Questionnaires

Unit 7

Learning outcomes

- Understand when/how to use questionnaires in interaction design
 - Surveys
 - Satisfaction questionnaires (post use)
- Learn how to prepare them
 - Different types of scales
 - Questions wording
- Learn about the most common types of questionnaire used in user research
 - Usabilty
 - User experiencer

Questionnaires

- Predefined set of questions in a predetermined order
- Provide data that can be analysed to identify patterns and relationships within the answers
- Questionnaires may be:
 - Self-Administrated (the respondent answer on their own)
 - Administrated by the researcher

Questionnaire

- Qualitative vs. quantitative data; self-report
 - opinions, beliefs, attitudes, behaviour
 - bias -> social desirability often there is an expectation that one answer is preferred

questionnaire score = true score + error

only as good as the questions asked

Source of Errors

- Systematic (bad design of the questionnaire)
- Random (this is not a problem in large sample)
- Use different items and techniques to address the same concept (average)
- Triangulation

Psychometric characteristics

- Reliability (reproducibility factor):
 - test-retest reliability: stability over time
 - internal reliability: stability over items
- Effective range in the scale (sensibility):
 - scale must be chosen according to variable peculiarities.
- Validity:
 - measures must reflect what it is investigated.

Surveys

- Systematic extraction of data from and about a population of people (or events) in a standardised & systematic manner
- The extraction of patterns from the responses from a sample enables statements and inferences about the whole population
- Sampling issues (random sample is often the best choice, but at times unfeasible)
- Requirements elicitation / adoption studies

Snow-ball sample

- Self-selected sample
- Shopping Web Sites
- Chat Sites
- Personal Sites
- Fan Sites
- Such sites are selected on the basis of convenience rather than for any in depth investigation

Scales of measurement

- Nominal data (nominal or categorical data)
 - Identity.
 - gender, (1= male; 2= female), ethnicity
 - Numbers are meaningless
 - Ordinal data (ordered data)
 - identity + magnitude (socioeconomic class)
 - Student ranks (1 = no pass; 2 = pass; 3 = merit; 4 = distinction)
 - Numbers reflect an order but arithmetical operations are limited
- Interval data (scores data)
 - identity + magnitude + equal intervals (evaluation scales)
 - I feel
 - Happy 1 2 3 4 5 6 7 Unhappy
 - This lecture is boring
 - strongly agree 1 2 3 4 5 Strongly disagree
- Ratio data (scores data)
 - identity + magnitude + equal intervals + a true zero (number of bugs)
 - There is a true zero
 - Age, height, annual turnover

Questionnaire design

- Questionnaires must be properly designed to elicit the answers you want from the respondent
- Answers should be valid and meet the researchers' need
- Each question has to effectively elicit an answer that contributes to addressing the overall research question

Questionnaire design

- Iterative approach
 - Establish the purpose of the questionnaire
 - what information is sought? how would you analyze the results?
 what would you do with your analysis?
 - · determine the audience you want to reach
 - determine how would you will deliver the questionnaire
 - Define thematic areas
 - IT experience, attitudes toward technology, user satisfaction
 - Compose and pilot the items
 - wording issues, response biases
 - select scales (precision; effort needed to decide on a response)
 - do not ask questions whose answers you will not use!
 - Write instructions
 - Pilot

Pilot

- How long did it take to complete?
- Were the instructions clear?
- Were any questions ambiguous?
- Were any questions objectionable?
- Was the layout clear and easy to follow?
- Were any topics omitted?

Questions

 Brief: ideally 20 words or less, providing the question is still understandable

Relevant:

- each question should be relevant to the overall questionnaire and its purpose
- each word within the question must be relevant to the overall (research) question you want to ask

Questions (2)

- Avoid 'and' questions
 - The web-site is interesting and appealing
 - The web site is interesting
 - The web site is appealing
 - Avoid 'negative' questions
 - The web site design is not appealing
 - The web site design is ugly

Practical guidelines

- Don't use jargon or abbreviations
- Keep questions simple and as short as possible
- Don't use vague terms: be precise.
- Avoid 'loaded' or 'leading' questions that hint at the answer you want to hear
- Avoid "AND" questions: asking more than one question
- Avoid 'double-negative' questions
- Use common concepts
- Take care over questions that involve memory/recall

Practical guidelines

- Hypothetical questions need to be worded especially carefully. Are they really needed? Can the question be misinterpreted?
- Take care when covering embarrassing or sensitive issues.
- Avoid using negative words or implicit negatives as this might bias your responses.
- Avoid 'presumption' questions: do not assume that everyone has the same standards.
- Watch out for prestige bias in the question: social bias happen even if the responses are anonymous,

Styles of Questions

- Open-ended questions
 - asks for unprompted opinions
 - good for general subjective information
 - but difficult to analyze rigorously

"Can you suggest any improvements to the interface?"

Closed questions

- Restrict responses by supplying alternative answers
- easy to analyze
- watch out for hard to interpret responses!

Do you use computers at work:

O often

O sometimes

O rarely

VS

In your typical work day, do you use computers:

- O over 4 hrs a day
- O between 2 and 4 hrs daily
- O between 1 and 2 hrs daily
- O less than 1 hr a day

Multi-choice

Respondents offered a choice of explicit responses

How do you most often get help with the system? (tick one)

- O on-line manual
- O, paper manual
- d ask a colleague

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

- O word processor
- data base
- O spreadsheet
- compiler

Ranked

- respondent places an ordering on items in a list
- useful to indicate preferences
- forced choice
- Limit the number of items

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

Likert Scales

- User judge a specific statement on a numeric scale
- usually corresponds with agreement or disagreement with a statement

The characters on the computer screen are hard to read

1 2 3 4 5

Strongly agree agree neutral disagree strongly disagree

Combination

- Combining open-ended and closed questions
 - get specific response, but allows room for user's opinion

It is easy to recover from mistakes:

```
disagree agree 1 2 3 4 5
```

comment: the undo facility is really helpful

Semantic differential scale

- Bi-polar attitudes about a concept
- pair of adjectives

The look and feel of the web-site is

```
exciting 1 2 3 4 5 6 7 boring annoying 1 2 3 4 5 6 7 pleasing
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Appearance

- Make the questionnaire attractive
- Use space generously; avoid a cramped, untidy appearance
- Make headings and instructions clear
- Make sure the method of answering is obvious
- Don't split a question between two pages
- Number all questions

- Take care over question order.
 Generally start with broad,
 straightforward ones and include
 more complicated, specific or
 sensitive ones later
- The questions should proceed in a logical manner (group by thematic areas)
- End questionnaire with a "Thank you" and give a clear deadline for responses.

Usability Questionnaire

SUS – System Usability Scale

- 10-item Likert-scale: overview of satisfaction with software
- Developed by <u>John Brooke</u>
- Freely available for use providing acknowledgement is made of the source.

SUS

	Strongly Disagree				Strongly Agree
I think I would like to use this website frequently.	0	0	0	0	0
2. I found the website unnecessarily complex.	0	0	0	0	0
3. I thought the website was easy to use.	0	0	0	0	0
I think I would need Tech Support to be able to use this website.	0	0	0	0	0
I found the various functions in this website were well integrated.	0	0	0	0	0
6. I thought there was too much inconsistency in this website.	0	0	0	0	0
 I would imagine that most people would learn to use this website very quickly. 	0	0	0	0	0
8. I found the website very cumbersome to use.	0	0	0	0	0
I felt very confident using the website.	0	0	0	0	0
10. I need to learn a lot about this website before I could effectively use it.	0	0	0	0	0

<u>QUIS</u>

- Questionnaire for User Interaction Satisfaction
 - Measures attitude towards different interface factors (screen factors, terminology and system feedback, learning factors, system capabilities, technical manuals, on-line tutorials, multimedia, voice recognition, virtual environments, internet access, and software installation)
 - http://www.cs.umd.edu/hcil/quis/

Overall Reaction to the Website		0	1	2	3	4	5	6	7	8	9		NA
1.	terrible	0	0	0	0	0	0	0	0	0	0	wonderful	0
2.	difficult	0	0	0	0	0	0	0	0	0	0	easy	0
3.	frustrating	0	0	0	0	0	0	0	0	0	0	satisfying	0
4.	dull	0	0	0	0	0	0	0	0	0	0	stimulating	0
5.	rigid	0	0	0	0	0	0	0	0	0	0	flexible	0
Web Page		0	1	2	3	4	5	6	7	8	9		NA
6. Reading characters on the page	hard	0	0	0	0	0	0	0	0	0	0	easy	0
7. Organization of information	confusing	0	0	0	0	0	0	0	0	0	0	very clear	0
8. Sequence of pages	confusing	0	0	0	0	0	0	0	0	0	0	very clear	0
Terminology and Website Information		0	1	2	3	4	5	6	7	8	9		NA
9. Use of terms throughout website	inconsistent	0	0	0	0	0	0	0	0	0	0	consistent	0
10. Terminology is intuitive	never	0	0	0	0	0	0	0	0	0	0	always	0
11. Position of messages on screen	inconsistent	0	0	0	0	0	0	0	0	0	0	consistent	0
12. Prompts for input	confusing	0	0	0	0	0	0	0	0	0	0	clear	0
13. Website informs about its progress	never	0	0	0	0	0	0	0	0	0	0	always	0
14. Error messages	unhelpful	0	0	0	0	0	0	0	0	0	0	helpful	0

Learning		0	1	2	3	4	5	6	7	8	9		NA
15. Learning to use the website	difficult	0	0	0	0	\circ	0	0	0	0	0	easy	0
16. Exploring new features by trial and error	difficult	0	0	0	0	0	0	0	0	0	0	easy	0
17. Performing tasks is straightforward	never	0	0	0	0	0	0	0	0	0	0	always	0
18. Help messages on the screen	unhelpful	0	0	0	0	0	0	0	0	0	0	helpful	0
19. Supplemental reference materials	confusing	0	0	0	0	0	0	0	0	0	0	clear	0
Website Capabilities		0	1	2	3	4	5	6	7	8	9		NA
20. Website speed	too slow	0	0	0	0	0	0	0	0	0	0	fast enough	0
21. Website reliability	unreliable	0	0	0	0	0	0	0	0	0	0	reliable	0
22. Sounds associated with this website	detracts value	0	0	0	0	0	0	0	0	0	0	adds value	0
23. Correcting your mistakes	difficult	0	0	0	0	0	0	0	0	0	0	easy	0
24. Designed for all levels of users	never	0	0	0	0	0	0	0	0	0	0	always	0

Italian version

Stefano FEDERICI, Simone BORSCI, Fabio MELONI

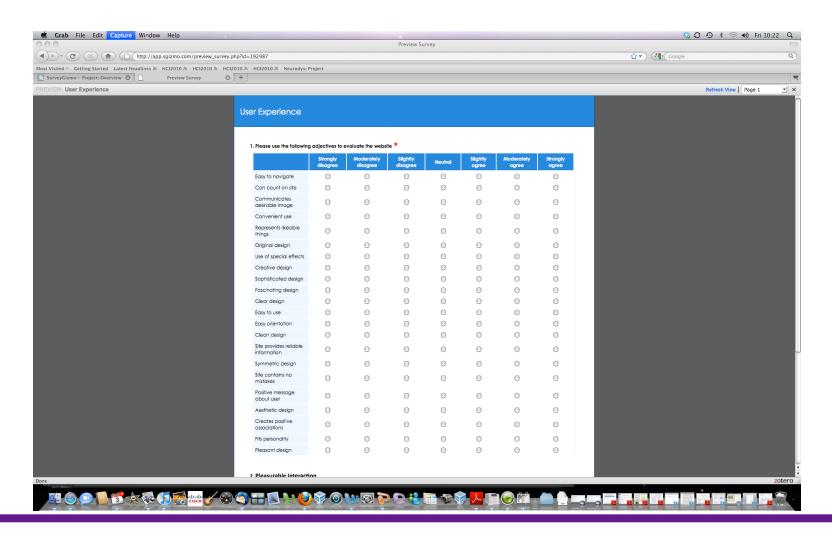
Le misure dell'usabilità: Studio sulle caratteristiche psicometriche del QUIS e del SUMI nella versione italiana

Giornale di Psicologia (2009), Volume 3, Numero 2 (Giugno)

PVA

- Perceived Visual Aesthetic scale Lavie and Trackitnsky
- Two dimension of aesthetics
 - Classical Aesthetics
 - Expressive Aesthetics

PVA



Factors

- <u>Usability</u>: Easy to navigate, Convenient use, Easy to use, Easy orientation
- Expressive aesthetics: Original design, Use of special effects, Creative design, Sophisticated design, Fascinating design
- <u>Classical aesthetics</u>: Clear design, Clean design,
 Symmetric design, Aesthetic design, Pleasant design
- Service quality: Can count on site, Site provides reliable information, Site contains no mistakes
- <u>Symbolism</u>: Communicates desirable image, Represents likeable things, Positive message about user, Creates positive associations, Fits personality

Information Quality

- Info. provided is useful
- Website conveys important info.
- The content is of good quality
- The level of detail is good
- Right amount content provided
- The information reported is well-documented and researched
- The site reports up to date info.
- The content of the website is relevant
- De Angeli et al. 2007

Interface Quality Scale

		Factor	
	Content	Usability	Pleasure
The level of detail of the content is good	.816	171	.140
The right amount of content is provided	.709	.076	023
The content is relevant	.559	.099	103
The content is of good quality	.502	.119	.124
The website is easy to use	.023	.912	079
I feel in control when I am using this website	027	.807	.033
The website requires little effort to use	030	.763	.058
Using the website is effective	.221	.638	.091
I feel pleasure interacting with the website	165	.038	.923
The website is pleasurable to look at	.070	055	.737
The website has design features I like	.145	020	.692
The website evokes positive feelings	.020	.097	.641

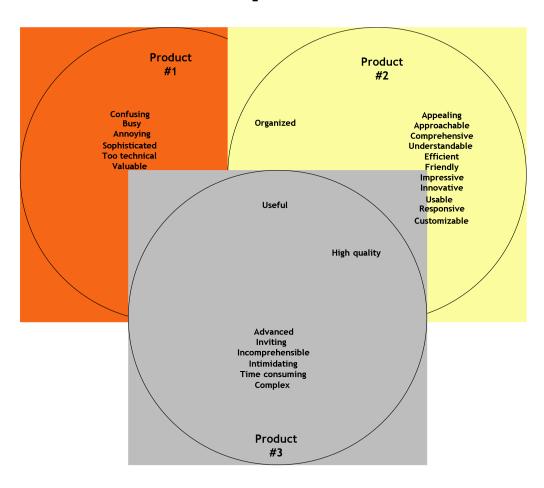
Desirability Tool Kit

- Developed by Microsoft
- Example of use and tools
- http://www.userfocus.co.uk/articles/ satisfaction.html

Desirability Kit

Accessible	Desirable	Gets in the way	Patronizing	Stressful
Appealing	Easy to use	Hard to use	Personal	Time-consumi
Attractive	Efficient	High quality	Predictable	Time-saving
Busy	Empowering	Inconsistent	Relevant	Too technical
Collaborative	Exciting	Intimidating	Reliable	Trustworthy
Complex	Familiar	Inviting	Rigid	Uncontrollable
Comprehensive	Fast	Motivating	Simplistic	Unconventiona
Confusing	Flexible	Not valuable	Slow	Unpredictable
Connected	Fresh	Organized	Sophisticated	Usable
Consistent	Frustrating	Overbearing	Stimulating	Useful
Customizable	Fun	Overwhelming	Straight Forward	Valuable

Example data

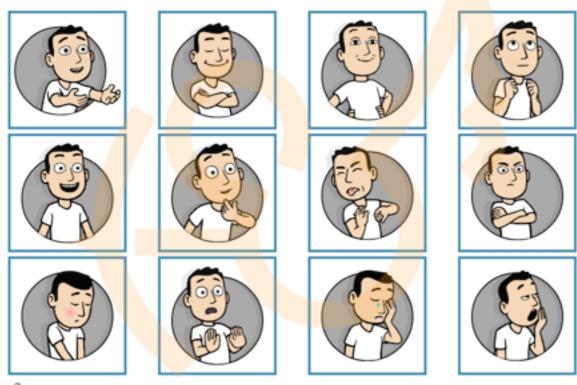


PrEmo

- Emotional responses elicited are difficult to measure because
 - their nature is subtle (low intensity)
 - they are often mixed (more than one emotional response at the same time)
- Instead of words, use animated cartoon characters
- Evaluation does not become a rational process

PreEmo

"To which extent do the feelings expressed by the characters correspond with your own feelings towards the stimulus?"



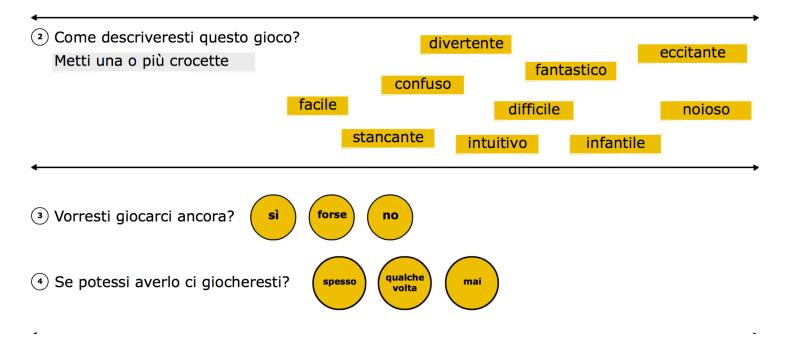
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COSA NE PENSI?

① Quanto ti sei divertito/a con questo gioco?

Disegna una riga sul termometro del divertimeto





5	completamente in disaccordo	in disaccordo	né sì né no	d'accordo	completamente d'accordo			
Vorrei continuare a giocare per conoscere di più Skies of Manawak.	0	0	0	0	0			
Mi sono dovuto/a impegnare per giocare.	0	0	0	0	0			
Mi è piaciuta la grafica (i disegni, i colori,)	0	0	0	0	0			
Ero molto concentrato/a a giocare.	0	0	0	0	0			
Mentre giocavo ero curioso/a cosa sarebbe successo.	0	0	0	0	0			
Giocare a questo gioco è stata una bella sfida.	0	0	0	0	0			
Mentre giocavo ho smesso di fare caso a cosa succedeva attorno a me.	0	0	0	0	0			
6 Sono e ho anni il mio numero: 7 Vuoi aggiungere qualche altro commento?								