Etiquette & Effectiveness:
How Should a Smart Home Interact

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(with thanks to Melissa Shaw of Presbyterian Homes)
Reeves and Nass


**Media Equation:**

\[ \text{Media} = \text{Real Life, or perhaps,} \]
\[ \text{People} \leftrightarrow \text{Media} = \text{People} \leftrightarrow \text{Real Life} \]

**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 computer's performance to the computer itself vs. when asked by a different computer
“... 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
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

1. w/o Redress, baldly
2. Positive Politeness
3. Negative Politeness
4. Off record
5. Donít do the FTA
Alternate Medication Reminder Wording

Alternate presentations for a Med-Advisor

A. You’ve missed a dose of medication. Take your medication now.
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.
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?
D. This is Med-Advisor calling to remind you that your health is important.
E. You’ve missed a dose of medication that was scheduled for <time>.
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

Mean Impoliteness Rankings

Most Polite
Most Rude
7.00
6.00
5.00
4.00
3.00
2.00
1.00

A. Bald
B. Pos. Polite
C. Neg Polite
D. Off Record
E. Candidate (Pos + Bald)

Nominals-Tech
Engineers
Elders
B&L’s Prediction
Perceived Inappropriateness

Mean Inappropriateness Rankings

- A. Bald
- B. Pos. Polite
- C. Neg Polite
- D. Off Record
- E. Candidate (Pos + Bald)

Nominal-Tech
Engineers
Elders
B&L's Predictions
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

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