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R u txting? Is the Use of Text Speak Hurting Your Literacy?

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Recent negative media attention surrounding the use of text speak (shorthand abbreviations of words such as *gr8* for "great") and the potentially detrimental effects of text speak on literacy prompted this study of texting and literacy in 80 college students. Thirty-four text speak users and 46 nontext speak users were assessed on their proficiency and familiarity with text speak as well as their standardized literacy levels and misspellings of common text speak words. Results showed that while text speak users were more proficient with the vocabulary, both groups showed familiarity with text speak. More important, there were no significant differences between the two groups in standardized literacy scores or misspellings of common text speak words. Thus, our analyses showed that the use of text speak is not related to low literacy performance. Nonetheless, more than half of the college students in this sample, texters and nontexters alike, indicated that they thought text speak was hindering their ability to remember standard English. These conflicting findings are discussed within a framework of future directions for research.

هل أنت تكتب كتابة مُختزلة معتمدا على كيفيّة لفظ الكلمة؟ بل ما هو أهمٍ هل أثر استخدامك للكتابة الاختزاليّة
الصوتيّة هذه (text speak) على كفاءتك القرائيّة والكتابيّة ؟
ملخّص البحث
لقد كان للنظرة الإعلاميّة السلبيّة المحيطة باستخدام الطريقة الاختزاليّة الصوتيّة كطريقة كتابة (كأن تُكتَب
كلمة مثل كلمة "great" على الشكل التالي "gr8") وأضرارها المُحتملة على كفاءة الطلاب القرائيّة

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والكتابيّة, مُبرِّر لدراستنا لطبيعة العلاقة بين الكتابة الاختزاليّة الصوتيّة والكفاءة القرائيّة والكتابيّة لثمانين
طالب من طلاب مرحلة البكالوريوس. طُبِّقت الدراسة على عيّنتين: الأولى من ٣٤ طالبا لتمثّل المجموعة
التي تستخدم طريقة الكتابة الاختزاليّة الصوتيّة؛ والأخرى من ٤٦ طالبا لتمثّل المجموعة التي لا تستخدم هذه
الطريقة, ثم قيست العيّنتان بعد ذلك على مستوى الطلاقة والإلفة بالكتابة الاختزاليّة الصوتيّة, وأيضا على
مستوى القراءة والكتابة المعياريّة ومدى الخطأ في تهجئة الكلمات الشائعة في الكتابة الاختزاليّة الصوتيّة. وقد
أظهرت نتائج الدراسة أنه في الوقت الذي كانت فيه مجموعة الطلاب التي تستخدم الكتابة الاختزاليّة الصوتيّة
أكثر كفاءة من حيث المفردات من نظيرتها في المجموعة الأخرى, إلا أنّ كلا المجموعتين أظهر ألفة للنص
الذي كُتب بالطريقة الاختزاليّة الصوتيّة. وأهم من ذلك, لم تظهر الدراسة وجود أي فروق دالة إحصائيًا بين
المجموعتين في درجات اختبارات القراءة والكتابة المعياريّة أو في صحّة تهجئة الكلمات الشائعة الاستخدام
في النصوص المكتوبة كتابة اختزاليّة صوتيّة. ومع أنّ نتائج التحليل قد أظهرت أنّ استخدام الكتابة الاختزاليّة
الصوتيّة غير مرتبط بالأداء المنخفض في القراءة والكتابة لدى الطلاب, إلا أن أكثر من نصف الطلاب في
عيّنة الدراسة اعتقدوا أنّ الكتابة المعتمدة على الطريقة الاختزاليّة الصوتيّة كانت تعيق قدرتهم على تذكّر اللغة
الإنجليزيّة المعياريّة. وقد نُوقشت النتائج المُتضاربة داخل إطار يستشرف الاتجاهات البحثيّة المستقبليّة.

Resumen

La mala publicidad que los medios de comunicación han hecho recientemente al uso del lenguaje de los mensajes de texto (abreviaciones cortas de palabras tales como *gr8* para decir "great") y del potencial daño de este lenguaje a la lectoescritura, animó este estudio acerca de mensajes de texto y lectoescritura entre 80 estudiantes universitarios. Los participantes fueron 34 estudiantes usuarios de mensajes de texto y 46 estudiantes que no utilizan este lenguaje. A los participantes se les examinó su capacidad y conocimiento del lenguaje típico de los mensajes de texto, así como sus niveles de lectoescritura estándar y fallas de ortografía de palabras comúnmente usadas en los mensajes. Los resultados mostraron que mientras los usuarios de mensajes de texto tenían más conocimiento del vocabulario, ambos grupos mostraron familiaridad con el lenguaje utilizado en los mensajes de texto. Más importante aún, no hubo diferencias significativas entre los dos grupos en las calificaciones de lectoescritura estándar o en la ortografía de palabras comúnmente usadas en mensajes de texto. Así, nuestro análisis muestra que el uso de mensajes de texto no tiene relación con bajos niveles de lectoescritura. No obstante, más de la mitad de los participantes, tanto los que utilizan como los que no utilizan los mensajes de texto, declararon que el uso de mensajes inhibe su capacidad de recordar palabras en inglés estándar. Discutimos estos contradictorios resultados desde de una mirada hacia futuras investigaciones.

你短信吗？更重要的，短信损害你的读写能力吗？
摘要
最近媒体关于使用文本话语（缩略速记，比如用 gr8 替代'great')和文本话语
对读写能力的潜在损害作用的负面关注促使了这个对８０位大学生短信使用
和读写能力的研究。研究测量了３４位文本话语使用者和４６位非文本话语
使用者对文本话语的熟练和熟悉程度，他们的标准读写程度,常用的文本话语
词语的拼写错误。结果显示虽然文本话语使用者对词汇更熟练，两个组都显

示了对文本话语的熟悉。更重要的是，两个组在标准读写能力分数和常用文本话语的拼写错误上没有显著的差别。因此，我们的分析表明了文本话语的使用与低读写能力没有相关。然而，样本中过半的大学生, 包括文本话语使用者与非使用者，都表示了他们认为使用文本话语阻碍了他们对标准英语的记忆。我们在未来研究方向的框架里讨论了这些相左的研究结果。

Résumé

L'attention négative récente dans les médias sur l'emploi du «texte parlé» (abréviations des mots, tel que *gr8* pour 'great') et les effets potentiellement négatifs du «texte parlé» sur la lecture-écriture, a provoqué cette étude de «texting» et la lecture-écriture parmi 80 étudiants à l'université. 34 utilisateurs de "texte parlé" et 46 non-utilisateurs ont été évalués sur leur compétence et familiarité avec le "texte parlé" aussi bien que leurs niveaux de lecture-écriture standardisés et leurs erreurs orthographiques de mots communs de«texte parlé». Les résultats sont les suivants: tandis que les utilisateurs de «texte parlé» ont été plus compétents en vocabulaire, les deux groupes ont montré une connaissance du «texte parlé». Plus important encore, il n'y avait pas de différences significatives entre les deux groupes sur des résultats standardisés en lecture-écriture ou en erreurs orthographiques des mots communs de «texte parlé». Donc, les analyses montrent que l'emploi de «texte parlé» n'a pas de relation avec un niveau bas de compétence en lecture-écriture. Néanmoins, plus de la moitíé des étudiants dans cette étude, "ceux qui envoient des textes" et aussi bien "ceux qui n'en envoient pas", indiquent qu'ils pensent que le «texte parlé» empêche leur capacité de se rappeler de l'anglais standard. Ces résultats contradictoires sont discutés dans un cadre de futures directions pour la recherche.

アー・ユー・テキスティング？　さらに重要なことには、テキストスピークの使用はリテラシーを傷つけているか？
要約

テキストスピーク（'great'を gr8 とするような速記的な省略表記）の使用をめぐっては近年否定的なメディアの関心があり、リテラシーにおいてテキストスピークが潜在的に有害な影響をもたらすことについて、80名の大学生を対象にテキスティングとリテラシーに関する本研究が行われることとなった。34名のテキストスピーク使用者と 46名の非使用者が、テキストスピークについての熟達度と精通度について、及び、標準化されたリテラシーのレベルとテキストスピークでよく用いられる語の綴りのミスについて評価された。結果は、テキストスピーク使用者は語彙においてより熟練している一方で、使用者と非使用者のどちらのグループもテキストスピークには精通していることが明らかになった。さらに重要なことには、二つのグループでは、標準化されたテストによるリテラシーの得点、よく用いられる語の綴りのミスについては、有意差がないことが明らかになった。

しかし、我々の分析は、テキストスピークの使用は、低いリテラシーのパフォーマンスには関係がないことを示した。それにもかかわらず、今回対象とした大学生の半数以上が、テキストスピークを使用してテキスト作成を行う者もそうでない者も、テキストスピークはスタンダードな英語を記憶する能力を妨げていると考えていることが指摘された。これらの矛盾する結果について、今後の研究の方向性を示す枠組みが議論された。

Auszug

Die neue negative Mediaaufmerksamkeit, die den Gebrauch von Text umgibt, spricht (Stenographieabkürzungen von Wörtern wie *gr8* für das Englishces Wort 'great') und die möglicherweise schädlichen Effekte des Textsprache Sie auf Bildungsgrad, aufgefordert dieser Studie des Textings und Bildungsgrad in 80 Studenten. 34 Textsprache Benutzer und 46, die nicht Textsprache Benutzer, wurden auf ihrer Leistungsfähigkeit und Vertrautheit mit Textsprache geprüft, sowie ihre standardisierten Bildungsgradniveaus und Fehlbuchstabierungen des allgemeinen Textsprache Wörter. Resultate zeigten, daß, während Textsprache Benutzer mit dem Wortschatz tüchtiger waren, beide Gruppen darstellten, daß Vertrautheit mit Textsprache. Wichtiger, gab es keine bedeutenden Unterschiede zwischen den zwei Gruppen in standardisierten Bildungsgradkerben, oder Fehlbuchstabierungen des allgemeinen Textsprache Wörter. So zeigten unsere Analysen, daß der Gebrauch von Textsprache zusammenhängt nicht mit niedriger Bildungsgradleistung. Nichtsdestoweniger zeigten mehr als Hälfte der Universitäts Studenten in dieser Probe, in Texters und in Nicht-texters gleich an, daß sie dachten, daß Textsprache hinderte ihre Fähigkeit, sich an Standardenglisch zu erinnern. Diese kontroversen Entdeckungen werden innerhalb eines Rahmens der zukünftigen Richtungen für Forschung besprochen.

The first text message sent via a cell phone was in 1993 by an engineering student working for Nokia (O'Donnell, 2003). Since then, the use of text messaging worldwide has been on the rise and is quickly replacing voice calls in communication with peers in the 13- to 24-year-old age group, especially in places such as Europe and China (Yuan, 2005). In the United States, "texting" is also on the rise (Reardon, 2008). As is the trend in other countries, younger and older populations of U.S. citizens use text messaging less frequently than adolescent and early adult populations. For example, 81% of 6- to 12-year-olds reported that they never use text messages (Knapstein, 2007), whereas 62% of 18- to 24-year-olds reported using text messages (Yuan, 2005).

As the use of text messages became increasingly widespread over the last decade, a new written vocabulary, "text speak," emerged (Carrington, 2004). Text speak bears resemblance to standard English, and they can both be considered written languages (Crystal, 2006); however, there are notable structural differences between them. More specifically, text speak is characterized by acronyms,

emoticons (symbols representing emotions, e.g., :) for happy), and the deletion of unnecessary words, vowels, punctuation, and capitalization (Carrington, 2004; Thurlow, 2003). Thus, words are frequently coded in simple phonetic form; for example, thanks becomes *thx* and you becomes *u*. Interestingly, this abbreviated written language resembles the early phonological stages of spelling. According to popular spelling models (e.g., Ehri, 1986; Gentry, 1982), early spellers typically omit medial vowels and encode only the salient sounds, such as the initial and final consonants (e.g., *gd* for good) and use letter names to encode whole words (e.g., *r* for are). Thus, structurally, text speak bears some similarity to early spelling in that it sometimes uses contracted linguistic forms. However, there are many additional features of text speak that do not resemble early spelling. For example, text speak users often utilize acronyms for popular phrases, such as *gtg* for got to go, *ttyl* for talk to you later, and *lol* for laugh out loud. Moreover, capitalization and punctuation are often left out so that I've got to run becomes *ive gotta run.*

This abbreviated text speak vocabulary has surfaced in many computer-mediated communication (CMC) environments, including SMS, instant messaging (IM) forums, e-mails, and on community social networks such as MySpace™. In fact, text speak has become so popular that there are standard text speak dictionaries posted on the Internet, and a Google™ search for "text speak dictionary" returns more than one million hits, suggesting that this written language is both widely used and structurally and symbolically different from standard English (SE). That said, as Thurlow (2006) asserts, the existence of a text speak dictionary in itself gives no reliable information about the prevalence of the language nor its structural similarities or differences. Consequently, there have been a small number of researchers in the past few years who have examined the use of text speak among adolescents and college students in naturalistic settings. These studies have mainly used discourse analysis techniques to measure the prevalence of text speak in adolescents' (Tagliamonte & Denis, 2008) and college students' (Baron, 2004; Thurlow, 2003) written communication within interactive peer forums. Although these researchers all found that the written communication within their groups contains relatively little text speak and is quite rich linguistically, they still agreed that a new written language has emerged (see also review by Thurlow, 2006). Moreover, media sources suggest that this new written language has begun to surface in more formal communication as well. For example, Barker (2007) claims that secondary school teachers are seeing textisms (text abbreviations) in school assignments. However, despite the media headlines that suggest that use of text speak in written assignments is becoming commonplace, there is no sound empirical evidence that textisms are, in fact, surfacing in students' formal written communication (Thurlow, 2006). On the other hand, there is also no evidence that textisms aren't surfacing in formal environments, that students differentiate between the two registers (text

speak and SE), or that students think text speak is inappropriate for formal written communication.

In addition to the concern expressed regarding students' use of text speak in formal written communication, one of the main concerns expressed in the media relates to the potential detrimental effects of the use of text speak on literacy. For example, in Britain, where a text messaging boom has existed since 2001 (Crystal, 2008), especially among teenagers, who have been said to be involved in a "texting craze" (Yuan, 2005), both teachers and parents have expressed concern about the possible negative effects of texting on literacy skills (Fox, 2003). This negative media attention is not limited to the United Kingdom. In his review of media headlines from 2001–2005, Thurlow (2006) found that many national and international media sources represented this new communicative discourse in a pessimistic light, citing specifically the pervasive nature of the discourse and the potential degeneration of the English language. As there is some structural similarity between text speak and early spelling stages, it is not surprising that educators worry about the widespread use of text speak, as it could be considered a step down in the spelling phase models (e.g., Ehri, 1986). However, no systematic empirical research to date has demonstrated that a relationship exists between the use of text speak and a decline in literacy. Furthermore, despite the vocal concerns, there have been no causal predictions made about the route by which text speak may have a deleterious effect on SE.

Presumably, those who have expressed concerns about the possible detrimental effects of text speak on SE have envisioned a future where individuals who use text speak are unable to recall SE or use it effectively. Psychologists use two memory theories, retroactive interference and decay theory, to explain this occurrence. Retroactive interference is the phenomenon whereby learning that occurs later interferes with learning that has occurred before (Britt, 1935) and has been specifically applied to verbal memory tasks (e.g., Peterson & Peterson, 1959; Gunter, Clifford, & Berry, 1980). In these tasks, a participant is presented with a verbal stimulus to memorize and is then presented with a verbal distractor, which may or may not resemble the original stimulus. Interference studies have shown that the verbal distractor (or most recently learned information) may interfere with the memory of the original stimulus. Thus, applied to the present scenario, learning a new text speak vocabulary could interfere with the memory of SE. Alternatively, the use of text speak vocabulary may slow down processing of standard English because the other language, in this case text speak, must be inhibited before SE can be processed. Meanwhile, decay theory states that learned information will be less accessible over time, especially when the neural connections are not being activated through use (see Loftus & Loftus, 1980). According to this theory, if individuals are using text speak as their main form of communication and are not using the neural connections associated with SE, the neural connections for SE may deteriorate from disuse.

While both of these phenomena are possible in a theoretical sense, they are very improbable. Research shows that information in the long-term memory (LTM) store is resilient to the effects of time (Bahrick, 1984; Bahrick, Bahrick, & Wittlinger, 1975). According to Bahrick (1984), this slow forgetting is especially relevant in the case of information that has been overlearned (i.e., practiced beyond the point of mastery), or when there has been ample time for distributed practice (i.e., practice over many sessions). Language, and specifically one's native language, has both of these qualities. In addition, even in the case of a foreign language, Bahrick (1984) showed that great amounts of the foreign language knowledge can be retained for periods up to 50 years. Considering this, it is likely that the concerns voiced by the media, educators, and parents on the detrimental effects of text speak on SE literacy are largely unfounded.

In sum, despite the growing concerns surrounding text speak, few studies have examined the extent to which students use, understand, or are proficient in text speak vocabulary. As such, there is no empirical evidence to show that the text speak vocabulary has become commonplace within the communication environments of teenagers or college students. Although Baron (2004), Tagliamonte and Denis (2008), and Thurlow (2003) all found evidence of text speak vocabulary within students' interactive discourse and performed comprehensive studies regarding text speak usage, they did not examine students' understanding of or proficiency in text speak. Instead, they conducted naturalistic type studies including linguistic analysis of discourse in IM forums and text messages, which allowed them to assess the linguistic structures evident within these CMC environments. However, they did not make any assessments of students' overall familiarity with the text speak vocabulary. Moreover, little research has been done on the effects of the use of text speak on literacy. In the few studies that have been done (e.g., Plester, Wood, & Bell, 2008), researchers examined text speak and literacy in younger populations of students and found no links between text speak proficiency and lower standardized literacy scores. Thus, this study was designed to explore both the usage of the text speak vocabulary among American college students and the relationship between the use of text speak and literacy.

METHOD

Participants

Participants were 80 college students (24 males and 56 females) from a midwestern four-year commuter university who were enrolled in an introductory psychology class and participated in the study to fulfill a research requirement.

Participants (mean age $=$ 21.8, range 18–48) were recruited for a study entitled "Computer-mediated Discourse."

Procedure

Participants met with the experimenter individually in a private room and completed the following tests in this order: e-mail task, translation task, word ID, reading fluency, spelling, and then the survey. These experimental and standardized measures were used to assess college students' use of and familiarity with the text speak vocabulary, their distinction between the text speak and standard English registers, and the relationship between use of text speak and literacy.

Measures

Use of textisms in formal versus informal communication: E-mails.   To measure the difference between students' use of textisms in formal and informal communication, students were asked to write e-mails to their professors and friends, respectively, according to these instructions: "Write an e-mail to your psychology professor (friend) explaining that you will not be able to take the next exam. Make up a reason for your absence." There was no autocorrect or spelling and grammar checking feature in the word processing program, and the e-mails were presented in random order so that some participants wrote the professor e-mail first, while others wrote the friend e-mail first, counterbalancing any possible priming effects. The goal of this measure was not to measure prevalence of text speak in this communication forum but instead to capture any differences in e-mails to friends and professors. For each submission, the number of words, errors (typographical, spelling, or grammatical), and textisms (e.g., *lol* for 'laughing out loud' or *i* for 'I') in each type of e-mail was recorded.

Text speak proficiency: Translating standard English to text.   To measure students' text speak proficiency, students were asked to translate five sentences (see Appendix) from SE into text speak with the following directive, "Please translate the following sentence from standard English into text speak (e.g., from 'better' to 'btr'). Please exclude capitalization or punctuation as you would in a text message." Participants' entries were recorded and coded for acceptable use of a text speak abbreviation. For example, for the part of the sentence "By the way, I'm not going to become one ..." students could score a maximum of five points if they translated each of the targets (underlined in the example) into an acceptable textism (e.g., *Btw im not gonna bcum 1*). Alternate abbreviations, provided they were still text speak vocabulary, were also accepted

(e.g., *goin 2* instead of *gonna*). A cumulative score for all five sentences was calculated and used in analyses as "total correct textisms."

Text speak familiarity: Translating text speak to SE.   To measure students' familiarity with and understanding of text speak, they were asked to translate five sentences (see Appendix) from text speak into SE with the following directive, "Please translate the following sentence from text speak into standard English. Please include appropriate capitalization and punctuation and spell out all words (e.g., '9' = 'nine')." Participants' entries were recorded and coded for acceptable use of SE. For example, for the part of the sentence <u>*Btw im not gonna bcum 1*</u> ... students could score a maximum of five points if they translated each of the targets (underlined in the example) into correct SE (e.g., By the way, I'm not going to become one ...). In this case, only a correctly spelled and punctuated SE word or phrase was counted as correct. A cumulative score for all five sentences was calculated and used in analyses as "total correct SE."

Literacy processing speed: Speed of translation to and from SE.   To measure literacy processing speed, participants' submissions were timed and recorded for each of the translating sentences exercises. A cumulative score was then calculated for the total time for translating SE to text speak, "total time SE to text," and for the total time for translating text speak to SE, "total time text to SE." This measure was included as an indirect indicator of the time it takes to switch back and forth between the two vocabularies and as a general measure of literacy processing.

Spelling errors: Translating target textisms to SE.   To measure whether or not the use of textisms has a negative effect on the spelling of words commonly abbreviated in text speak, spelling errors were recorded for two textisms that were included in the translation exercises. These target textisms were *2*, which appeared in the sentences eight times and *ur*, which appeared in the sentences 11 times. In common text speak, as in the translating exercise, *2* is used to represent "to," "too," and "two" while *ur* is used to represent both "your" and "you're." These specific words were chosen because they are ever present in text speak dictionaries and both translate into words that sound alike but have different meanings. Moreover, spelling errors for both of these words are quite common, so much so that in a general usage guide for college students, Purdue University includes "to, too, two" and "your, you're" on a list of 12 commonly misspelled word forms (Purdue University Online Writing Laboratory, 2004). It was predicted that if a spelling decline associated with the use of text speak existed, it might be evident first in the spellings of commonly misspelled words that are regularly abbreviated in text speak.

Standardized Literacy

Reading.   Two standardized reading measures were administered: Letter-word Identification and Reading Fluency, achievement subtests of the Woodcock Johnson III Achievement tests battery (Woodcock, McGrew, & Mather, 2001). Letter-word Identification is a task that requires participants to read aloud words from a list that increases in difficulty as the test progresses (Maximum score = 76). Reading Fluency is a timed task that requires participants to read a series of sentences and circle True or False based on whether the sentence is correct or not (Maximum score = 98).

Spelling.   The standardized spelling measure used was the Spelling subtest from the Woodcock Johnson III (Woodcock, McGrew, & Mather, 2001). For this task, participants are asked to write words of increasing difficulty (Maximum score = 76).

Survey

The survey included a variety of items related to the students' use of text speak in different contexts, as well as their opinions about the appropriateness of text speak in formal and informal communication and whether or not the use of text speak may have a positive or negative effect on memory of standard English. All items were designed with a six-point Likert scale response format or a forced-choice True-False format. In the questionnaire, there were three items related to the use of text speak: text speak SMS, text speak MySpace, and text speak friends' e-mails. These items were combined into a single "use of text speak" measure, which had a Cronbach's alpha of .78. Likewise, the three measures related to students' opinions on the positive or negative effect of text speak on SE (text speak makes it more difficult to remember SE, text speak may hinder ability to remember SE, and using text speak helps me remember SE—counter-balanced) were also combined into a single measure that had a reliability of .73. As it appears that the measures included in each of these two scales were represented by a single construct, these combined measures were used in subsequent analyses.

RESULTS

Of the students participating in the study, 34 (43%) indicated they use text speak and 46 (57%) indicated they do not use text speak. These groups shall be referred to as texters and nontexters, respectively. Although there was a significant difference in age between the two groups ($t = 2.781$, $p = .007$), there were no significant differences in either GPA or the standardized literacy

TABLE 1
Mean Ages, GPAs, and Standardized Literacy Scores for Texters and Non-texters

Measure	Texters		Non-Texters		Grade Equivalent	
	Mean (SD)	Range	Mean (SD)	Range	Mean	Range
Age	19.9 (3.4)	18–33	23.3 (6.5)	18–48		
GPA	3.1 (.54)	2.0–4.0	3.3 (.56)	2.0–4.0		
Word ID	67.8 (3.5)	60–75	69.0 (3.9)	62–76	13.4	7.1–18.0
Reading Fluency	79.1 (9.6)	62–95	79.2 (12.3)	49–98	13.7	2.8–18.0
Spelling	49.1 (4.1)	41–57	49.4 (4.9)	39-59	14.0	7.1–18.0

Note. Texters n = 34. Non-texters n = 46. Word ID, Reading Fluency, and Spelling are subtests of the Woodcock Johnson III Achievement test battery.

scores. The average ages, GPAs, and standardized literacy scores for the entire sample are displayed in Table 1. As is shown in the table, the means on the standardized literacy measures are appropriate for the grade level of the students, but there was a wide range of achievement levels within those measures. Thus, the sample was quite heterogeneous.

Text Speak Usage among College Students

As Table 2 shows, students' self reports revealed that text speak is used among approximately half of the college students, with varying frequencies, within different computer-mediated communication environments, including cell phone

TABLE 2
Text Speak Survey Items and Responses

Measure	Mean	Range	True (%)	False (%)	N/A (%)
Text speak SMS	2.71	1–6			
Text speak MySpace	2.06	1–6			
Text speak friend emails (freq)	2.49	1–6			
Text speak instructor emails (freq)	1.13	1–4			
Use text speak			34 (43%)	46 (57%)	—
Text speak w/instructors*			5 (6%)	74 (93%)	1 (1%)
Text speak w/friends*			60 (75%)	19 (24%)	1 (1%)
Texting/difficult to remember SE			39 (49%)	21 (26%)	20 (25%)
Difficult to switch back and forth			26 (33%)	38 (48%)	16 (20%)
Texting may hinder remembering SE			44 (55%)	26 (33%)	10 (13%)
Find easy to switch back and forth			33 (41%)	33 (41%)	14 (18%)

Note. N = 80. A 1–6 likert scale was used for the first 5 measures with 1 = never and 6 = very often. *deemed appropriate. SMS = short message service. SE = Standard English.

communication, MySpace, and e-mails. A Freidman test revealed a significant difference in the use of text speak in the different domains ($X^2 = 18.407$, $df = 78$, $p < .001$). According to these college students' self-reports, text speak is used most often in SMS messages via cell phones, then in e-mails, and finally in MySpace.

With regard to differences in the use of text speak in informal versus formal literacy environments, 75% of the students indicated that it was appropriate to use text speak in written communication with friends (informal environment), whereas only 6% of the sample indicated that it was appropriate to use text speak in written communication with instructors (formal environment). This result suggests that most college students recognize a distinction between communication with friends and communication with instructors and also believe that text speak is not appropriate for more formal contexts of written communication. This trend was also evident the experimental e-mails. In e-mails to friends, slightly more than half of the sample (51%) used at least one textism (range = 1–14). In contrast, few of the participants (18%) used textisms in their e-mails to instructors (range = 1–4). A Wilcoxon signed ranked text, corrected for ties, showed that this difference was significant ($Z = 4.490$, $p < .001$). Moreover, a paired sample t-test showed that students in this sample used significantly more textisms in e-mails to friends than in e-mails to professors ($t = 4.083$, $p < .001$). Thus, students used textisms more frequently for informal communication with peers than in more formal communication with professors in this experimental setting.

ANOVAs were then used to further explore group differences in the use of text speak in the experimental emails. As Table 3 shows, the group of texters used significantly more text speak in their e-mails to friends than did the group of nontexters ($F_{(1,78)} = 4.063$, $p = .047$). However, the groups did not differ with regard to the number of text speak items they included in the e-mails to professors ($F_{(1,78)} = .613$, $p = .436$). This result is not surprising, as it would be expected that the group of students who use text speak would likely use it more often in informal communication with peers. Moreover, as nearly all of the participants (93%) indicated in the survey that text speak was inappropriate for communication with professors (see Table 2), it was also not surprising that there was no significant difference between the groups in the number of textisms used in the experimental e-mails to professors. However, it is notable that both texters and nontexters made the distinction between appropriate registers to use in each scenario.

College Students' Proficiency and Familiarity with Text Speak Vocabulary

In the first part of this analysis, the students' use of text speak was evaluated with student reports and experimental e-mail data. However, students' usage

TABLE 3
Means, Standard Deviations, and Significant Differences for
Scores on Experimental Text Sentences and Emails for
Texters and Non-texters

| | Texters | Non-Texters | |
| | Mean (SD) | Mean (SD) | |
Measure			$F^{a}_{(1,78)}$
Total "your, you're"	9.5 (2.1)	9.3 (2.9)	.138
Total "to, too, two"	5.5 (1.4)	4.9 (2.0)	2.324
Total correct textisms[b]	66.4 (21.7)	52.3 (24.4)	7.060*
Total correct SE[c]	111.8 (10.0)	106.7 (26.6)	1.142
Total time SE to text	6.3 (2.0)	6.9 (2.6)	1.608
Total time text to SE	6.4 (2.1)	7.2 (3.2)	1.839
Errors Prof. Email	1.1 (1.6)	1.1 (1.5)	.025
Errors Friend Email	1.6 (3.2)	.84 (1.2)	1.964
Texts Prof. Email	.31 (.58)	.20 (.69)	.613
Texts Friend Email	1.8 (2.8)	.77 (1.5)	4.063*

Note. Time displayed in minutes. SE = Standard English. Texters n = 34. Non-texters n = 46. Maximums: "your, you're" = 12; "to, too, two" = 7; total correct texts = 121; total correct SE = 125.

[a]F ratios are reported for linear contrasts that used univariate analysis of variance tests.

[b]Total correct textisms = total number of correct textism translations from standard English sentences.

[c]Total correct SE = total number of correct standard English translations from text sentences.

*$p < .05$.

of text speak in an experimental setting is not a representative measure of either proficiency or familiarity with the text speak vocabulary. Consequently, to measure the prevalence of text speak among college students, proficiency and familiarity were also examined.

First, to see if there were any significant differences between texters and nontexters in their proficiency with the text speak vocabulary, ANOVAs were used to analyze differences between the two groups (see Table 3). Not surprisingly, significant differences were found between the groups in their texting proficiency ($F_{(1,78)} = 7.060$, $p = .010$), which in this study was the number of correct textisms translated from the standard English sentences (total correct texts in Table 3). This result indicates that texters were better at translating SE into text speak (e.g., tonight to *2nite*), which was expected as the group of participants that indicated that they used text speak should have greater access to text speak vocabulary.

To explore this result further, an item-level analysis was performed to examine any differences between the two groups on common text speak phrases and words. Table 4 shows the results from this analysis, grouped in orthographic categories as in Thurlow (2004). As Table 4 illustrates, while more of the individuals in the texting group translated the target phrases and words into text speak correctly, significant differences on individual items were rare. In fact, the two groups did not differ significantly on the correct translation of any of the common text speak initialisms (e.g., *lol* for laughing out loud), and significant differences between the two groups were seen only for a few of letter/number homophones, such as *l8r* for later. This result suggests that even those individuals who claim that they do not use text speak are still familiar enough with text speak vocabulary to demonstrate a text speak proficiency.

Nontexters' familiarity with the text speak vocabulary is also demonstrated by the finding that there was no significant difference ($F_{(1,78)} = 1.142$, $p = .289$)

TABLE 4
Percentage of Texters and Non-texters Translating Standard English
Words and Phrases into Appropriate Text Speak Abbreviations

Standard English—Target Text	Texters	Non-Texters	t
Initialisms			
Are you ok—*ruok*	97%	94%	.769
Bye, bye for now—*bbfn*	60%	60%	.000
Just kidding—*jk*	89%	78%	1.257
Laugh out loud—*lol*	94%	87%	1.122
Love you like a sister—*lylas*	91%	82%	1.182
Talk to you later—*ttyl*	89%	82%	1.257
Letter/number homophones			
See—*c*	40%	24%	1.491
Why—*y*	46%	24%	2.022*
You—*u*	80%	53%	2.550*
Anyone—*ne1*	51%	38%	1.217
Forever—*4ever* or *4evr*	60%	58%	.198
Great—*gr8*	77%	67%	1.021
Later—*l8r*	69%	24%	4.343**
To—*2*	60%	49%	.982
Tonight—*2nite*	74%	44%	2.772**
Shortenings			
Because—*cuz* or *bcuz*	77%	58%	1.832
Going to—*gonna* or *goin 2*	66%	47%	1.709
Know—*no*	57%	33%	2.165*
You're—*ur*	89%	78%	1.257

Note. Texters n = 35. Non-texter n = 45. *df* = 78. For words that occurred more than one time

*$p < .05$. **$p < .01$.

between the group of texters and nontexters in the number of correct translations from text speak to SE (total correct SE in Table 3). Thus, while texters may be more proficient at using and applying appropriate textisms, texters and nontexters are able to decipher text speak into standard English with about the same level of correctness. This result suggests that within a college population, the written vocabulary of text speak, though only utilized by some, can be readily recognized by those who do not use text speak.

Relationship Between the use of Text Speak and Literacy

Several series of analyses were performed to address the second question of interest related to the detrimental effects of text speak usage on literacy performance. First, the literacy scores of texters were compared to that of nontexters to determine if there were any significant differences in performance. Next, frequency of text speak usage and literacy scores were examined within the group of texters to see if higher rates of text speak usage were associated with lower literacy scores. Finally, student reports were analyzed to see whether students believe that the use of text speak has a detrimental effect on standard English literacy.

Part I: Literacy in texters versus nontexters.   In the first part of this analysis, the group of texters (those that indicated on the questionnaire that they use text speak) was compared to the group of nontexters (those that indicated that they do not use text speak) to see if there were any group differences in standardized literacy performance, the correct translation of the target textisms *2* and *ur*, and the time taken to complete the translation tasks (an indirect measure of literacy processing speed).

As already demonstrated in Table 1, there was little difference between the texters and nontexters on any standardized literacy measure. In fact, texters' literacy levels were not significantly different from nontexters' literacy levels for spelling ($t = .277$, $df = 78$, $p = .783$), word recognition ($t = 1.363$, $df = 78$, $p = .177$), or reading fluency ($t = .045$, $df = 78$, $p = .964$). Moreover, as is shown in Table 3, there was no significant difference in the number of times the texters and nontexters correctly translated the target words *ur* and *2* into the appropriate standard English word forms, ($F_{(1,78)} = .138$, $p = .712$ and $F_{(1,78)} = 1.608$, $p = .131$, respectively). Finally, there was no difference in the speed at which texters and nontexters translated the sentences from SE to texts and vice versa ($F_{(1,78)} = 1.608$, $p = .209$ and $F_{(1,78)} = 2.324$, $p = .179$, respectively), suggesting that the use of text speak neither speeds up nor slows down processing from one lexicon to another. Thus, for all of our measures of literacy (standard measures, translation of target words, and literacy processing)

there appeared to be no significant differences between the group of texters and the group of nontexters.

Part II: Literacy within the group of texters.   In the second part of the analysis, the relationships between standardized literacy performance, the correct translation of our target textisms *2* and *ur*, and the time taken to complete the translation tasks was examined within the group of students that indicated they used text speak. With this type of analysis, the "use text speak" variable can be examined on a scale rather than in a yes/no dichotomous manner. As a result, it is possible examine whether using text speak more frequently and in more environments, as opposed to less frequently and in fewer environments, has a relationship with literacy. For this part of the analysis, a Pearson correlation matrix was constructed to illustrate the relationships between the variables (see Table 5).

As Table 5 shows, the measure of use text speak (a scale composite variable) was negatively related to performance on the standardized literacy measures. However, none of these correlations was significant, indicating that student reports of more frequent usage of text speak is not significantly related to lower literacy levels. Furthermore, in the analysis of spelling errors for the target words, "use text speak" was not significantly related to students' correct translations of target textisms *ur* and *2* to standard English ($r = .00$, $p = .977$ and $r = -.17$, $p = .347$, respectively). Thus, it appears that a higher frequency of text speak usage is not related to college students' abilities to produce appropriate SE spellings for words that are commonly used in texting.

TABLE 5
Correlations Between Texters' Translations Between Text Speak and Standard English, Their Use and Opinions of Text Speak, and Standardized Literacy Scores

Measure	1	2	3	4	5	6	7	8	9
1. Correct use "you're"	—	. 26*	.07	.14	.00	−.01	.49**	.14	.13
2. Correct use "to, two, too"		—	.07	−.19	−.17	−.12	.42*	.27	.61**
3. Time SE to text			—	.73**	−.13	.13	−.03	−.06	−.05
4. Time text to SE				—	−.09	.28	−.09	−.05	−.21
5. Use text speak[a]					—	−.06	−.13	−.24	−.16
6. Text speak hinders SE[b]						—	−.09	−.16	−.19
7. Word Recognition							—	.43*	.43*
8. Reading Fluency								—	.36*
9. Spelling									—

Note. N = 34. Word Recognition, Reading Fluency, and Spelling are subtests of the Woodcock Johnson III Achievement test battery.
[a]Use text speak = Composite measure comprising three questionnaire items related to use of text speak in different domains.
[b]Text speak hinders SE = Composite measure comprising three questionnaire items related to students' opinions that use of text speak has a negative effect on their memory of standard English.
*$p < .05$. **$p < .01$.

Moreover, this result appears to be present across all levels of literacy. When the relationship between the "use text speak" composite measure and the total correct translations was analyzed for the target words, controlling for the effects of spelling ability, there was no significant relationship between the students' use of text speak and the correct use of SE for target words *ur* and *2* ($r = .030$, $p = .868$ and $r = -.093$, $p = .600$, respectively). Therefore, regardless of spelling ability, the analyses showed that using text speak is not related to a higher number of spelling errors in common text speak words among American college students.

Finally, increased use of text speak is also not related to any increase or decrease in literacy processing speed from one lexicon to another. As shown in Table 5, frequency of use of text speak is not significantly related to literacy processing speed as measured by translation times for standard English to text and text to SE ($r = -.13$, $p = .469$ and $r = -.09$, $p = .607$, respectively).

In sum, in the group of texters, self-reported frequency of use of text speak was not related to lower levels of literacy, more spelling errors of common text speak words, or slower literacy processing.

Part III: Students opinions of text speak and literacy.   In the final part of this analysis, college students' opinions of the effect of texting on literacy were examined. Irrespective of the cross-sectional data that show that higher rates of usage of text speak both within and across domains are not related to lower levels of literacy knowledge or processing or more spelling errors (demonstrated in Parts I and II of this paper), the question of whether or not texting has had or could potentially have a negative effect on literacy has not been addressed. To answer this question, an experimental, longitudinal study is necessary. However, without a longitudinal experimental manipulation, the analysis of the opinions of those who use text speak is still possible, to see whether they are experiencing or anticipating problems with SE as a result of their text speak usage.

The results of these analyses are clear. As shown in Table 2, approximately half of the participants (texters and nontexters) indicated they thought text speak was making it difficult to remember SE (49%) or it could potentially have a negative effect on their usage of SE (55%). Furthermore, when the nonresponders were excluded from this analysis, a staggering 65% of the sample indicated that using text speak makes it more difficult to remember SE, and 63% indicated that the use of text speak *may* hinder their remembering of SE. However, as shown in Table 5, the composite score of "text speak hinders SE" was not significantly related to literacy scores, spelling errors, or literacy processing speeds, which suggests that those individuals who thought that using text speak hinders the use of SE were no better or worse on the literacy markers.

To examine perceptions on the negative effects of text speak on literacy further, it is useful to analyze only the group of individuals who indicated

that they use text speak. It is this population that has experience using text speak and would therefore be more likely to notice any depreciative effect on their memory of standard English as a result of their text speak usage. When the sample was reduced to just those individuals who indicated that they use text speak, 16 (46%) stated that they thought using text speak made it more difficult to remember SE, and 17 (49%) stated that they thought using text speak *may* make it more difficult to remember SE. A more in-depth analysis of this sample revealed no significant group differences between those who thought using text speak made it more difficult to remember SE and those who did not, for age ($t = .733$, $p = .469$), GPA ($t = .838$, $p = .409$), reading ability ($t = 1.324$, $p = .196$), spelling ability ($t = .386$, $p = .702$), or the frequency with which they use text speak across and within the different domains ($t = .403$, $p = .690$). Thus, across all levels of age, literacy, and GPA, approximately half of the students believe that texting may have a negative influence on literacy.

DISCUSSION

The purpose of this study was to explore the usage of text speak among college students and test whether the use of text speak had a significant negative relationship with literacy performance. First, the usage of text speak among college students was examined through the analyses of experimental and self-reported text speak usage and text speak proficiency and familiarity. Not surprisingly, those students who indicated that they use text speak showed greater proficiency with the vocabulary. However, even students who indicated that they do not use text speak showed familiarity with the vocabulary. Therefore, this study provides some empirical support for the media's assertion that the widespread introduction of this vocabulary into communication environments (see Thurlow, 2006) has indeed occurred, at least within the college population. Second, students' use of text speak in e-mails was examined to see whether or not students could differentiate between the two registers and also whether they thought it was appropriate to use text speak in formal written communication. In this study, students reported that they thought it was inappropriate to use textisms in formal communication (in this case, e-mails to professors), and few actually used textisms in the experimental e-mails to professors compared to their e-mails to friends. Thus, it appears that texters and nontexters believe that the text speak vocabulary is inappropriate to use in formal written communication.

With regard to the growing concern surrounding the influence of text speak on literacy, the results are not as straightforward. Although the analyses did show consistently that there are no significant decreases in standardized literacy performance or on the translation of the targets *2* and *ur* into appropriate SE

associated with the use of text speak, the results need to be interpreted with some considerations in mind.

First, it is not likely that using text speak abbreviations for words such as *you* or *great* could lead to a deterioration of performance on the standardized literacy tests because of the nature of both text speak communication and standardized literacy assessments. In text speak, common words that have likely been overlearned (see again Bahrick, 1984) are often abbreviated, but longer words such as *appreciative* or *industrial* or other such words that might appear in standardized literacy assessments would have to be spelled out because there are no common abbreviations. Consequently, text speak users cannot cut corners on the longer, more elaborate words but only on the shorter, common ones. As such, declines in standardized literacy performance would not be expected.

Second, even if one analyzes performance on translations of textisms that are both commonly used and short (such as the targets *2* and *ur*), it is not likely that a decline in performance will be seen immediately, if at all. In his LTM studies, Bahrick (1984) showed that language information stored in the LTM (in the case of the 1984 study, knowledge of a foreign language), declined exponentially for the first three to six years and then leveled off for approximately 30 years, but some knowledge was retained for 50 years. Thus, even if there is an exponential decline in the memory of standard English (in this case, a decline in the native language, which is more resilient to loss than a foreign language), statistically significant differences may not be evident for a few years or more. However, a decline in spelling performance for commonly used words may not occur at all. As reading researchers have noted (e.g., Ehri & Saltmarsh, 1995; Reitsma, 1983), even beginning readers need as few as three or four practices to retain letter information about specific words in memory. As a result, the information about specific words (such as you're or too) is quickly learned and provided it is encoded properly into LTM, it is not likely to be forgotten.

Finally, although the data showed no negative relationships between texting and literacy, more than half of the students in this sample (both texters and nontexters) indicated that they thought that the use of text speak makes it difficult to remember SE. This finding is both unexpected (especially considering the previous analyses) and instructive. Because this study is cross sectional, no causal claims can be made about any possible negative effects of texting on literacy. However, students, and specifically students who use text speak, can make causal predictions about the influence of text speak on their literacy achievement because of their past and present experiences. Thus, although the present analyses are limited by time, students' perceptions are not. Consequently, this result is one that highlights the importance of further exploration of this topic within a longitudinal context.

Overall, the results of this cross-sectional study demonstrate the need for more research in this area as there are many questions still to answer. More

specifically, the potential negative influence of text speak on literacy needs to be studied longitudinally, with the same sample of individuals over a long period of time (three to six years is appropriate as a beginning point). In addition, standardized literacy measures, though useful for group comparisons, should not be the only dependent variables. Instead, studies should use a protocol involving target words, as was used in this study, because declines in literacy are more likely to be seen in this area rather than in standardized tests. Furthermore, there is a need to explore this same topic in younger populations. Since text speak is a relatively new language, it is likely that the individuals in this cohort had much practice with SE and little, comparatively, with text speak. On the contrary, with populations of teenagers, the opportunity for distributed practice and overlearning of SE (see Bahrick, 1984) will not have been so great, comparatively speaking. Therefore, although it was not evident in this sample, a decline in literacy in younger populations might be evident over time.

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APPENDIX—TEXT SPEAK TRANSLATION EXERCISES

Standard English to Text Speak

1. You're not going to believe what I saw! I saw your brother out with that girl from Great Escape. I'm not sure if he saw me though. I hope he saw me too because he's such a cutie! Bye, bye for now!

2. By the way, I'm not going to become one of those stalker girls who will see a cutie boy and turn all crazy like your sister did with that boy in your class. But I could! Laughing out loud. Later.

3. What's up? Your brother's leaving and I can't believe you're leaving me too. Tonight! Do you know anyone who wants to see me when you're away? I don't know why I'm even friends with you. Just kidding. Talk to you later!

4. I don't know when you're going to be home, but I cannot wait to see you! Your trip has lasted forever! I'll admit that I mostly miss your messages because they are great, but I miss you too! Love you like a sister. Your friend, Carla.

5. Are you ok? Don't you think you're going to get all these right? I'm not too sure you are. I'll bet that you don't know two or maybe more. There's no way I'm going to help you with these though. Sorry!

Text Speak to Standard English

1. Ur not gonna bleve wot i saw i saw ur bro out w/ that grl frm gr8 xscape im not 2 sure if he saw me tho i hope he saw me 2 cuz hes such a Qt!!! bbfn!

2. Btw im not gonna bcum 1 of thOs stalker grls whol C a Qt boi & trn all crAz like ur sis did w that boi n ur class but I cud! LOL l8r

3. Wassup? ur bros leving & i cant Bleve ur leving me 2 2nite do u no ne1 who wans 2 C me wn ur away? i dont no Y im even frnds w u jk. ttyl!

4. i dont no wn ur gonna b hom but i cant wAt 2 c u. ur trips lasted 4ever! il admit that i mostly miss ur msgs cuz ther gr8 but I miss u 2 lylas, ur frnd carla.

5. Ruok? Doncha tink ur gonna get all dese rIt? im not 2 sure u r il bet dat u dont no 2 or mayB more theres no wA im gonna hlp u w dese tho sry!

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