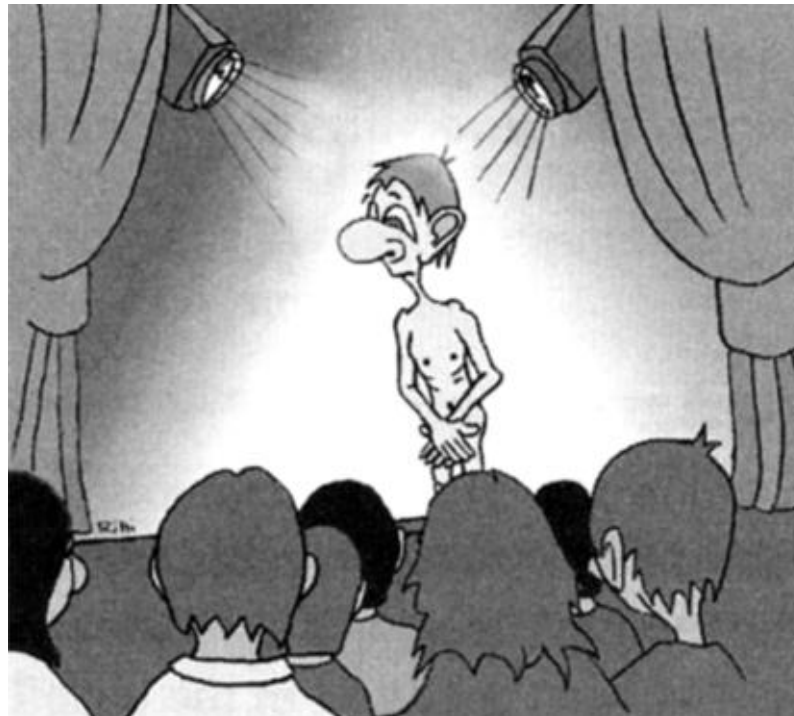


The participant standpoint

- Testing is a distressing experience
 - Pressure to perform
 - Feeling of inadequacy
 - Looking like a fool in front of your peers, your boss,...



(from "Paper Prototyping" by Snyder)

Ethics: The Milgram experiment

- Was it useful?
 - Did we learn anything that can be broadly applied?
- Was it ethical?
 - Could we have gathered this knowledge by other means?

Treating subjects with respect

- Follow human subject protocols
 - Individual test results will be kept confidential
 - Users can stop the test at any time
 - Users are aware (and understand) the monitoring technique
 - Their performance will have not implication on their life
 - Records will be anonymous
 - *Videos and recordings must be explicitly approved*
- Use standard informed consent form
 - Especially for quantitative tests
 - Be aware of legal requirements
- Special protocol for children

Conducting the experiment

- Before the experiment
 - Have them read and sign the consent form
 - Explain the goal of the experiment
 - *In a way accessible to users*
 - *Be careful about the demand characteristic*
 - *Answer questions*
- During the experiment
 - Stay neutral
 - *Never indicate displeasure with users performance*
- After the experiment
 - Debrief users
 - *Inform users about the goal of the experiment*
 - Answer any questions they have

Managing subjects

- Don't waste users time
 - Use pilot tests to debug experiments, questionnaires, etc...
 - Have everything ready before users show up
- Make users comfortable
 - Keep a relaxed atmosphere
 - Allow for breaks
 - Pace tasks correctly
 - Stop the test if it becomes too unpleasant
- Compensation
 - Pay participants whether they complete the study or not

Usability Study - Qualitative approach

- Gather user's perception of the interaction
- Concerned more about *ability* to use system than how much they like it
- Methods
 - Introspection
 - *Walkthroughs*
 - Direct observation
 - *Simple observation*
 - *Thinking aloud*
 - *Constructive interaction (co-discovery)*
 - Interviews, questionnaires and surveys

Direct observation

- Observing (and recording) users interacting with the system
 - In lab or in the field
 - For a set of pre-determined tasks or through normal duties
 - *Be prepared!*
- Excellent at identifying gross design/interface problems
- Three general approaches:
 - simple observation
 - think-aloud
 - constructive interaction

Be prepared!

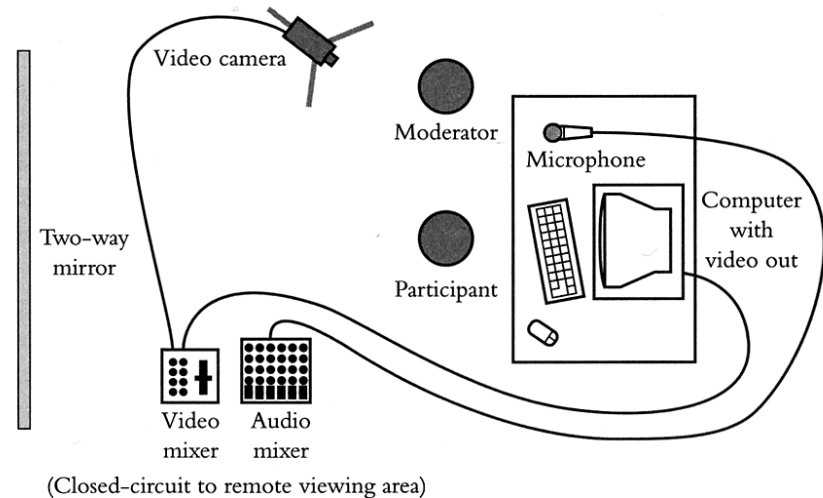
- Select the correct population
- Set objectives and tasks
 - Realistic
 - Informative
- Apply for the IRB
 - <http://www.umresearch.umd.edu/IRB/>
- Hardware
 - Computer, video equipment...
- Software
 - Up and running, properly debugged...
- Facilitator
 - Using a checklist might be useful
 - Practice!

Creating tasks

- Describe in terms of end goals
- Specific and realistic
- Doable
- Not too long (< 5-10 minutes each)

Recording observations

- Need a record
 - Further analysis
 - Proof during discussion
- Techniques
 - Paper and pencil
 - *Simple to set up*
 - Free form
 - Coding scheme
 - *Might be biased*
 - Audio/Video recording
 - *More accurate*
 - *Time consuming to analysis*
 - Encoding is a time consuming process



From "Observing the user experience" (Kuniavsky)

Coding scheme example

- Tracking activity in the office

s	start
e	end

Time	Desktop activities			Absences		Interruptions	
	Computer	Desk	Telephone	Desk	Room	Visitor	Telephone
9:00	s						
9:02	e					s	
9:05					s	e	
9:10			s		e		
9:13							

Simple observation method

- Evaluator observes users interacting
 - Sometime behind a half-silvered mirror
- Drawback
 - No insight into the user decision process or attitude

The think aloud method

- Subjects are asked to say what they are thinking/doing
 - What they believe is happening
 - What they are trying to do
 - Why they took an action
- Widely used in industry
- Drawbacks
 - Awkward/uncomfortable for subject (thinking aloud is not normal!)
 - “Thinking” about it may alter the way people perform their task
 - Hard to talk when they are concentrating on problem

Facilitator's Role

- “Flight Attendant”
 - Support participant
- “Sports Caster”
 - Support designers/developers
- “Scientist”
 - Accurately collect data

The constructive interaction method

- Two people work together on a task
 - Normal conversation between the two users is monitored
 - *removes awkwardness of think-aloud*
 - Variant: Co-discovery learning
 - *Use semi-knowledgeable “coach” and naive subject together*
 - *Make naive subject use the interface*
- Drawback
 - Need a good team

Debriefing

- Post-observation interviews
 - Questions from your notes
 - Questions from users diary
 - Questions from a video footage
- Pros and Cons
 - Avoids erroneous reconstruction
 - *Provide many constructive suggestions*
 - Time consuming
 - *But extremely valuable*

Interviews

- Method
 - Pick the right population
 - *Individual or group discussion*
 - Be prepared
 - *Plan a set of central questions*
 - Probe more deeply on interesting issues as they arise
 - *Focus on goals not technology*
 - *Find the root of the problem*
- Pros and cons
 - Very good at directing next design phase
 - *Provide many constructive suggestions*
 - Subjective
 - *Do not ask leading questions*
 - Time consuming

Questionnaires and surveys I

- Method
 - Pick the population
 - *Demographics and sample size*
 - Between 50 and 1000 subject
 - Establish the purpose of the questionnaire
 - *What information is sought?*
 - *How would you analyze the results?*
 - Establish the means of delivery/collection
 - *On-line*
 - *Direct interaction with users*
 - Walking in the street
 - Post-user testing
 - *Surface mail*
 - including a pre-addressed reply envelope gives far better response

Questionnaires and surveys II

- Method
 - Design the questionnaire
 - *Don't forget to debug it!*
 - Deliver
 - Collect and analyze the data
 - Establish the main findings

Closed questions

- Supply possible answers

Characters on the computer screen are:

hard to read

easy to read

1 2 3 4 5

- Easy to analyze
- Make it more difficult for respondents

Style of closed question: Scalar

- Likert Scale

Characters on the computer screen are:

hard to read					easy to read
	1	2	3	4	5

- Be sure to pick odd numbers of choice
 - *Often 5 or 7*

Style of closed question: Multi-choice

Which types of software have you used? (tick all that apply)

word processor

data base

spreadsheet

compiler

– Can be exclusive or inclusive

– Be sure to be specific

Do you use computers at work:

often

sometimes

rarely

vs

Do you use computers at work:

more than 4 hrs

between 1 and 4 hrs

less than 1 hrs

Style of closed question: Ranked choice

Rank the usefulness of these methods of issuing a command

(1 most useful, 2 next most useful..., 0 if not used)

__2__ command line

__1__ menu selection

__3__ control key accelerator

– Helpful to understand users preference

Open ended questions

- The user answers in his/her own words
 - Can you suggest any improvements to the interfaces?
 - Good for general information
 - Difficult to analyze
 - *Need for a coder*
 - Can complement closed questions

Questionnaires and surveys

- Pros and cons
 - Preparation is expensive
 - *Need to design and debug the questionnaire*
 - Can reach a large population
 - *But often a low return rate*
 - *Sample not necessarily representative*
 - As good as the questions asked
 - Data collection can be tedious
 - *Use automatic forms for large volume*

Qualitative approaches outcome

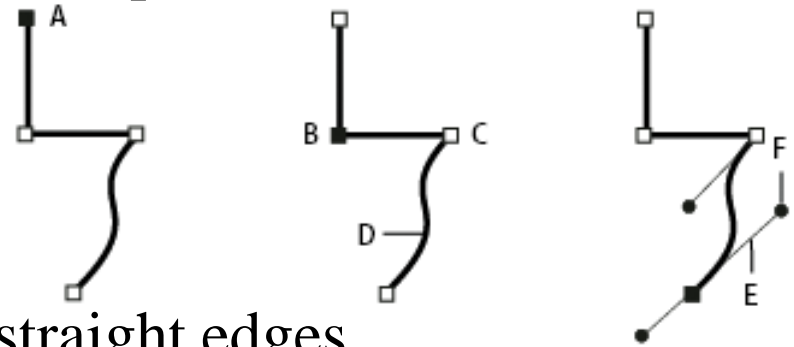
- High level effects
 - Task flow problems
 - Task description problems
 - Contextual findings
 - *Conflict with social pattern, ...*
 - *Two hands needed but only one available*
- Pros and Cons
 - Apply to a real situation
 - *Good external validity*
 - Difficult to generalize
 - *Poor control of independent variables*
 - Often subjective data

Think Aloud Example: Adobe Illustrator

- Goal: Test learnability of path (i.e., curve) construction
- Assume no previous experience
- Assume basic understanding of splines – end points and control points
- Roles:
 - Me: facilitator
 - Volunteer: participant
 - Volunteer: observer/note-taker
- Tasks:
 - Draw straight line
 - Draw simple curve
 - Draw heart shape
 - Modify shape

Review: Actual Path Interaction (Creation)

- “Straight” vs. “curved” edges
- “Anchor” vs. “direction” points
- Anchors can be “corner” or “smooth” points



- Clicks generate corner points w/ straight edges
- Close path when cursor has small “o” next to it
- Click & drag to generate a smooth point with curved edge
- Alt-click to generate a corner point (i.e., separate direction lines)
- Click-Spacebar to reposition anchor point

Review: Actual Path Interaction (Editing)

- Use “Direct Selection” tool to select points or paths
- Use marquee selection to select points or paths
- Use control panel to
 - convert point type
 - join endpoints
 - delete points
- Or use variations of Pen tool to add/remove/change anchor points (with keyboard shortcuts P,+,-,Shift-C)
- And many other operations...