervisor may be quite different from that of another student’s, in terms of how well or how long they have known each other and their social closeness or distance. These factors could have a strong influence on the student’s tendency to use or avoid textese in writing to that recipient. Future research in this area could ask participants to indicate the nature of their relationship with message recipients of different categories. Our results still showed a clear decline in textese use/perceived appropriateness from friends to peers to superiors, but a more nuanced approach could reveal further details in future work.

A broader limitation of the research reported here is that it is unclear if the current results can be generalised beyond the undergraduate world. As reported by Rosen et al. (2010), adults with and without a university degree differ in their use of textese. These differences could reflect the fact that in general terms, university students may use formal writing more, or have stronger literacy skills, than those who have not gone on to tertiary education. This may mean that university students have more experience with a greater range of levels of formality and recipient, and this experience could lead to a more differentiated view of when it is appropriate to use textisms. Further, in both samples, women greatly outnumbered men, as is common in research in this area (e.g., Thurlow & Brown, 2003; Wood, Kemp, & Waldron, 2014). Given that women may use more textese than men (e.g., Grace & Kemp, 2015; Herring & Zelenkauskaitė, 2008), the current findings may overestimate people’s use of textisms and thus may not be generalisable to the population as a whole.

Future research in this area would clearly do well to consider the digital language use and attitudes of a wider range of people, beyond the university classroom, and with better balanced numbers of men and women. It would also be interesting to examine the use of textese to different recipients in children, who may not yet have developed such a flexible sense of language register, and with people in the workforce, where unthinkingly including textese in an otherwise formal message could have a relatively serious impact on client interactions or future business.

Conclusions

For now, at least, it appears that university students have clear views on when and where it is appropriate to use textese in their messages. However, as technology continues to

advance, so does the use of digital communication in our everyday lives. As more and more interaction takes place via digital means, the scope for using language in a way that could facilitate, or hinder, the interaction also increases. It will be important to continue to assess people’s use of written language in electronic communication with others, as well as recipients’ responses to receiving messages that contain varying levels of textese.

Appendix

Table A1. Example (text) messages for the message rating task, Study 1.

Textese density	Recipient	Example
High	Friend	hey paul wont be @ prac 2day not feelin good ☹ c u next week!!
Medium	Peer	Hi Kelly can we meet up at uni later on?? I need 2 go over something for our asst... ta, Mel
None	Lecturer]Dr. Mackenzie, my poster won first prize at the conference last week, and I want to thank you for all your input. Thanks again, Elizabeth.

Table A2. Example scenarios (for text messages) for the message creation task, Study 1.

Recipient	Scenario
Friend	You missed what the lecturer said about the exam, and you would like your friend to tell you.
Peer	You want to arrange with your peer when and where to meet up to discuss which question your practical group will do.
Lecturer	You can’t make it to participate in the lecturer’s experiment, and want to reschedule.

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