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Naomi S. Baron

American University, Washington, USA

Abstract

With the growth of mobile communication technologies, we increasingly use portable devices to produce and read text that previously existed in hardcopy or on stationary screens. Voice recognition software now enables us to speak rather than write, potentially shifting the current dominance of texting over voice calls on mobile phones. This article describes contemporary studies of language use on mobile technologies and poses research questions for new investigations.

Keywords

Computer-mediated communication, electronically-mediated communication, reading, speech, writing

Communicating on mobile devices predominantly involves spoken or written language. Obviously, graphic displays convey information independently or enhance voice or text. However, outside of emoticons, graphics have not generally figured in the mainstream discussion of new media language. The terms “computer-mediated communication” (written text formulated on or conveyed via the internet on computers) and “electronically-mediated communication” (adding in mobile platforms) have been applied in the literature to such issues as linguistic shortenings (e.g., abbreviations and acronyms), online discourse, or differences between texting, face-to-face speech, and traditional writing.

There are two basic challenges in discussing how language works on mobile communication technologies: identifying what counts as a mobile technology, and clarifying the relevant linguistic scope.

Corresponding author:

Naomi S. Baron, American University, Hurst 214, 4400 Massachusetts Avenue, NW, Washington, DC 20016-8017, USA.

Email: nbaron@american.edu

What counts as a mobile technology?

Back when computer users largely had desktop machines, a laptop computer (even a heavy one) counted as a mobile technology. Moreover, functionality of devices such as cell phones, which are clearly mobile, has varied with time and place. In the 1990s, North Americans essentially used mobile phones for voice calls, while counterparts elsewhere in the world focused on written messaging. Today, eReaders have become multi-functional mobile devices, though initially their lone connection with cyberspace was downloading books.

What makes a device mobile? It isn't having an internet connection, since desktop computers have them, while early eReaders didn't. Size (or weight) cannot be the sole criterion, since older tablet computers and netbooks are roughly matched. Definition becomes relevant in considering whether language is different on mobile devices than on stationary technologies. Key factors shaping language use on new media involve functionality more than mobility, including the input system (e.g., multi-tap or virtual keyboard) and suitability of the screen for reading (e.g., visual clarity, screen size).

Here we define a mobile reading platform as any device someone can easily carry. This definition includes laptops, tablets, eReaders, and mobile phones. While PCs are not mobile technologies, they remain common devices for reading. Platform choice generally reflects availability and marketing. In early 2012, in the US, 23% of eReading was done on PCs or laptops, 29% on tablets, and 36% on eReaders. By comparison, in India, 76% occurred on PCs or laptops, 9% on tablets, and only 2% on eReaders (Bowker Market Research, 2012).

Language basics: Writing, reading, and speaking

Research on language produced or conveyed on new media has centered on text appearing on screens (e.g., Crystal, 2001; Herring, 1996; Hillesund, 2010). In the US, early studies focused on writing created on computers, while in Europe and Asia, the emphasis was on SMS (texting).

Writing potentially entails both production (writing itself) and decoding (reading). Reading has received less attention, especially for comparing reading on stationary versus mobile technologies. Relevant production variables include:

- language style and writing mechanics (e.g., spelling, punctuation, editing);
- length of text produced;
- genre (e.g., micro-coordination, SMS poetry, *keitai* novels, formal letters).

Some important issues regarding reading are:

- mode of reading (e.g., skimming, use of search function, deep reading);
- length of text read;
- genre (e.g., light fiction, philosophical argumentation);
- reading speed;
- memory for and understanding of text;
- likelihood of annotating or re-reading.

Of course, “language” also includes speech. In thinking about speech on mobile devices, some variables to consider are:

- when interlocutors choose to speak rather than write;
- how cultural norms influence use of speech in public space.

Research directions

We turn now to research directions in media studies involving speech, writing, and reading. It is crucial to note when and where existing studies have been undertaken, as well as the specific digital platform involved. Data on distinct platforms (e.g., mobile phones versus tablets, original versus internet-enabled eReaders) have often been lumped together, blurring device-specific variation. Because some devices are new (e.g., the iPad only launched in 2010), we have few studies examining language on mobile devices (other than mobile-phone texting), including research on distinctions between writing or reading on the “same” site (e.g., Facebook, Twitter) when using a laptop versus a mobile phone.

Speech

With proliferation of email, instant messaging, and texting in the 1990s and early 2000s, studies often compared these forms of writing with face-to-face speech: Was the text more like (traditional) written or spoken language, or was it a new genre? (See Baron, 2008, Chapter 4 for a sample comparison.) During the 2000s, an additional question was whether electronically-mediated communication (especially IM or texting) was influencing spoken language (e.g., incorporating such acronyms as LOL or BRB into casual speech).

Since mobile phones were designed for speech, voice calls are an obvious function. However, other than tracking call volume (especially compared with written messaging – CTIA, 2012) and noting replacement of landlines with mobiles, there is little research on mobile speech itself. Similarly, though voice-over-internet protocols use has grown, few studies have explored when users choose to talk versus using written messaging – either on stationary or mobile devices.

Despite shrinkage in voice calls on mobile phones (compared with texting), a new frontier for speaking on mobile devices could shift the current voice/text balance. Voice recognition programs for operating many digital devices are expanding (Singer, 2012), including on mobile phones or tablets. Apple’s Siri is but one example. The conundrum is that to utilize such programs, people need to speak aloud, though (anecdotally) many users are increasingly hesitant to interrupt interlocutors with a phone call, and in some cases it is culturally inappropriate to conduct phone conversations in public (Baron & Hård af Segerstad, 2010). We need to study if users perceive public-space voice calls as socially problematic (whether calling another person or asking Siri for a restaurant review).

Writing

The way we write – how much, to whom, about what – has long been influenced by technology. With the coming of typewriters, volume of writing increased (compared with handwritten works). Word processing had a similar effect. However, most mobile devices

have decreased text length, given input challenges. Multi-taps on a phone pad are not conducive to writing lengthy text. Virtual keypads are only somewhat better, since they generally lack the full layout of computer keyboards.

Anecdotally, users seem to produce shorter texts on mobile devices than on computer keyboards, though empirical studies are needed. If predictions hold that mobile devices will increasingly replace desktops and laptops, we should explore whether people become as adept with virtual keypads as with full computer keyboards, whether the length of texts produced increases or decreases, and what kind of editing is done. We also need to study whether increasing availability of dictation software leads to reduced written input on mobile devices.

Reading

Reading on digital devices (stationary or mobile) is receiving increased attention. Early studies (e.g., Dillon, 1992) compared how well subjects read from computer screens versus hardcopy, through the direct relevance of initial research to contemporary discussion is unclear, given how dramatically screens have evolved and how much experience users now have with reading onscreen.

More recent research has noted subtle but relevant differences in such areas as cognitive work and how knowledge is acquired (Garland & Noyes, 2004; Noyes & Garland, 2006, 2008; Szalavitz, 2012). Other studies (e.g., Baron, *in press a*, *in press b*; Dominick, 2005; Student Monitor, 2011) report that young adults often prefer reading hardcopy, and believe they learn more from print.

The market is heavily driving reading habits. US sales of eReaders and tablets roughly doubled in the last month of 2011 (Rainie, 2012). Growth of online academic courses, along with initiatives to replace hardcopy books with eTexts as a cost-saving measure (e.g., Dennis, 2011) are sharply increasing the likelihood that students will do yet more of their reading on mobile devices. Another contributing factor is demand for instant access to news – whether about current events or personal online social connections.

The field is ripe for studies of how people read – and how they evaluate reading – on screens that are comparatively large (computers, laptops), mid-sized (tablets, eReaders), and small (mobile phones). Issues to investigate include:

- Does the ephemeral nature of onscreen text affect the amount we read, the genre read, frequency of re-reading, reading speed, and memory for and understanding of what has been read?
- How much does screen size affect the same issues?
- Is readers' concentration broken by availability of other resident programs (e.g., games) or an internet connection (Bosman & Richtel, 2012)? How do such interruptions compare with breaks in concentration when reading in hardcopy?

Rainie et al. (2012) report that owners of eReaders read more than people without these devices. Will this trend continue or, particularly as the functionality of eReaders becomes indistinguishable from tablets, will the amount of reading onscreen change?

All the research cited thus far involves American data. We also need to explore the same set of questions for readers outside of the US. Interest in eBooks (and probably

eReading more generally) is not internationally uniform, even among users who have internet access. According to Bowker Market Research (2012), as of early 2012, while 20% of respondents in the US who had internet access had purchased an eBook in the past six months, the comparable percentage in India was 24% – but only 8% in Japan and 5% in France. Research is needed to understand why the numbers in Japan and France are low, given the widespread availability in both countries of traditional computers and mobile devices. While the complexity of the writing system could be part of the answer in Japan, we need to look elsewhere to explain the low French statistic.

We now have a sense of some research directions inviting investigation regarding both spoken and written language on mobile devices. Our final issue is more teleological: Why is it important to study such language?

Challenges and significance of studying language in mobile contexts

For scholars of mobile communication technologies, the major challenge in studying language use is identifying relevant variables. For example, some research (e.g., Baron, *in press b*) suggests users find it easier to concentrate when reading on eReaders than on computers, but studies do not always distinguish between eReaders with and without internet connections.

Another challenge is sorting out the strength of multiple variables. Consider the role of culture versus the lure of technological innovation. In Japan, it has been culturally inappropriate to talk on mobile devices in public space (Ito, Okabe, & Matsuda, 2005). However, the norm has begun to shift and stigma may further dwindle if voice recognition devices become pervasive. Similarly, while writing on small, non-QWERTY keypads is cumbersome (as is reading lengthy documents on small screens), we cannot assume that mobile technology itself causes shorter writing (and preference for reading shorter texts), since other social or pedagogical factors might be at work.

Why does studying language in mobile contexts matter? Because given the profusion of mobile communication technologies, they are poised to play a fundamental role in how we use spoken and written language. I therefore close with several observations (paired with potential research questions) concerning speech, writing, and reading.

Speech

Within the span of two decades, Americans went from being a nation of talkers (on landline phones) to a nation of typists (first through word processing, email, and IM, and now through texting). Given recent developments in voice recognition technology, will the US again become primarily a nation of talkers? And what are the cultural implications for politeness norms (in the US and elsewhere)?

Writing

Computer technology has democratized writing, and (perhaps) increased both its volume and even quality through such platforms as blogs and self-publishing online. As users

shift to mobile platforms on which text production is more cumbersome than on full keyboards, will writing become shorter or less edited?

Reading

Considerations regarding reading on mobile devices have both commonalities and differences compared with reading on stationary computer screens. All the issues of durability and intrusion from multi-tasking remain. The relevance of text length (already a challenge on a computer screen) is heightened as screens become yet smaller and potentially more difficult to annotate. New questions include what kinds of texts are suited for mobile reading (e.g., news stories or restaurant reviews, but not Plato's *Republic*). However, careful research needs to determine whether prior reading practices (in hard-copy or on stationary screens) will eventually be shifted to mobile devices or whether the affordances of these devices will end up redefining what we mean by reading.

It is a truism that all living languages change. The vocabulary and grammar of Old English were very different from those of Shakespeare, while the words of Shakespeare are often alien to the modern ear. The impact that mobile technologies might have on the ways we read and write (and the social conditions under which we speak) is potentially far more profound. Text-only books could disappear, supplanted by documents that are predominantly graphic, or that contain embedded video and audio clips, or links to internet sites as a matter of course. Voice recognition systems could render handwriting as anachronistic as quills and inkwells. Onscreen reading (whether on mobile devices or PCs) could spell the end of bookstores and libraries as we have known them for at least the past 500 years.

The field of mobility and language is highly fluid at this moment in our history – and therefore especially promising for study.

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Author biography

Naomi S. Baron is Professor of Linguistics and Executive Director of the Center for Teaching, Research, and Learning at American University in Washington, DC.