



Etiquette & Effectiveness: How Should a Smart Home Interact

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(with thanks to Melissa Shaw of Presbyterian
Homes)

SIFT

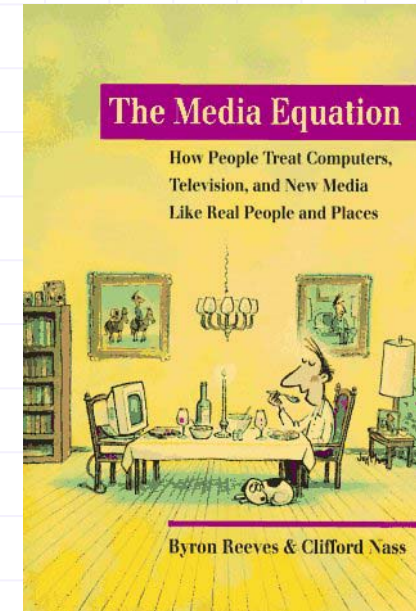
Honeywell Laboratories

Reeves and Nass

Reeves, Byron & Nass, Clifford (1996). *The Media Equation: How People Treat Computers, Television and New Media Like Real People and Places*. Cambridge University Press.

Media Equation:

Media = Real Life, or perhaps,
People \leftrightarrow Media = People \leftrightarrow Real
Life



One Example:

- People are less critical to a person's "face" than behind his/her back (Finkel, et al., 1991)
 - just as they are when evaluating a computers performance to the computer itself vs. when asked by a different computer

Etiquette is ...

- ◆ "... the defined roles and acceptable behaviors or interaction moves of each participant in a common 'social' setting ... Etiquette rules create an informal contract between participants in a social interaction allowing expectations [and interpretations] to be formed and used about the behavior of others." (Miller, 2002)
- ◆ "Etiquette" is the (frequently implicit) codes governing expectations (and, therefore, interpretations) in human social behaviors

Honeywell



Independent LifeStyle Assistant

Transforms the home into a supportive environment.



Independent LifeStyle Assistant (ILSA)

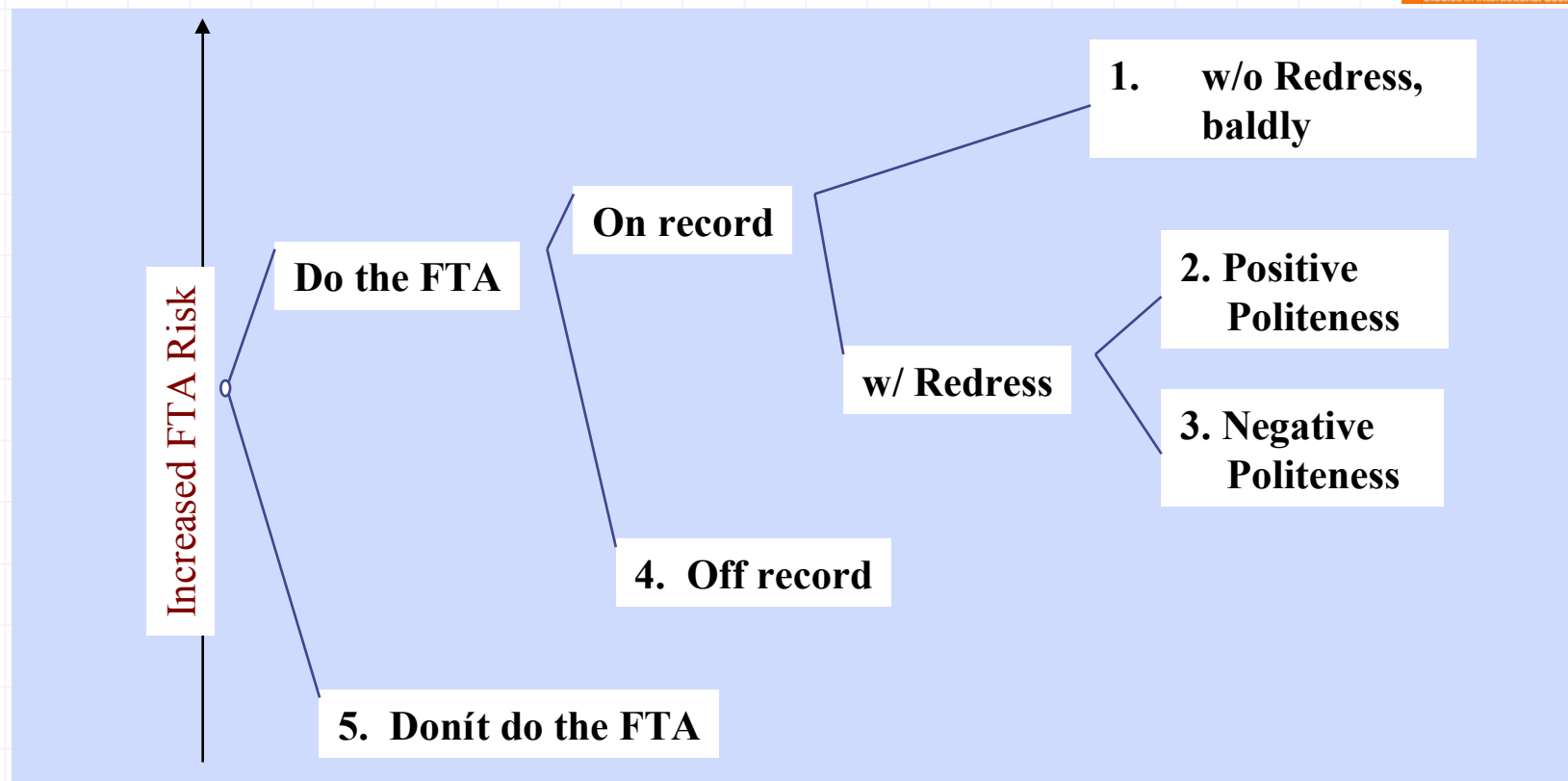
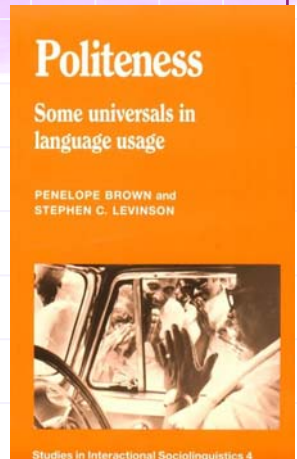
A NIST ATP Program

Interests and Concerns

- ◆ What are some dimensions of human-human etiquette?
- ◆ How are they used in human-human interaction?
- ◆ Can models and predictions from human-human interaction predict perceptions and be used in design for human-machine interaction?
- ◆ Do elders' perception of etiquette (politeness and effectiveness/appropriateness) differ from others'?
- ◆ (And how could we tell?)

Brown and Levinson, 1986

- ◆ Politeness strategies as universal in human-human interactions
 - They are NECESSARY for intent & power relationships
- ◆ As means of diffusing Face Threatening Actions



Alternate Medication Reminder Wording

◆ Alternate presentations for a Med-Advisor

Face Threat ≈ Impoliteness ↑

A. You've missed a dose of medication. Take your medication now.

Bald

B. Your health is important. It looks like you've missed a dose of medication you wanted me to check on. Why don't you take your medication now.

Pos. Polite

C. I'm sorry, but Med-Advisor hasn't detected you taking your medication scheduled for <time>. If you haven't taken it, could you please take it now?

Neg. Polite

D. This is Med-Advisor calling to remind you that your health is important.

Off Record

E. You've missed a dose of medication that was scheduled for <time>.

Candidate
(Pos./Bald)

Experiment Conditions

◆ Method:

- Simple survey
- Subjects asked to rank alternate wordings of a potential medication reminder
- Explicitly stated as being delivered by machine

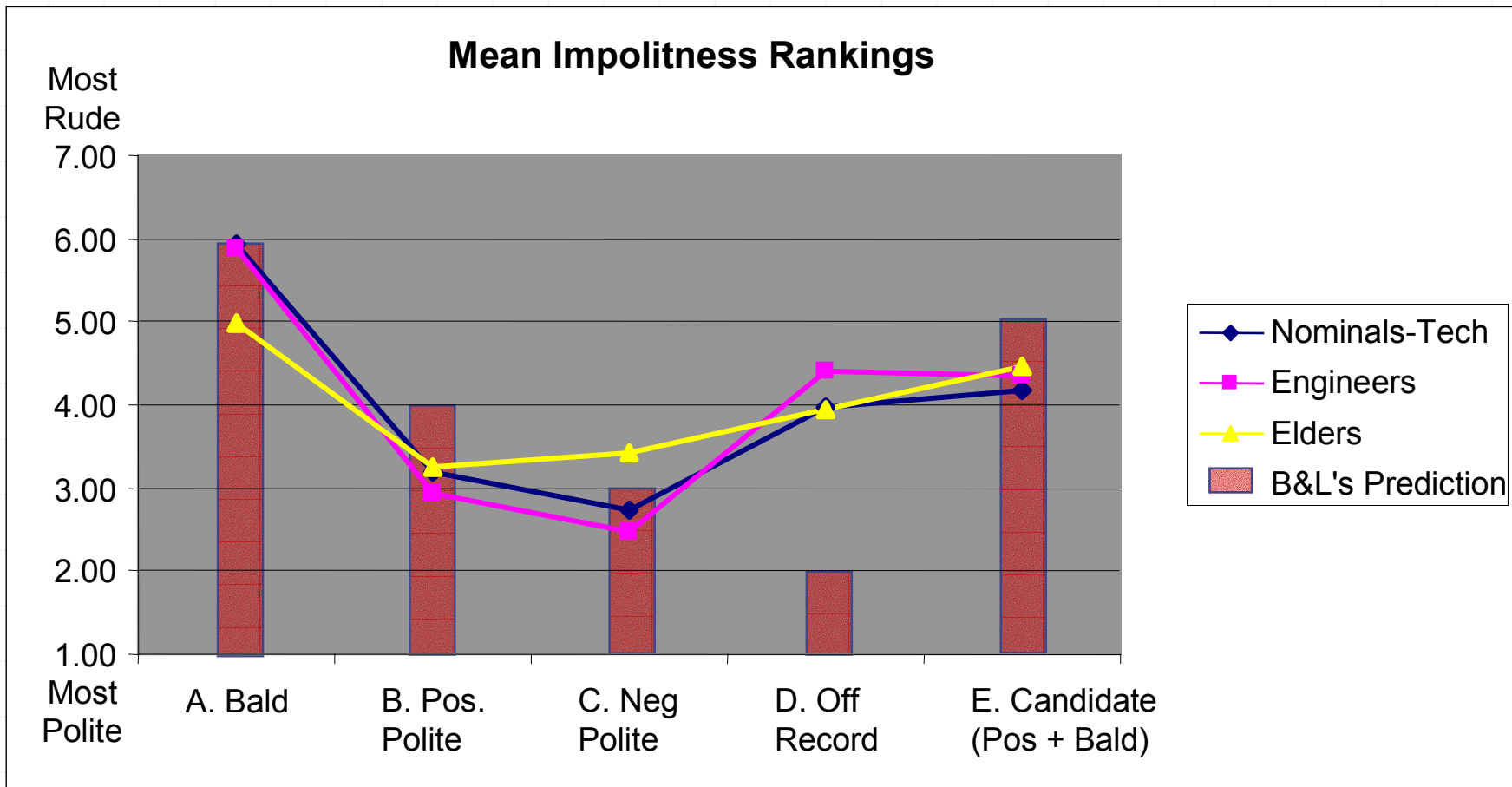
◆ Subjects:

- Elder's with no I.L.S.A. experience
- Nominals asked about I.L.S.A.
- I.L.S.A. engineers

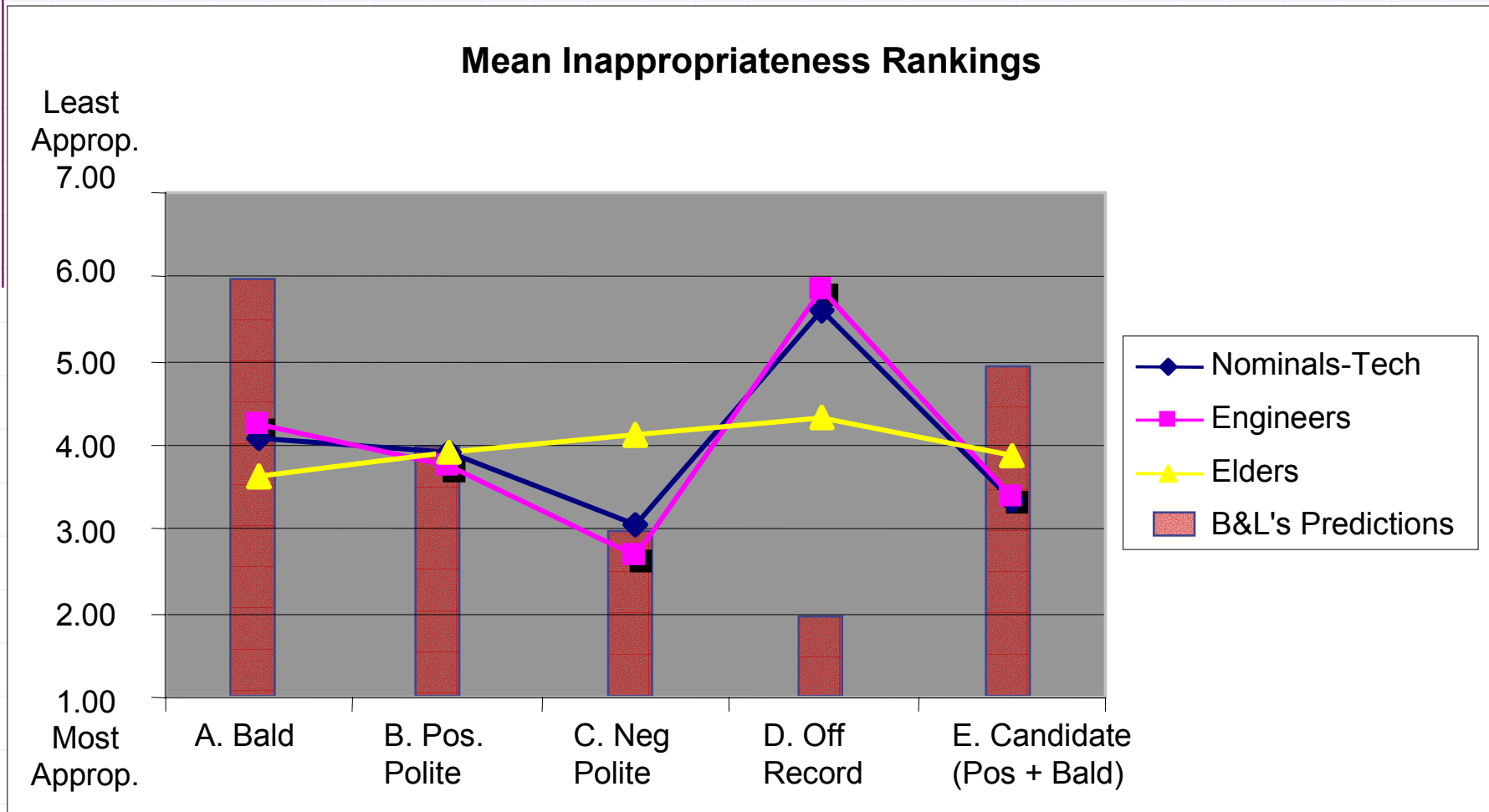
◆ Additional Data from I.L.S.A. Field Study and Focus Groups

- Fielded at 2 facilities (7 independent living apartments in Mpls) and 4 homes (Florida) for 4-6 months
- Clients were living independently, no problems with dementia

Perceived Impoliteness



Perceived Inappropriateness

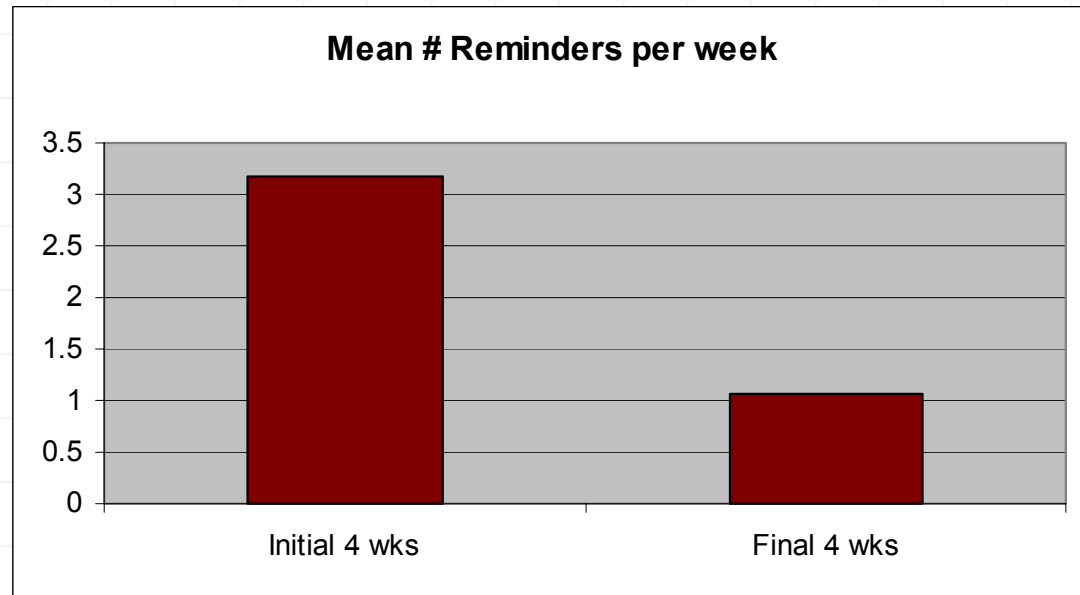


I.L.S.A. Field Study: Reminder Effectiveness

Implemented
Reminder



(+ Neg. Politeness—
somewhat more
polite, but no higher
than mid-scale)



- ◆ No direct evidence collected for medication compliance
- ◆ Indirect evidence supports claims that reminders were effective:
 - Reminders delivered when I.L.S.A. suspects medication miss
 - Med reminders declined significantly over time ($p < .01$, 2-tailed, pair comp. T-test, $N=9$)
 - Clients either increasing compliance or tricking system

I.L.S.A. Focus Group Results

- ◆ Participants were I.L.S.A. Field Test recipients
 - 7 Apartments in Minneapolis area, >5 months
 - (also 4 Florida apartments, not included in Focus Group)
- ◆ Many reported ignoring message
- ◆ Many reported rushing to beat message
- ◆ Most reported some help in taking their meds (earlier, more reliably, checking feature)
- ◆ Comments:
 - "I didn't like the phone calls at all! A nuisance"
 - "I had to find out a method to 'beat the box'"
 - "I hated the voice and tone. Too cold and impersonal, machine-like"
 - "I'd start the message with a cheerful 'good morning!'"
 - "I would prefer a human"
 - "I just pretended not to be home. I would prefer a sound."

Conclusions 1

- ◆ Focus Group data roughly confirm predictions
 - Wording used was seen as impolite
 - But somewhat effective ... even when avoided
- ◆ Substantial differences between nominals and elders
 - Differences in etiquette perception?
 - Evidence for poor questionnaire design?
- ◆ All groups agree there is some difference between “polite” and “appropriate”

Conclusions 2

- ◆ Survey data will be, at best, a coarse means of assessing perceived politeness
 - Nuance of context, tone, etc. important
 - Individual differences?
 - Expectation that perceptions will change over time
 - Unclear relationship to performance
- ◆ B&L's model did a reasonable job of predicting perceived politeness in (this) Human-Machine Interaction
 - at least for nominals
 - Except for Off Record Strategies
 - ◆ Too subtle for machines to use accurately (or for our method)?
- ◆ There are many other mediators of etiquette than wording ...
- ◆ **Theory actually supports and predicts need for adaptation of politeness strategies/behaviors**