


ETHOS: Ethical Technologies  
in the Homes of Seniors

**APHA 2012**  
**“How In-home Monitoring Mediates  
Communication in the Caregiving  
Relationship”** L. Huber, L. Borrero, B. Walker, K.  
Shankar, K. Caine, K. Connelly, J. Camp

## Research at Indiana University

***ETHOS:***  
***“Ethical Technologies in the  
Homes of Seniors”***  
<http://ethos.soic.indiana.edu/>



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## The Study

- Three-year project exploring the privacy concerns of independently living older adults regarding home monitoring systems and other ubiquitous technologies
- A series of five studies, to develop and test a proposed privacy framework to inform the design of home-based ubiquitous technologies.
- The fourth of these studies was an in-situ study in the homes of six study participants for six weeks
  - The informal caregivers of four of these participants had *paired technologies* installed in their homes as well

## Research Question

- How do in-home technologies affect caregiving relationships in later life?
- Specifically, how might in-home technologies affect communication patterns between older adults and their caregivers?

## The Technologies

- Chosen to test each aspect of the framework and relevant domains of everyday functioning:
  - personal safety
  - daily activities
  - health behaviors
  - social communication

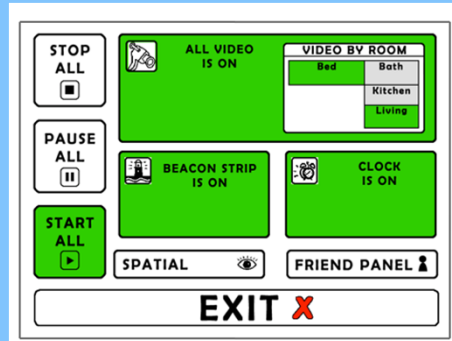
## The Technologies

- Beacon strip
- Presence clock
- Video cameras
- Scheduler
- Digiswitch
- Smart phone



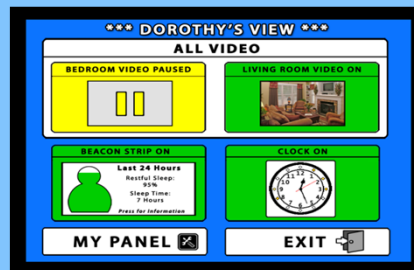
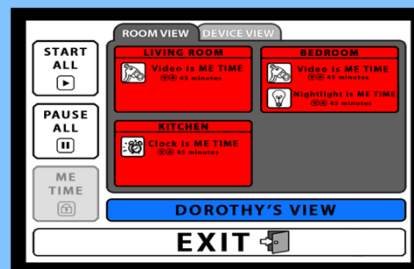
## Control Panel:A Closer Look

- A touch screen provided data transparency and control of all installed technologies



## “Me Time”

“Me Time” allows the user to cease having information about themselves collected by the devices, while preserving privacy about their choice from their caregiver

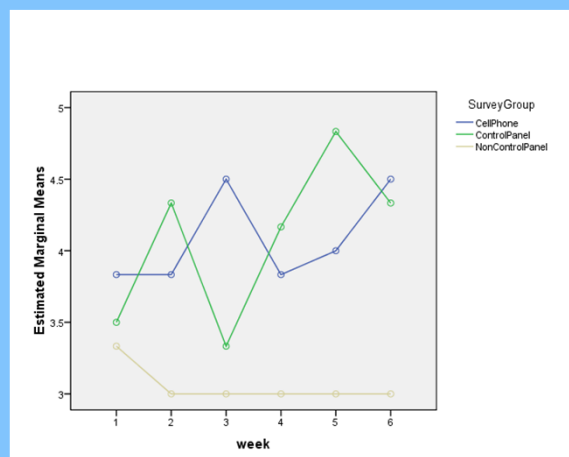


## Procedures

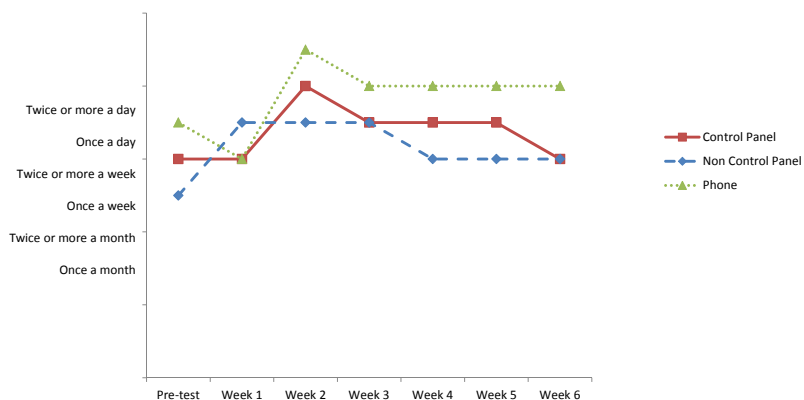
- Participants were contacted daily to capture their experiences with the technologies
- Weekly face-to-face qualitative interviews elicited in-depth feedback about the technologies and caregiver interactions
- Caregivers were also interviewed weekly about the technologies and interactions with their loved ones.

## Overview of Results

People who had the control panel rated their experiences with the technology higher than other groups



## Frequency of Contact with Caregiver



## How Technology Affected Relationship Patterns

- **Communication Patterns Were Maintained or Improved**
  - Participants were generally satisfied with the level of communication with their caregivers at beginning of study
  - Over the course of the study, the amount of communication between older adults and caregivers either stayed the same or increased

## How Technology Affected Relationship Patterns

- Perceived Interpersonal Closeness (PICS) was Maintained or Improved
  - Participants were generally satisfied with the quality of their relationship pre and post test
  - Interviews suggest that technologies can increase feelings of closeness and amount of contact
    - “And I will say one thing, that we have talked more since I had this [technology].”
    - “I got two emails [from older adult] this morning. I talked with her twice yesterday, and it was about the technology.”
    - “And talking to people makes me want to be with them more. So then the more I talk, then I also want to be with them.”
    - “Yeah, I'd say more. It made me more aware of what she does all day and that kind of thing. Yeah, I'd say definitely it made me more aware. It made me think of her more.”
    - “I've gotten closer to my kids because of it.”

## How Technology Affected Relationship Patterns

- Older Adults Use Technology To Reduce Their Perception Of Caregiver Burden
  - “I tend not to bother him unless there's something coming up.”
  - “I tend to worry about interrupting someone else, calling at the wrong time, and that makes me tend to not call as much.”
  - “I rely on the clock to verify whether they are home, and therefore whether it would be okay to call them. I don't mind if they use the clock to determine whether they could call me. I would not turn the clock off if I had the choice, even if I didn't want interruptions. I want them to feel welcome to call me whenever they like.”
  - “Annie” and “Karen” know when they can call each other because of presence information on clock

## How Technology Affected Relationship Patterns

- **Technology Can Increase Awareness Of Daily Activities And Feelings of Connectedness**
  - “Well, one time I was sitting at the kitchen table writing checks and she said ‘Well, I see you’ve got your checkbook out. Do you want to write me a check too?’”
  - “Yes, I think it has made me think of her more. It made me more aware of what she does all day and that kind of thing.”
  - The Presence Clock was used by all participants as a green light for a phone call.

## How Technology Affected Relationship Patterns

- **Technology Can Present Challenges to Privacy**
  - “When Zach [student researcher] was here, my phone rang. It was my daughter. She said, ‘How come you’ve got a man in the bedroom with you?’”
  - On two occasions, two different caregivers pretended the Presence Clock was not working, so that their loved one would not know they were home.



## Limitations of Study

- Limited generalizability due to sample size, sample characteristics
  - Follow up large scale survey
  - Formative data from earlier focus groups
- Types of technology influence interactions
  - Phones vs monitoring: One phone participant experienced increased awareness of her tendencies toward isolation, improved communication with her family, and a feeling of increased closeness with her children and grandchildren
- Technology must function perfectly, storms or no storms.

## Implications

- In home technologies should be designed to allow for customization according to
  - the types of technologies involved
  - the preferences and personalities of the elder
  - and the existing relationship between the elder and his or her caregiver

## Implications

- Our research suggests that the presence of home-based ubiquitous technologies in the homes of elders should be elder-friendly and provide users with the ability to see and manage their personal data
  - Data collection must be transparent, especially to the older adult user
  - The type of technology and granularity of data affects satisfaction, adoption and use
  - The relationship between the caregiver/data recipient and older adult is of key importance to the older adult
  - Both older adults and their caregivers can use technology to maintain or improve their relationship

## Thank You!

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