

# DESIGNING STUDIES THAT YOU CAN LEARN FROM

Scott Klemmer

“Do You Like My Interface?”



“How much do you like  
my interface?”

“How much do you like  
my interface?”

“This is a useful  
interface: agree/disagree”

# Please the Experimenter Bias

# Developers are Valuable Testers

# Getting beyond “*do you like my interface?*”

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- What's the comparison?



# Getting beyond “*do you like my interface?*”

- What's the comparison?
- What's the yardstick?

# Getting beyond “*do you like my interface?*”

- **Baselines:** How often does Y occur?
  - Requires measuring Y.

# Getting beyond “*do you like my interface?*”

- **Base rates:** How often does Y occur?
  - Requires measuring Y.
- **Correlations:** Do X and Y co-vary?
  - Requires measuring X and Y.

# Getting beyond “*do you like my interface?*”

- **Baserates:** How often does Y occur?
  - Requires measuring Y.
- **Correlations:** Do X and Y co-vary?
  - Requires measuring X and Y.
- **Causes:** Does X cause Y?
  - Requires measuring X and Y, and manipulating X.
  - Also requires somehow accounting for the effects of other independent variables (confounds)!

# Let's introduce a few terms...

manipulations

# Independent Variables



measures

# Dependent Variables

precision

# Internal Validity


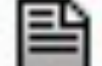
generalizability





# External Validity

IS MY COOL NEW APPROACH BETTER  
THAN THE INDUSTRY STANDARD?



## A Not-Very-Useful iPhone Keyboard Study

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 [SLASHDOT IT](#)  [DIGG THIS](#)  [DELICIOUS](#)  [NEWSVINE](#)



Research firm User Centric has released a study that tries to gauge how effective the iPhone's unusual on-screen keyboard is. The goal is certainly a noble one, but I can't say that the survey's approach

results in data that makes much sense.

User Centric brought in twenty owners of other phones--half who had ones with QWERTY keyboards, and half who had ordinary numeric phone keypads. None were familiar with the iPhone. The research involved having the test subjects enter six sample text messages with the phones they already had, and six with an iPhone.

Logical end result: These iPhone newbies took twice as long to enter text with an iPhone as they did with their own phones, and made lots more typos.



# Benefits and Drawbacks?

The screenshot shows the User Centric website with the following elements:

- Header:** User Centric logo, tagline "We believe experiences matter.™", and a language dropdown set to "English".
- Navigation:** Home, Services, Experience, Facilities, About Us, News & Resources (active), Contact Us.
- Breadcrumbs:** User Centric > News & Resources > 2007 >
- Section Header:** QWERTY texters demonstrated drop in efficiency when texting on iPhone
- Date:** August 15, 2007
- Related Services:** [Mobile Device Usability Testing](#)
- Main Text:**

In late July, Chicago-based usability consultancy User Centric, Inc. tested the iPhone's touch keyboard in comparison with conventional QWERTY and numeric phone keyboards. In an [earlier baseline study](#), User Centric had identified texting as potentially problematic for new iPhone customers. The goal of the current study was to determine how easy it was for conventional mobile phone users to text using the iPhone.

**Participants Texted using Both Conventional Phones and iPhones**  
A total of 20 participants were brought in for one-on-one usability sessions with a moderator. All sent text messages at least 15 times per week. Ten of the participants owned a phone with a QWERTY keypad, and ten of the participants owned a phone with a numeric keypad. Those who owned a numeric keypad used the "multitap" method of entering text messages rather than predictive text. To multitap, a user must press a particular key on the numeric keypad multiple times to get the desired character to appear.

During each session, participants were required to use their own phones. In addition, they were provided with an iPhone for use during the study. None of the participants were iPhone owners, and all participants were compensated for their time.

**Standardized Messages Were Provided for Texting**  
Every participant entered six messages using their own phone and six messages on the iPhone. In their sessions, participants were asked to
- Right Sidebar:**
  - Social media icons for LinkedIn, Facebook, Twitter, YouTube, and RSS.
  - Image of the book "Handbook of Global User Research".
  - Text: "The *Handbook of Global User Research* collects insight from user experience professionals in over 20 countries. This book is a must-read for professionals working on global research projects. [More Info](#)"
- Left Sidebar:**
  - News & Resources
  - Overview
  - User Centric News
  - Publications
  - Webinars
  - Resources
    - Glossary
    - Handbook of Global User Research
    - Newsletter
    - Usability Tips
    - UX Masterclass
  - Blog
- Sticky Note:** A yellow sticky note with the text "scott will show in background" is placed over the right sidebar.



# Benefits and Drawbacks?

## • Manipulation: Input Style

The screenshot shows the User Centric website. The header includes the User Centric logo, a language dropdown set to English, and the tagline "We believe experiences matter.™". The navigation menu has links for Home, Services, Experience, Facilities, About Us, News & Resources (which is highlighted), and Contact Us. A breadcrumb trail reads "User Centric > News & Resources > 2007 >". The left sidebar contains a "News & Resources" section with links to Overview, User Centric News, Publications, Webinars, and Resources (which includes Glossary, Handbook of Global User Research, Newsletter, Usability Tips, and UX Masterclass). Below this is a "Blog" section. The main content area features a news article titled "QWERTY texters demonstrated drop in efficiency when texting on iPhone" dated August 15, 2007. The article includes a "Related Services" link for "Mobile Device Usability Testing" and a "Participants Texted using Both Conventional Phones and iPhones" section. A sidebar on the right promotes "The Handbook of Global User Research" with social media icons and a "More Info" link. A yellow sticky note is overlaid on the right side of the article, containing the text "scott will show in background".

usercentric

English

We believe experiences matter.™

Home Services Experience Facilities About Us News & Resources Contact Us

User Centric > News & Resources > 2007 >

### News & Resources

Overview

User Centric News

Publications

Webinars

Resources

- Glossary
- Handbook of Global User Research
- Newsletter
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Blog

## QWERTY texters demonstrated drop in efficiency when texting on iPhone

August 15, 2007

**Related Services:** [Mobile Device Usability Testing](#)

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usercentric

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Home Services Experience Facilities About Us News & Resources Contact Us

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- Manipulation: Input Style
- Measure: Words per minute



# Benefits and Drawbacks?



- Manipulation: Input Style
- Measure: Words per minute
- External validity: not so much

# A better version: actual users

- Manipulation: Input Style
- Measure: Words per minute
- ...and error rate

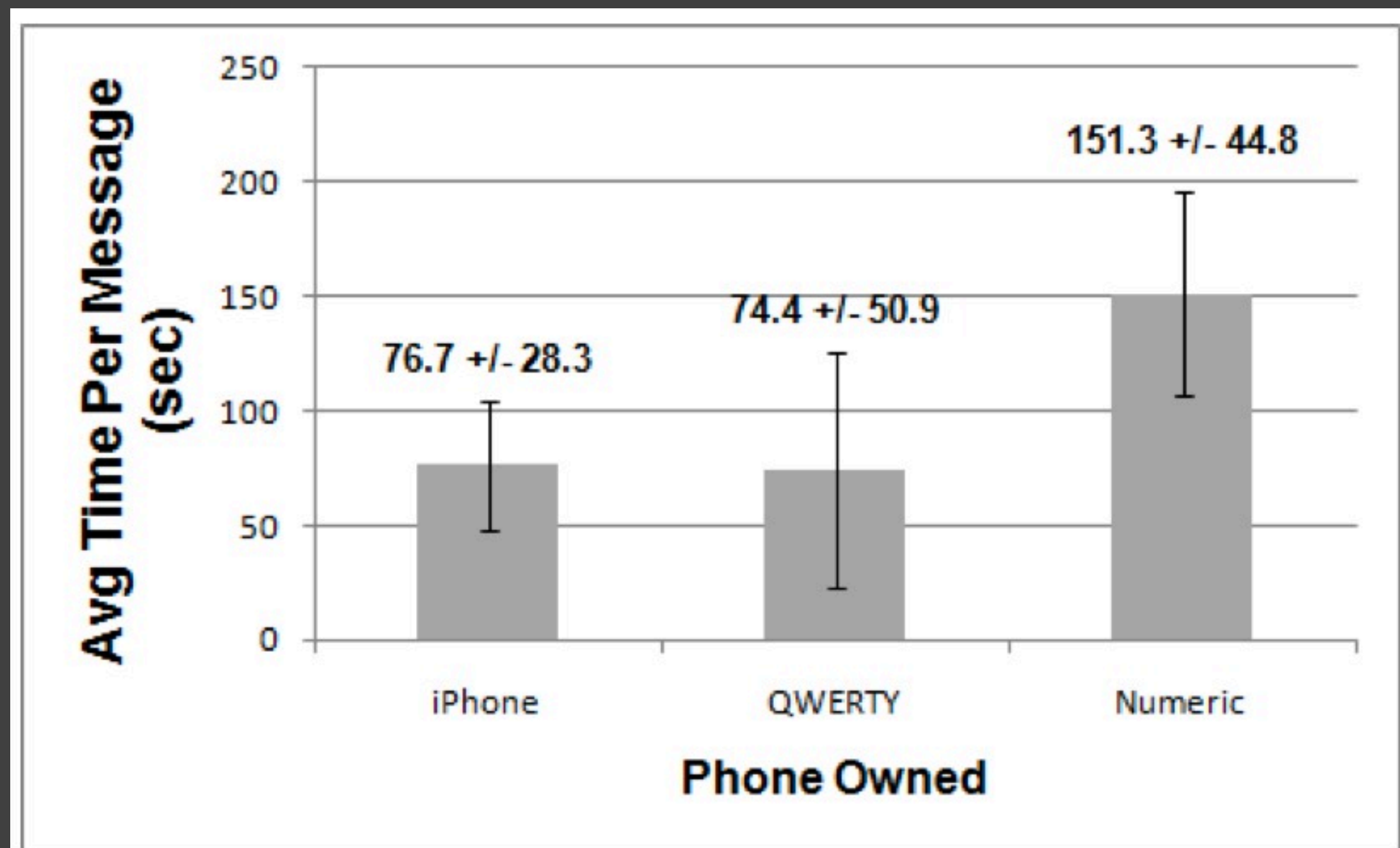


Figure 1. Average time to type a message on phones owned by the participants ( $M \pm SD$ ).



# iPhone & Qwerty users similar speed, but make more errors

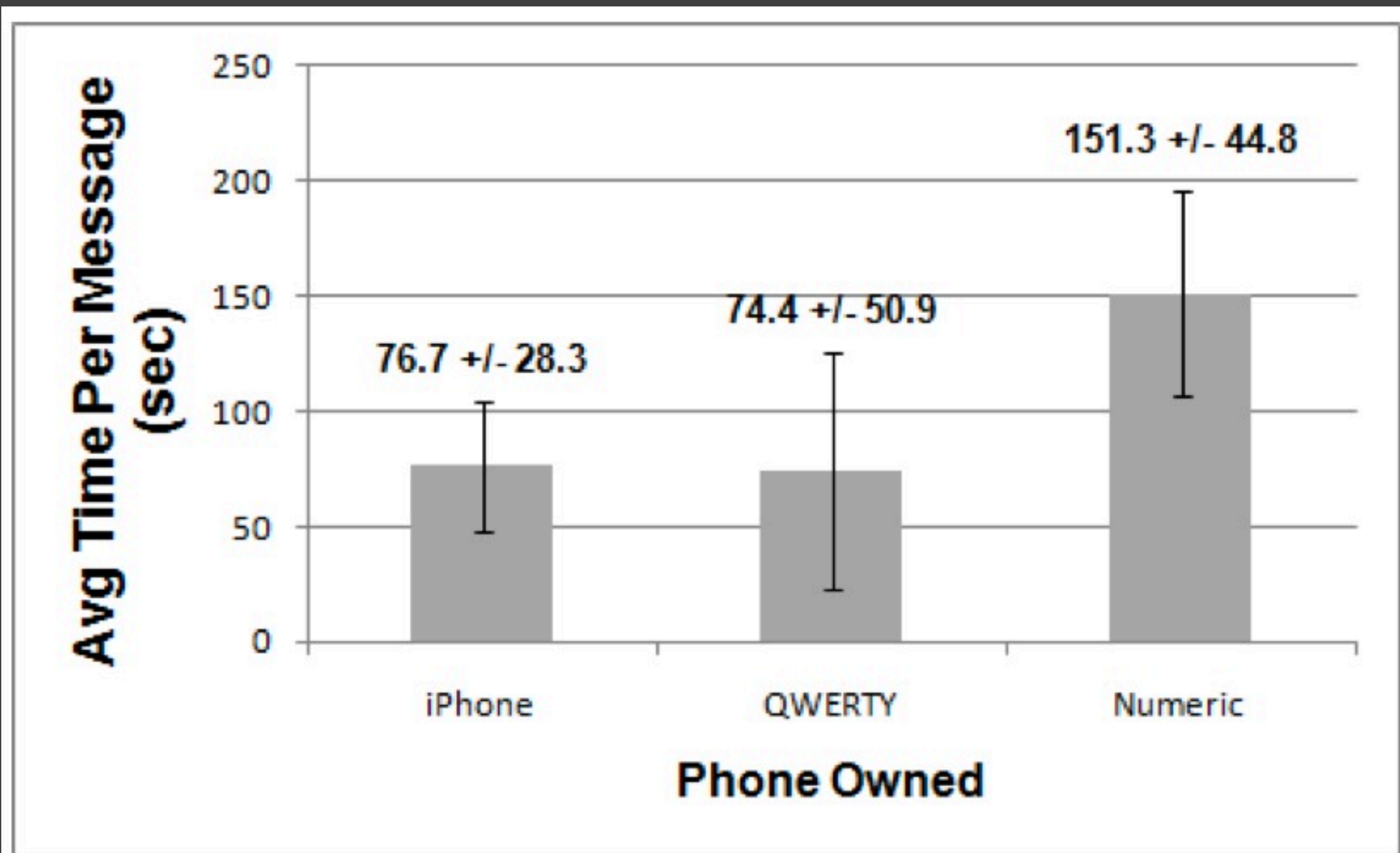


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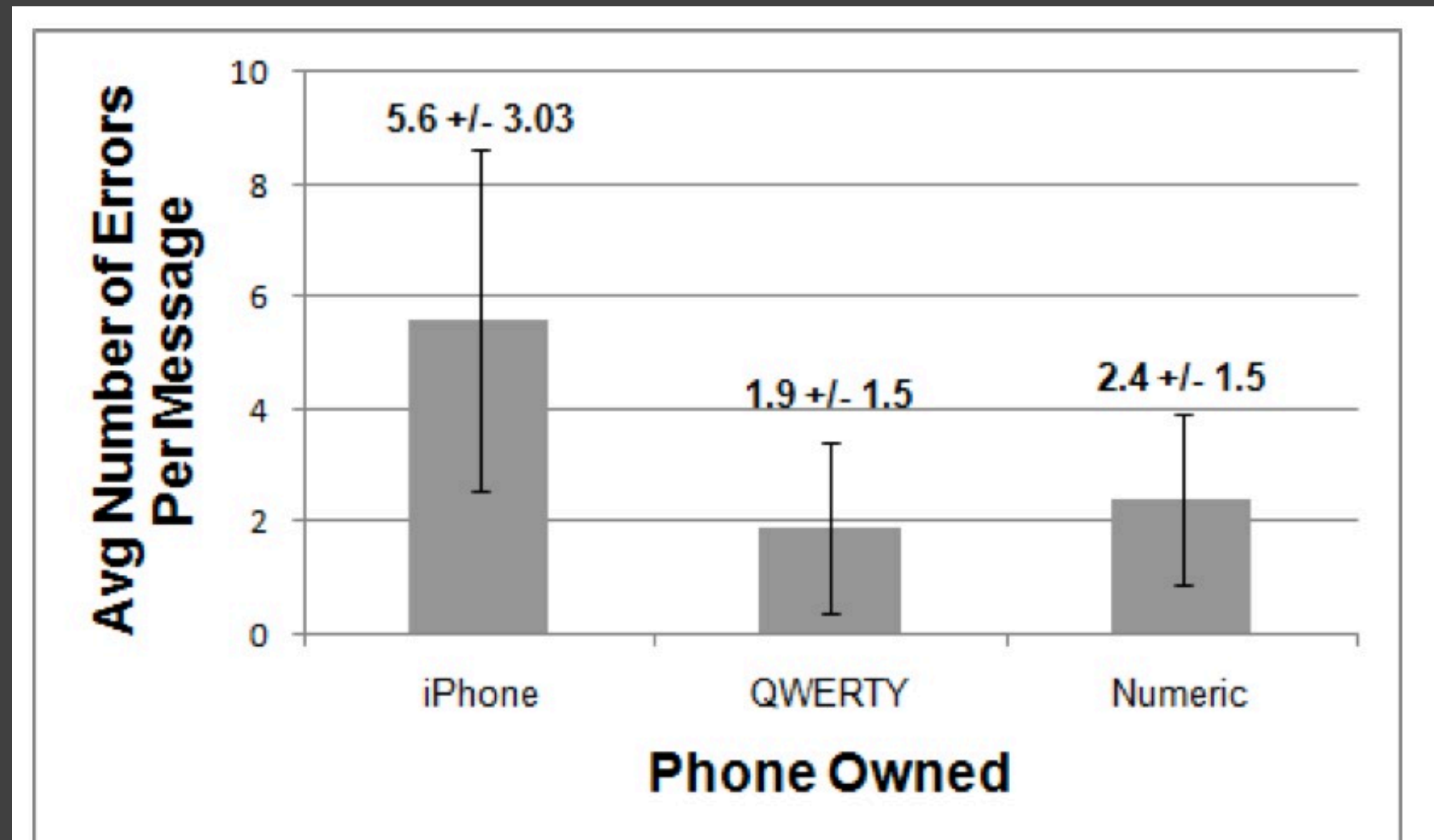


Figure 2. Average number of total errors per message made by participants using their own phones ( $M \pm SD$ ).

# Strategies for fairer comparisons



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# Strategies for fairer comparisons

- Insert your new approach into the production setting
- Recreate the production approach in your new setting
- Scale things down so you're just looking at a piece of a larger system
- When expertise is relevant, train people up

IS INTERFACE X BETTER  
THAN INTERFACE Y?

Most often, the answer is  
“it depends”



Most often, the answer is  
“it depends”

The question is “on what”?

CONTROLLED COMPARISON  
ENABLES CAUSAL INFERENCE  
*(a fancy way of saying you can learn stuff)*

I USED TO THINK  
CORRELATION IMPLIED  
CAUSATION.



THEN I TOOK A  
STATISTICS CLASS.  
NOW I DON'T.



SOUNDS LIKE THE  
CLASS HELPED.  
WELL, MAYBE.



<http://xkcd.com/552>