

Application for Approval to Use Humans as Experimental Subjects

PART I:

November 4, 2000

Title of Study: Counter Intelligence: User Studies

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Undergraduate Assistants (rotating)

Collaborating Institutions: No specific collaborators;
Sponsored by corporations (complete list at
<http://www.media.mit.edu/ci/resources/sponsors.html>)

Financial Support: see above

Anticipated Dates of Research: Start Date November 2000
Estimated Date of Completion February 2001

Purpose of Study:

The progress of computer technology into everyday consumer appliances makes possible new applications that interact with people in their very own homes, helping them complete everyday tasks and learn new skills. The home kitchen is one key environment for these new applications, for it is a space where people are actively engaging in goal oriented tasks, such as cooking, cleaning, or planning—tasks that may demand help or encouragement to complete. The CounterActive kitchen counter is designed to help users in the task of cooking a recipe. Using a computer, a projector and a variety of hidden sensors, the kitchen counter is able to interactively teach people to cook; it's rich multimedia capabilities also enable the counter to provide entertainment or to set the atmosphere in order to keep the user engaged in their task.

This study will seek to determine the aptness and usability of an interactive kitchen counter that guides users through recipes. It is possible for the counter to adapt to the needs of different kinds of users—people of varying cooking experience, people of different ages, people with varying computer experience. Thus, it is important to verify what needs users may have in the kitchen environment, test the ability of the counter's user interface to provide users with relevant information, gauge user reactions toward the style of the counter's interface and the entertainment value of its content and determine the impact this interface may have on people's desire and ability to cook.

There are several benefits to this study. One is to gain empirical information regarding the use of interactive technologies in helping people finish a given task. This is of interest to numerous fields, as the ability to train people on demand can be of use in manufacturing environments, in laboratory environments, and in fact, in any place with a workbench setting. Additionally, this project is designed to provide information about user interface design principles for next-generation computer devices that have far reaching implications for interaction design professionals, educators and many other disciplines.

PART II:

EXPERIMENTAL PROTOCOL:

In the experiment, subjects will be asked to prepare one of a few recipes using the kitchen counter. (Please see included sample screenshots.) The counter will provide both video and audio instructions on how to make some prepared dish as the subject touches various words or icons projected on the kitchen counter. During the experiment, the subjects actions may be monitored via electric field sensors and radio-frequency identification (RFID) tag sensors. The field sensing is used in conjunction with the projected visual interface to behave like a touch screen which allows the subjects to move from step to step of the recipe. The RFID tag sensors will monitor the movement of ingredients and kitchen tools as they are being used. The subject will be asked to vocalize their on-going questions, thoughts and reactions throughout the cooking process; at least one experimenter will be on hand to record notes on the subjects' actions and thoughts, to monitor the subjects to ensure that their safety and to provide them with any information necessary to complete the task. The subjects will be told to expect a short series of questions afterward.

Before the experiment, subjects will be asked questions to determine demographic information, their previous computer experience and their previous cooking experience. They will also be asked about what sort of help they think would be useful during the cooking process. After the experiment, subjects will be asked to verbally describe their feelings toward the task, the interface and the end-product of their cooking. The experimenter will take written notes based on the subjects' responses.

The recipes each subject is asked to prepare will be geared for their skill and age level; subjects below the age of 13 will be assisted by the experimenters, who will perform any steps involving the use of sharp objects, electric equipment or kitchen appliances. Subjects of various ages are necessary to determine how the user interface must be adapted to users of various skill levels, include those who may have difficulty reading or who may have little knowledge of kitchen tools and their usage.

All sensors involved with the counter interface are completely non-invasive and require little or no preparation for use. Employment of this equipment presents no threat of either physical or psychological discomfort to subjects.

PART III:

1. Subjects will be recruited through the use of posted flyers on the MIT campus, through verbal request, and through the use of computer networks and bulletin boards. This study will entail the recruitment of 30+ subjects, equally divided among males and females, aged 8-65.
2. Women will comprise half of the subject pool in order to counterbalance for gender effects as well as explore any differences. Minorities will be encouraged to participate.
3. Subjects will not receive any payment for participation.
4. NA. Subjects will not be studied outside MIT premises.
5. NA. The Clinical Research Center facilities will not be used.
6. NA. No drugs will be used.
7. NA. No radiation or radioactive materials will be employed.
8. NA. No special diets will be used.
9. NA. Subjects will not experience any physical pain or stress.
10. NA. Questionnaires will not be used.
11. A few brief questions will be asked, which are detailed in part II.
12. NA. Subjects will not experience psychological stress.
13. NA. Subjects will not purposefully be deceived.
14. NA. No information acquired through this investigation should adversely affect a subject's relationships with other individuals.
15. All subjects will be assured of their anonymity in the experiment. Experimenters will tabulate observations based on assigned ID number rather than by name. In general, only group data and not individual data will appear in any write-up. Any anecdotes or quotes will be used only with the specific permission of the subjects issuing said information; in the case of minors, parental permission will also be obtained.

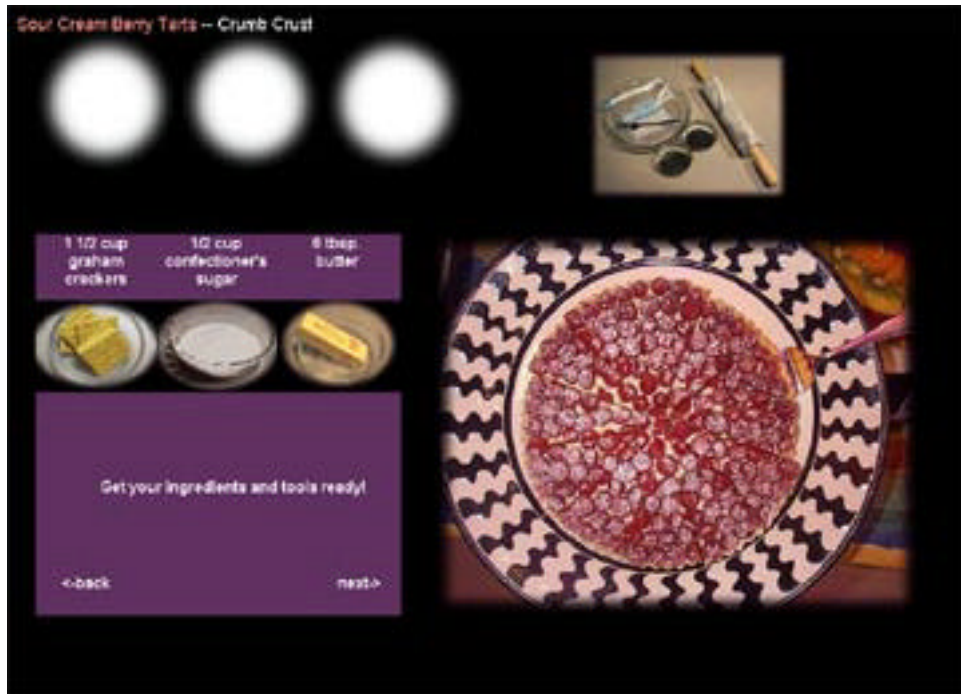
PART IV:

A. Risks to the subjects include accidents associated with preparing food in everyday domestic environments. In order to minimize such risks, subjects will be alerted beforehand to wear proper attire (no sandals or shorts), and will be instructed to use proper equipment, such as aprons, oven mitts and step stools. Experimenters will be on hand to alert people of possible hazards, and to perform any cooking tasks that the subjects may need help with. The recipes each subject is asked to prepare will be geared for their skill and age level; subjects below the age of 13 will be assisted by the experimenters, who will perform any steps involving the use of sharp objects, electric equipment or kitchen appliances.

It is not anticipated that subjects will encounter any privacy risks.

B. No ill effects are anticipated. However, all subjects will be given, as part of their debriefing, a document with the name and number of the experimenters. They will be instructed to contact the experimental personnel with any questions or problems, who will subsequently refer them to medical assistance. Any events of this kind will be immediately reported to the Committee.

Sample screen shot from a CounterActive kitchen counter recipe



Picture of setup of kitchen counter



Consent Form

Your participation in the following experiment is completely voluntary. You are free to withdraw this consent at any time, for any reason, and to request that any data collected be destroyed. If at any time you feel uncomfortable, or unsure that you wish your results to be part of the experiment, you may discontinue your participation with no repercussions.

In a few minutes, you will be asked to prepare a recipe on an interactive kitchen counter. You will be asked to state your thoughts regarding the counter, the recipe and your process aloud. If you have any questions, at any point during the experiment, the experimenter will gladly answer them. The experimenter will also gladly perform any tasks in the process that you are not comfortable with or provide any help needed.

Please read the following and sign on the lines below:

"I, the undersigned, have read and understood the explanations of the following research project and voluntarily consent to my participation in it. I understand that my responses will remain confidential and that I may terminate my participation at any time.

In the unlikely event of physical injury resulting from participation in this research, I understand that medical treatment will be available from the MIT Medical Department, including first aid emergency treatment and follow-up care as needed, and that my insurance carrier may be billed for the cost of such treatment. However, no compensation can be provided for medical care apart from the foregoing. I further understand that making such medical treatment available; or providing it, does not imply that such injury is the Investigator's fault. I also understand that by my participation in this study I am not waiving any of my legal rights.

I understand that I may also contact the Chairman of the Committee on the Use of Humans of Experimental Subjects, MIT 253-6787, if I feel I have been treated unfairly as a subject.

Name: _____

Date: _____

Location: _____

Additional Parental Consent Form
(for the parents or guardians of subjects under 18)

You and your child's participation in the following experiment is completely voluntary. You are free to withdraw this consent at any time, for any reason, and to request that any data collected be destroyed. If at any time you or your child feel uncomfortable, or unsure that you or your child wish these results to be part of the experiment, you may discontinue your participation with no repercussions.

Your child will be asked to prepare a recipe on an interactive kitchen counter. Your child will be asked to state their thoughts regarding the counter, the recipe and their process aloud. If they have any questions, at any point during the experiment, the experimenter will gladly answer them. The experimenter will also gladly perform any tasks in the process that you are not comfortable with or provide any help needed. You are welcome to be on hand to watch the study.

Please read the following and sign on the lines below:

"I, the undersigned, have read and understood the explanations of the following research project and voluntarily consent to my child's participation in it. I understand that my child's responses will remain confidential and that I may terminate my child's participation at any time.

In the unlikely event of physical injury resulting from participation in this research, I understand that medical treatment will be available from the MIT Medical Department, including first aid emergency treatment and follow-up care as needed, and that my child's insurance carrier may be billed for the cost of such treatment. However, no compensation can be provided for medical care apart from the foregoing. I further understand that making such medical treatment available; or providing it, does not imply that such injury is the Investigator's fault. I also understand that by my child's participation in this study I am not waiving any of my or my child's legal rights.

I understand that I may also contact the Chairman of the Committee on the Use of Humans of Experimental Subjects, MIT 253-6787, if I feel my child has been treated unfairly as a subject.

Name: _____

Date: _____

Location: _____

Sample Interview Outline

I. Before cooking:

Background information on the user

- How old are you?

Background information on subject's cooking habits:

- How much cooking have you done before today?
- How did you learn what you know about cooking?
- How often do you cook?
- What sorts of things do you like to cook?
- Do you like cooking? Why/why not?
- Are there things you wish you had help with when you are cooking?

Background information on subject's computer experience:

- How much experience do you have with computers?
- What do you use computers for?
- How did you learn to use computers?
- Do you like using computers? Why/why not?
- Are there things about using computers you wish you had help with?

II. During cooking:

- What are you looking at?
- What are you thinking about?
- Is there anything that's puzzling you right now?
- What do you like/don't you like about (some aspect of the interface)?
- What does (instruction on interface) mean to you?
- Are the instructions clear to you? Do you know what to do?

III. After cooking:

- Tell me what you can remember about the steps you took to make _____.
- What about the kitchen counter did you like?
- What about the kitchen counter didn't you like?
- How is cooking with the counter like or unlike the way you're used to cooking?
- Are there things you wish the counter did that it did not do?
- Did you feel the instructions provided by the counter added or detracted from the experience?
- Did you feel the entertainment added or detracted from the experience?
- Were there aspects of the kitchen counter that were confusing? What would you do to change that?
- Did you like cooking with the counter more, the same or less than cooking without its instructions?
- Is there anything else you'd like to tell us about this experience?

Signature of Principal Investigator:_____ Date:_____

Print Full Name:_____

Signature of Department Head:_____ Date:_____

Print Full Name:_____