

Mode choice on an iPhone increases survey data quality

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Mobile multimodal phones (smartphones)

- People using smartphones increasingly use – and probably expect – multiple modes for interacting
 - Voice
 - Text messaging (SMS)
 - Email
 - Video chat
 - Web browsers (reading and posting content)
 - Dedicated social media apps (posting, messaging, chatting, etc.)

On smartphones, people can choose and switch modes to fit their needs

- Is message
 - Urgent or can it wait?
 - Sensitive or not?
 - Short vs. long?
- Will I be multitasking? If so, what else will I be doing?
- What mode will be easiest or least disruptive for partner?
- Is setting public vs. private, noisy vs. quiet, bright vs. dim?
- What is my generally (chronically) preferred way of communicating?
 - e.g., talking vs. texting
- So people can use the same device, for example, to respond to
 - a voice call with a text message
 - a text message with a Facebook post
 - email with a voice call

New options for survey mode choice

- Now possible to choose one of many modes on a single device, immediately and conveniently
- Different from prior implementations of survey mode choice
 - mostly involving self-administered modes (e.g., Fulton & Medway, 2012)
 - When R invited by mail to complete on paper or web, web requires extra step of typing URL into browser
- Choice on single device creates new possibilities and raises new questions

Current study

- Examines how mode choice on a single device affects
 - completion rates
 - data quality (rounding and straightlining)
 - R satisfaction
- Four existing or plausible interview modes that work through native apps on the iPhone
 - As opposed to specially designed survey apps
 - As opposed to web survey in phone's browser
 - Assured uniform interface for all *R*s within a mode
 - As opposed to mix of platforms (Android, Windows, etc.)

4 interview modes on iPhone

		Medium	
		Voice	SMS Text
Interviewing Agent	Human	Human voice (<i>R</i> speaks with <i>I</i>)	Human text (<i>R</i> texts with <i>I</i>)
	Automated	Speech IVR (<i>R</i> speaks with system)	Automated Text (<i>R</i> texts with system)

Mode Choice Design and Implementation

1. No Choice

- *Rs* randomly assigned to a mode
- Contact and interview in same mode

2. Choice

- *Rs* randomly assigned to a contact mode
- Required to choose interview mode
 - Could choose contact mode or any of other three
 - Makes explicit their mode choice intention

Mode Choice Design and Implementation (2)

- Mode Choice introduction:

“To get started, we need you to choose how you want to be interviewed -- whatever works best for you. There are four choices and any choice is fine with us. Do you want to ‘talk with a person’, ‘talk with an automated interviewer’, ‘text with a person’, or ‘text with an automated interviewer’?”
- Within each contact mode, order of interview mode options rotated across *Rs* (16 orders)

Outcome Measures

- Participation
 - Starts, completions (once start interview)
- Data Quality: Rounding and Straightlining
 - Rounded numerical responses (e.g., multiples of 10)
 - Straightlining (nondifferentiation): same response to battery of Qs with same response scale (Krosnick, 1991)
- *R* Satisfaction

Items

- First, safe-to-talk/text question
- 32 Qs taken from major US social surveys and methodological studies
 - E.g., BRFSS, NSDUH, GSS, Pew Internet & American Life Project
- Yes/no, numerical, categorical

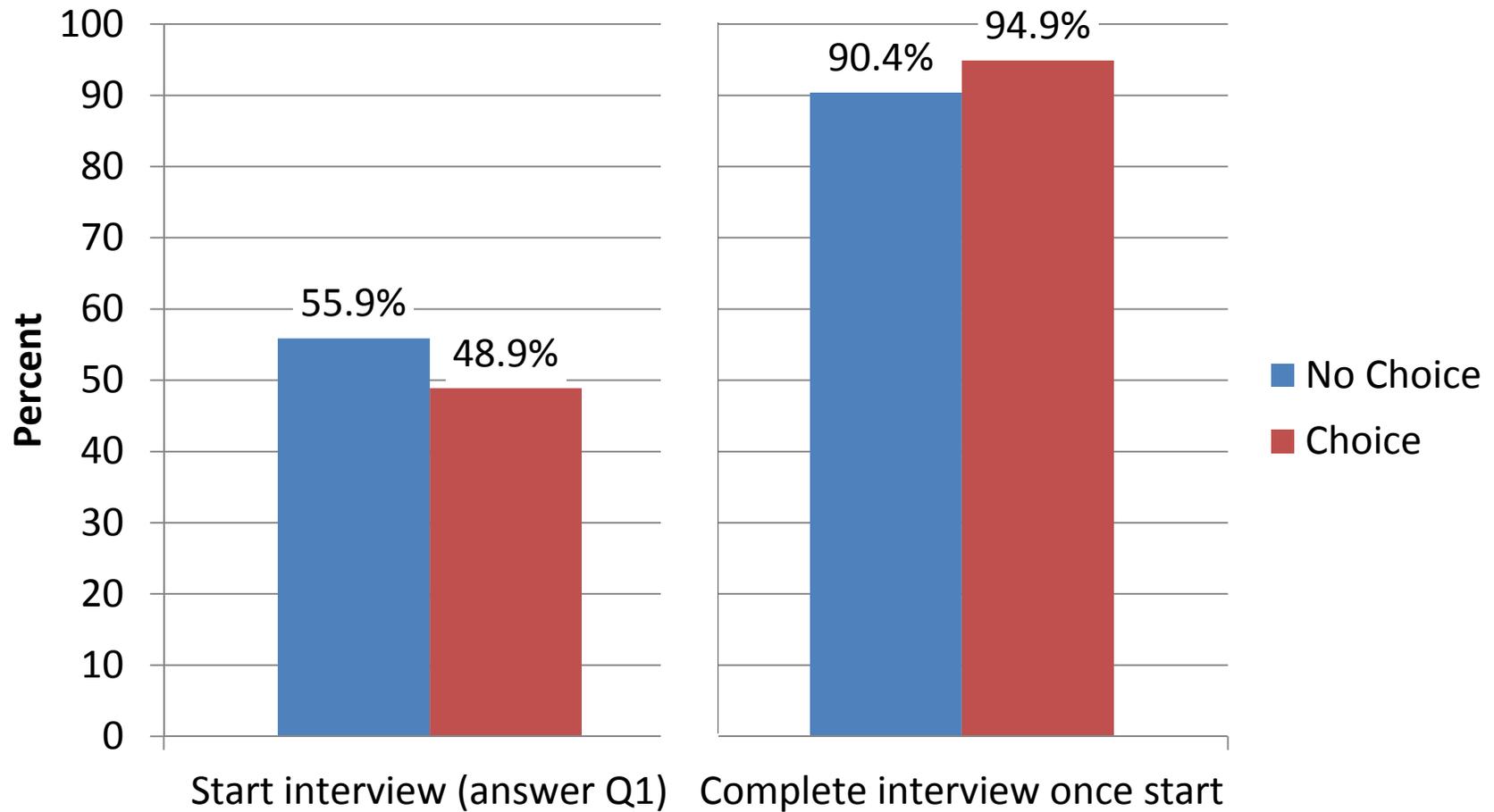
Implementation

- Human Modes
 - 13 /s from UMich Survey Research Center asked Qs via
 - Custom CATI interface that supported both voice and text interviews
 - For voice, / wears headset and uses landline phone
 - For text, / selects, edits, or types questions/prompts, and clicked to send
- Automated Modes
 - Speech IVR used custom built speech dialogue system
 - Uses ATT's Watson speech recognizer
 - Recorded human interviewer, speech responses (not touchtone)
 - Automated text used custom built text dialogue system
 - Rs must answer with single character: Y/N, letter (a/b/c), or number

Respondents: 1260 iPhone users

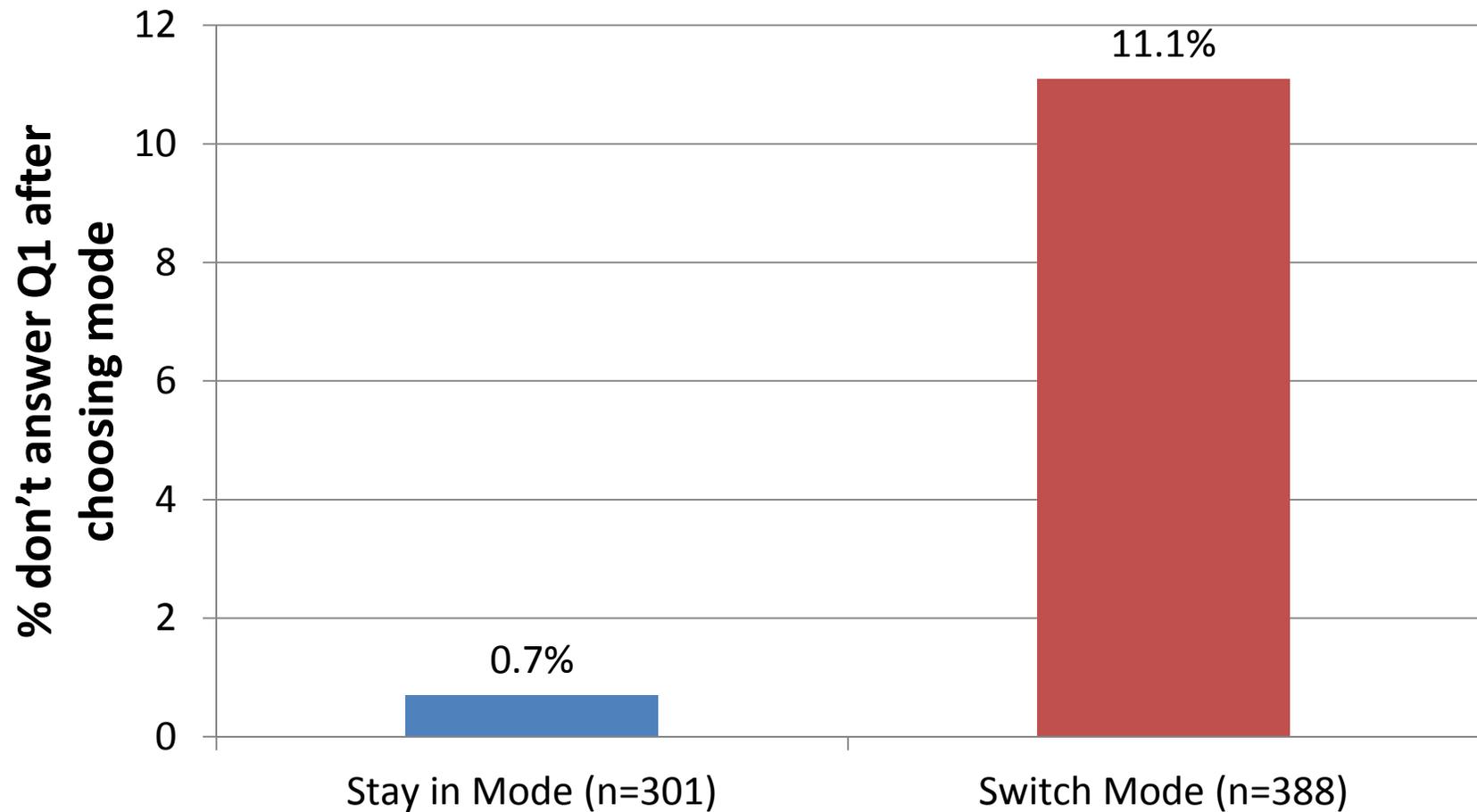
- No Choice (Assigned to Mode): n = 634
 - n= 157 to 160 per mode
 - Interviewed March – May, 2012
- Choice (Able to Choose Interview Mode): n = 626
 - n = 149 to 170 per mode of contact
 - Interviewed July – September, 2012
- Recruited from Craigslist, Facebook, Google Ads, and Amazon Mechanical Turk
 - Web screener verified age (> 21 years) and US area code
 - iPhone usage verified via text message to device and user agent string in response
- \$20 iTunes gift code incentive, provided after post-interview web questionnaire
- Age, gender, ethnicity, income, education not reliably different between **Choice** and **No Choice** groups
- Sample is somewhat younger and less affluent than US national iPhone users

Participation



Overall completion higher without (50.5%) than with choice (46.4%)

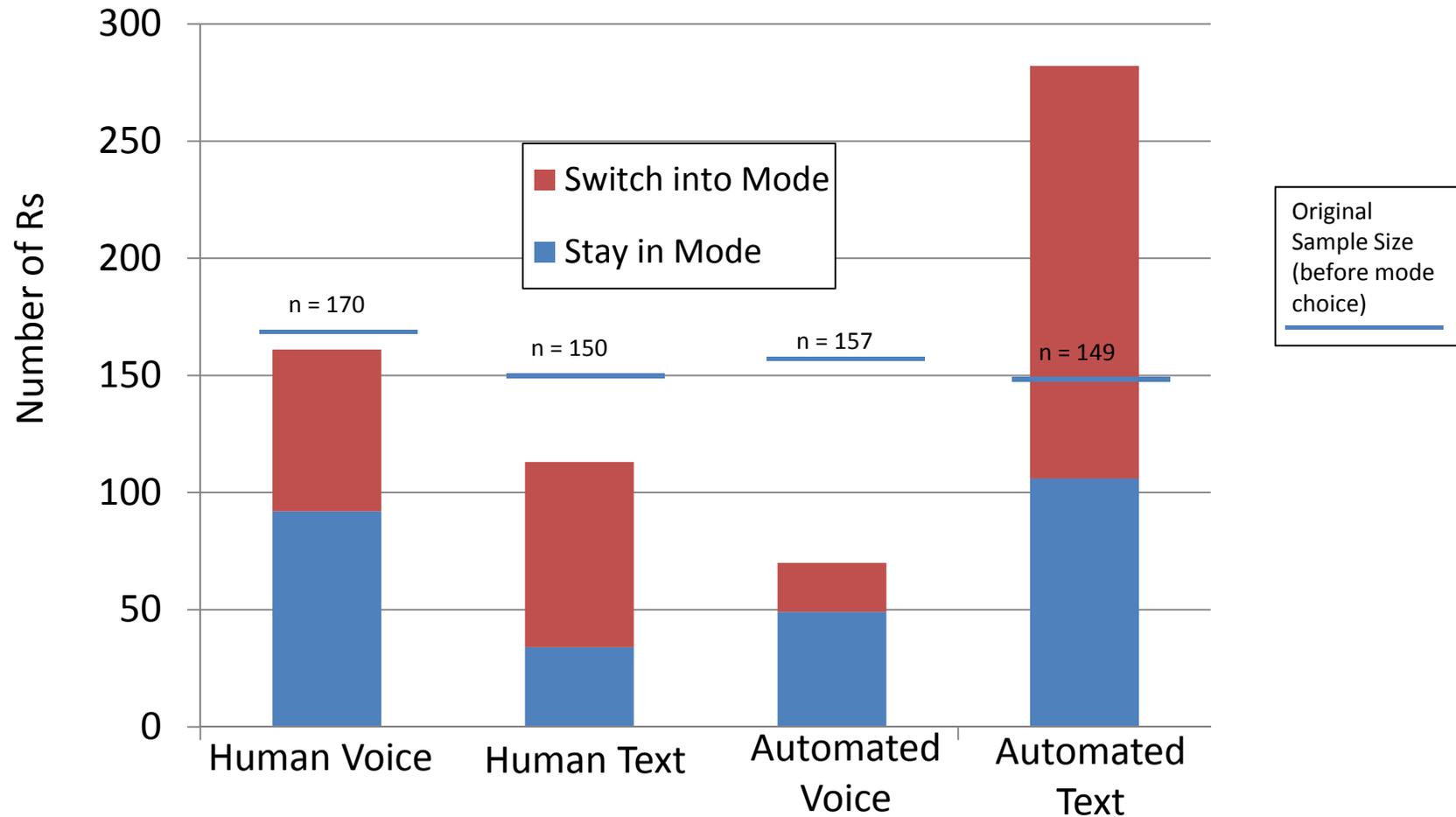
Breakoff before interview not due to *paradox of choice* but to switching costs



Breakoffs (after choice) seem to depend on which modes Rs switch from and to

- Some transitions have no breakoffs at switch
 - Human to Human modes: 0% - 2.8%
 - Human Text to Auto Voice: 0%
 - Auto Text to Auto Voice: 0%
- Others involve more breakoffs
 - Any automated to any human mode: 4.5%-22.2%
 - Probably because continuation is not immediate in our implementation
 - Suggests on-demand human interviewers could substantially reduce these breakoffs

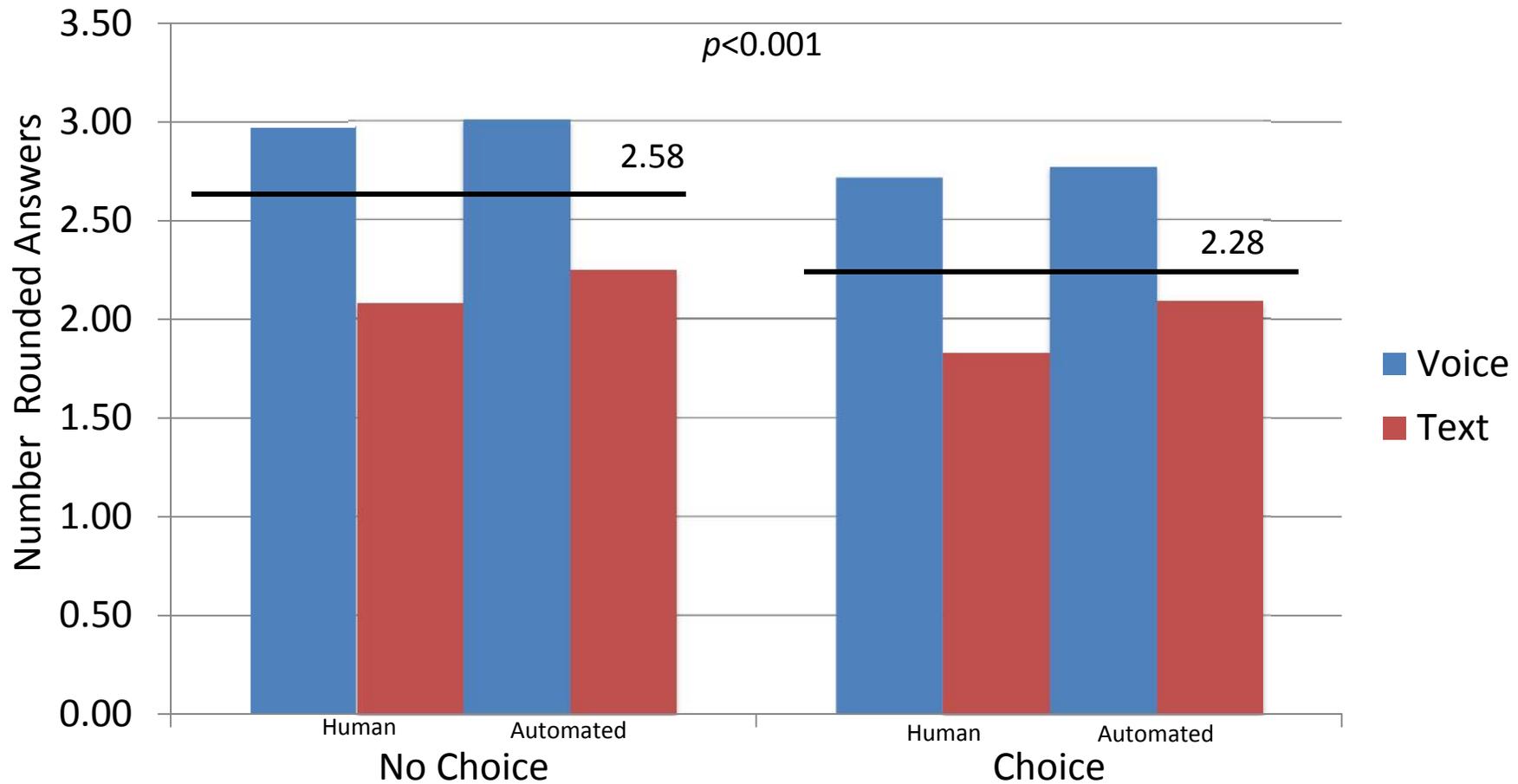
Preference for automated text



Satisficing: Rounding

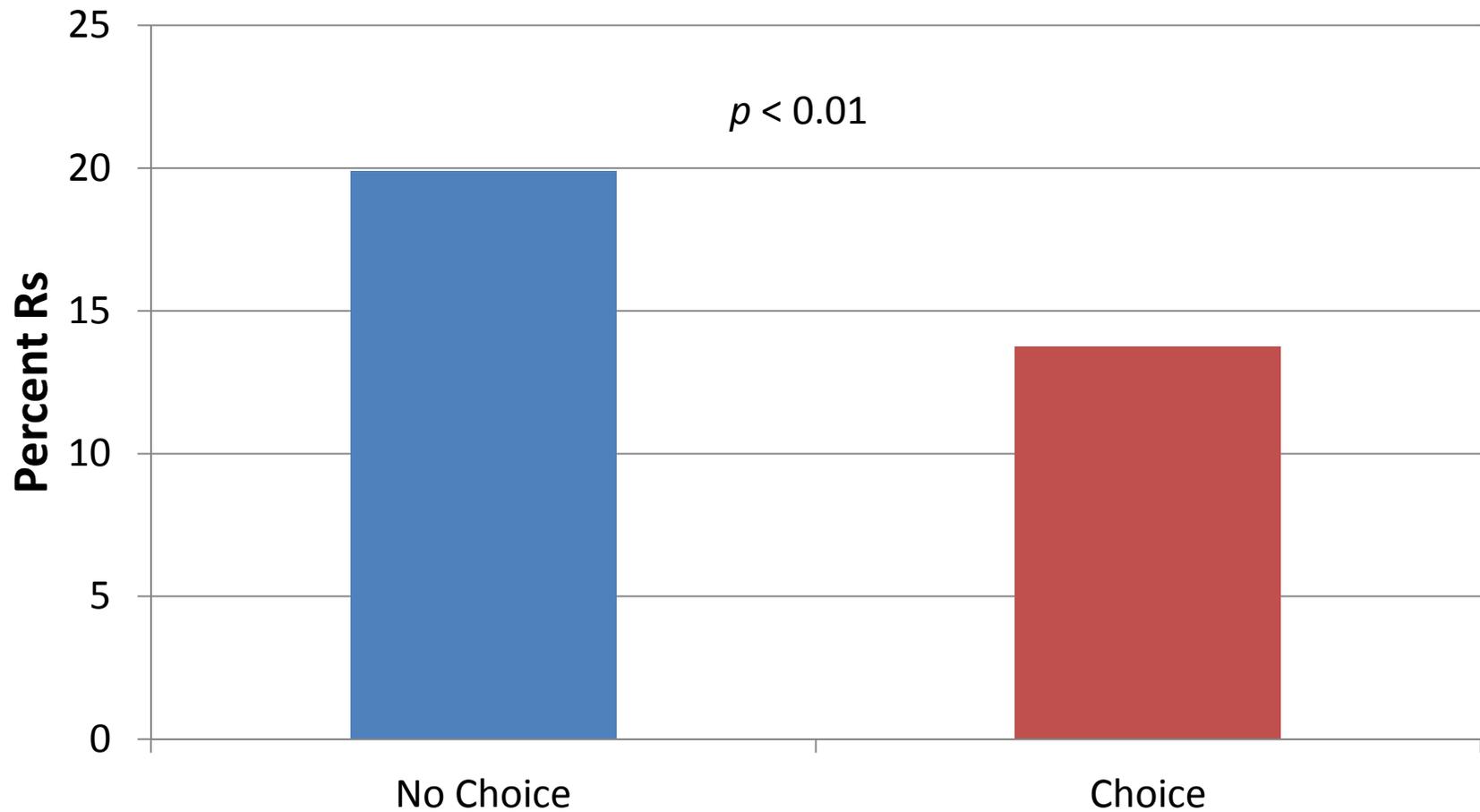
- We define rounding here as numerical answers divisible by 10
 - How many songs do you currently have on your iPhone?
 - Example rounded answer: 1100
 - Example unrounded answer: 1126

Satisficing: Average number of rounded numerical answers



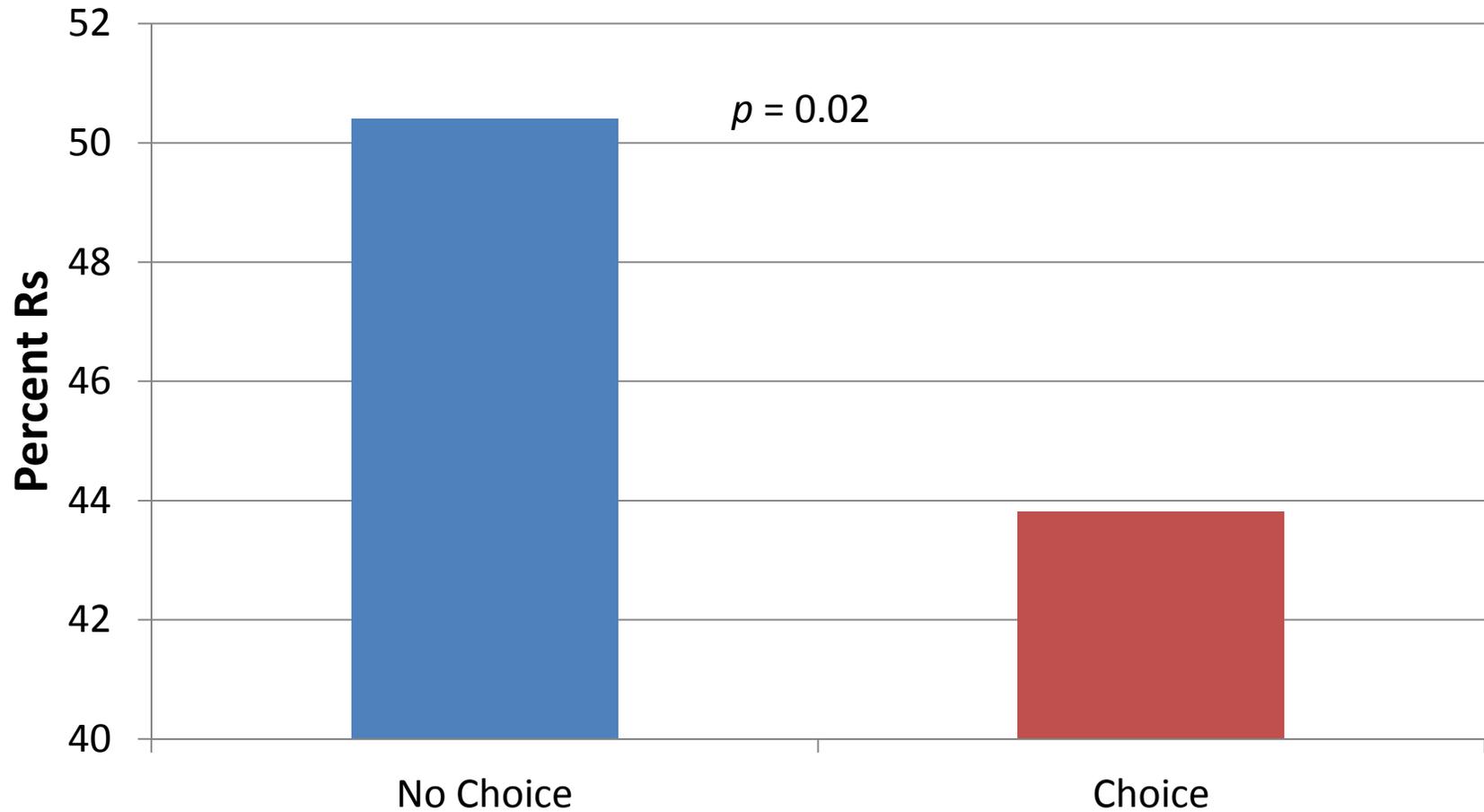
Effect of choice not due to particular choice of mode: less rounding with choice than without after controlling for mode, $p = 0.008$

Rounding: “Number of times eating in restaurants”



*During the last month, how many times did you eat in restaurants?

Rounding: “Number of songs on your iPhone”

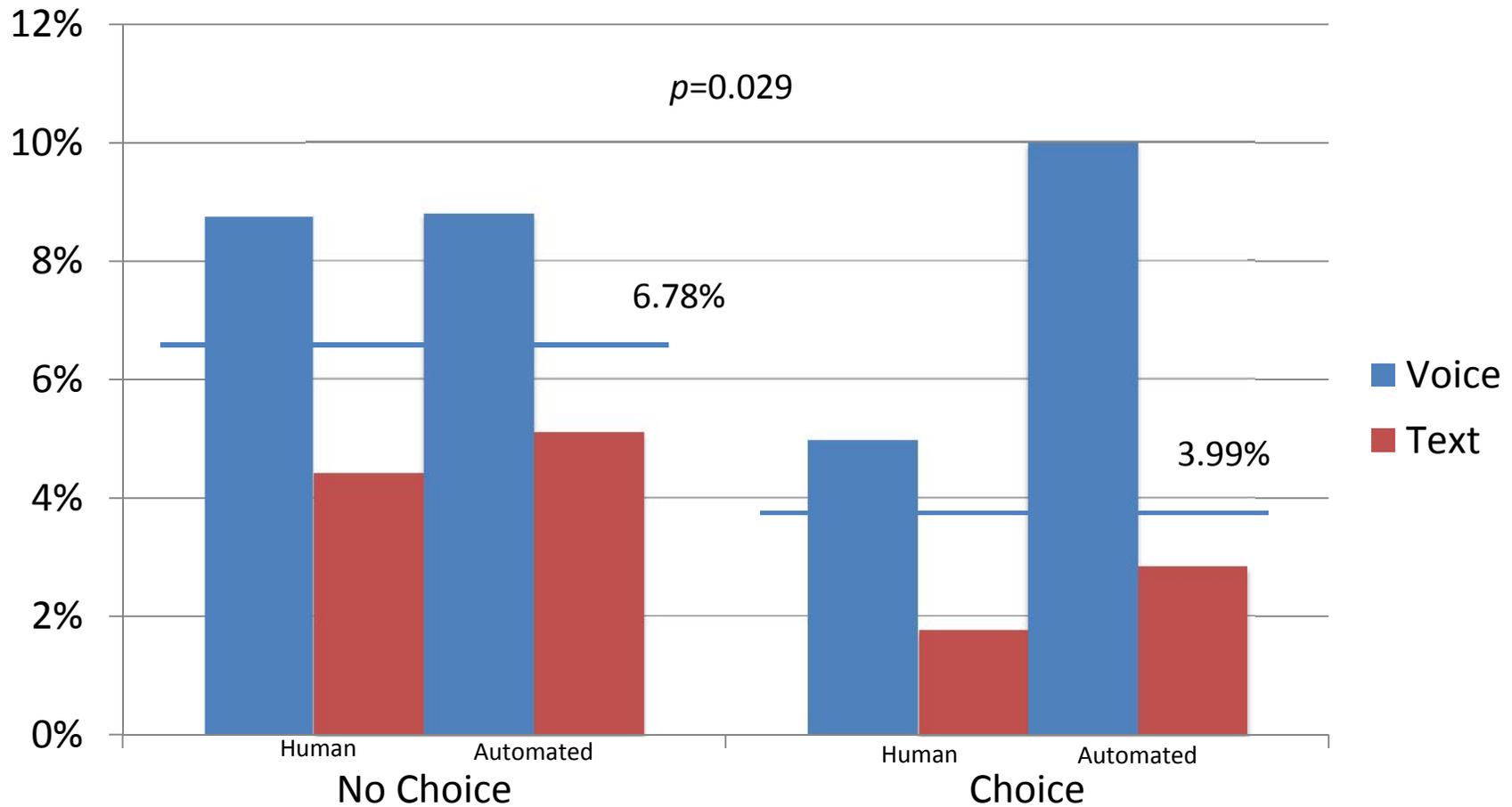


*How many songs do you currently have on your iPhone?

Satisficing: Straightlining

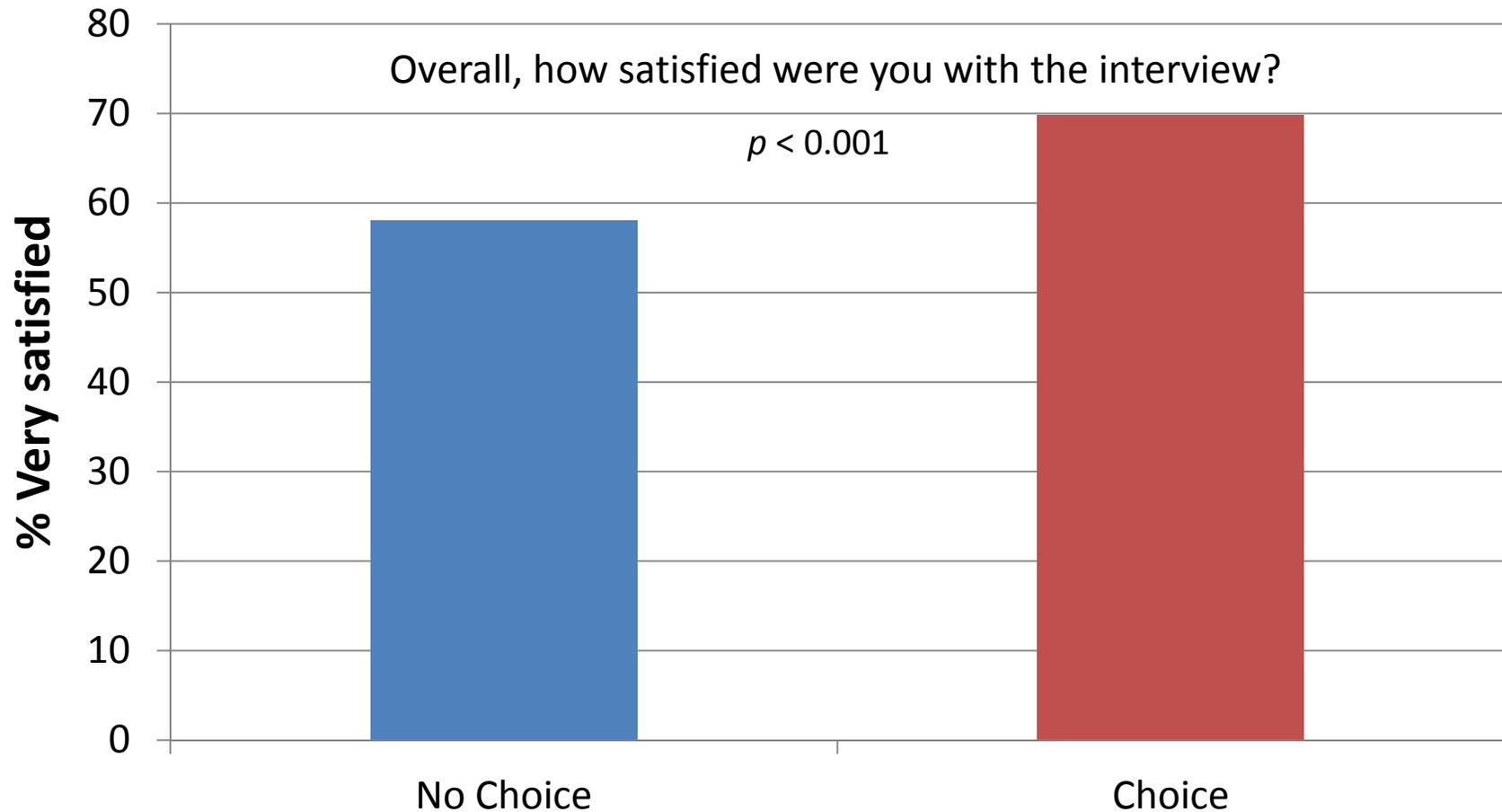
- Q: support for various dietary practices (eating red meat, limiting fast food, etc.)
 - » strongly favor
 - » somewhat favor
 - » neither favor nor oppose
 - » somewhat oppose
 - » strongly oppose
- We define answers in battery as “straightlining” when at least 7 of 8 responses are the same
- Less straightlining in text than voice ($p < .01$)
- Less straightlining with choice than without ($p = .029$)

Satisficing: Percent of *Rs* straightlining



Effect of choice not due to particular choice of mode: marginally less straightlining with choice than without after controlling for mode, $p = 0.085$

Satisfaction higher with mode choice



- Increased satisfaction may result because people perceive the chosen alternative as more attractive (Festinger, 1948; Cooper, 2007)
- Or may better fit their needs

Reasons for choosing modes

- Coded open-ended answers into 29 categories

Most common categories	% Providing Reason
Ease/simplicity	33.8%
Convenience/flexibility	22.8%
Quickness (shortest interview time)	10.3%
Privacy	9.8%
Like texting	9.0%
Environment--location	8.8%

Three coders; Agreement= 98.1%

*Why did you choose this interviewing method?

Reasons for choosing modes* (examples)

- *Human voice:*
 - “More comfortable speaking with a real person”
- *Human text:*
 - “I chose to text because I had a small child with me in my home during the interview and could not have concentrated on the questions if it was on the phone.”
 - “To avoid background noise and to clearly understand the question and take my time to answer it.”
- *Automated text:*
 - “I am at work and wouldn't always be able to answer questions if I spoke to someone on the phone.”
 - “Because I didn't want to talk on the phone nor did I want to text a person simply because I knew some of my responses would have been a little late”
- *Speech IVR:*
 - “I didn't want to talk to anyone but, I was driving so I couldn't look at a screen”
 - “Talking to an automated person was less personal”

*Why did you choose this interviewing method?

Summary

- Mode choice produced:
 - less rounding
 - less straightlining
 - fewer breakoffs
 - higher R satisfaction
- Text led to less rounding and straightlining than voice
 - Irrespective of mode choice
- Participation
 - Lower 'start rates' with choice than no choice
 - not offset by reduced breakoffs among those who chose

Mode choice on a single device opens up new possibilities

- Potential Rs (with smartphones) are already choosing modes all the time
- Each kind of mode transition may have different properties
 - Immediacy of continuation and convenience differ
 - Need to better understand costs and benefits for survey data
- Our data suggest that choice per se does not suppress participation
 - more likely due to break in response process when Rs switch modes

Implications

- Particular mode transitions seem more and less attractive for survey designers
 - And different design solutions will be needed for different mode transitions
- In any case, higher completion rates, less satisficing, and more satisfaction all argue for further exploring mode choice on a single device

Thank you!