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Advances in Eye-Tracking and Cognitive Interviewing Methodology:

Dos, Don'ts, and Decisions

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Why to combine eye tracking with Cognitive Interview?

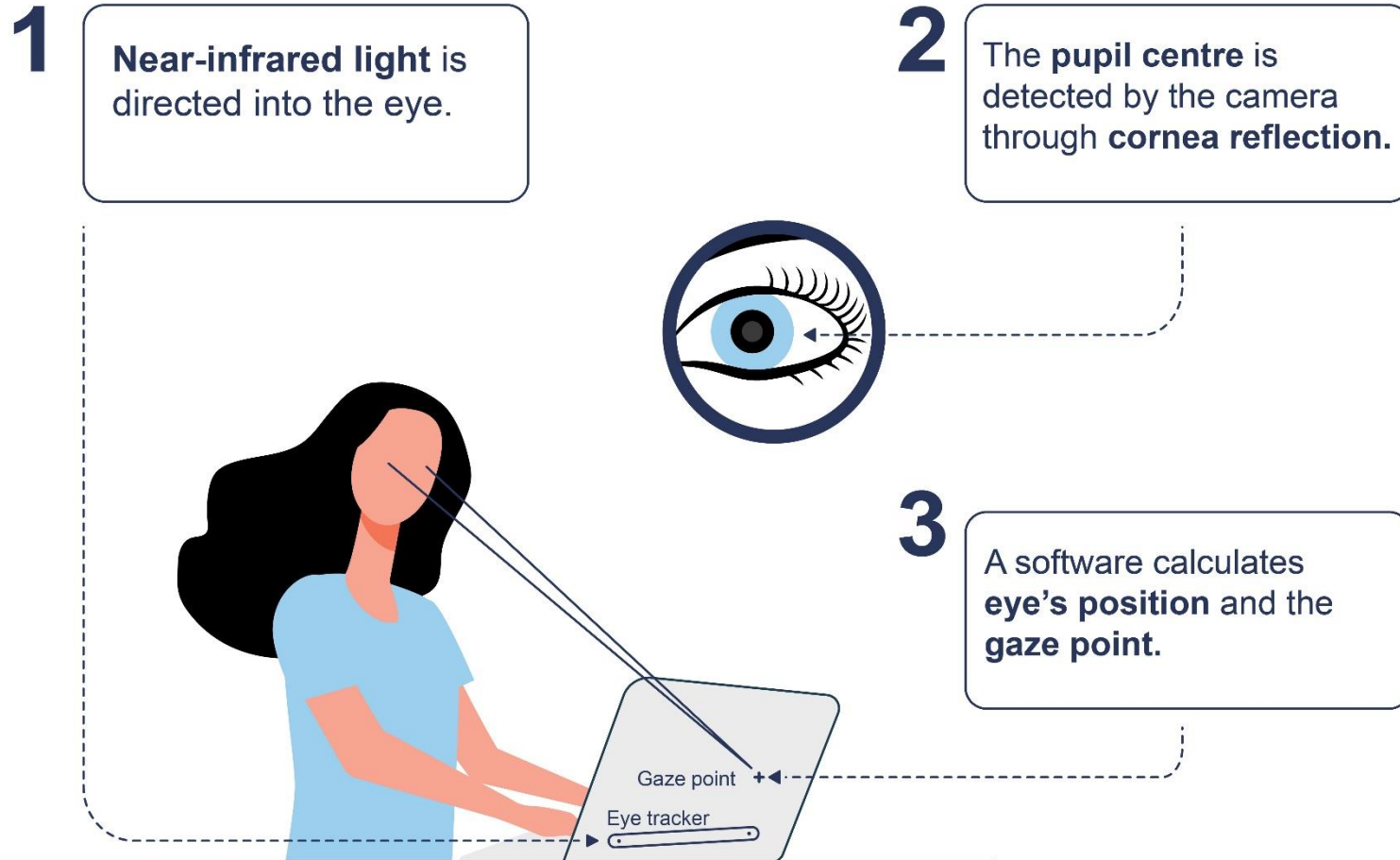
- Data collection modes affect responses.
- Cognitive testing primarily models in-person interviews, not online surveys!



Develop more realistic cognitive testing methods for online surveys.



How does an eye-tracker work?



Sample design and recruitment

- ✓ Interlocked quota for key characteristics
- ✓ Parallel quota for additional characteristics
- ✓ Creating a reserved sample to handle drop-outs
- ✓ Screening questionnaire – at least two channels for recruitment
- ✗ Convenience sampling



One complex quota system



Concurrent vs. retrospective protocol

	Concurrent	Retrospective
The relation of the two phases (eye-tracking + CI)	Simultaneous	Sequential
Recalling problems and interpretations during the interview	✓ Immediate	✗ Retrospective
Impact on eye-movement data	✗ Significant	✓ Minimal to moderate
The role of the interviewer during eye-tracking	✗ Active involvement	✓ Observation / minimal involvement
Other considerations	? Applying think-aloud technique	



(Neuert & Lenzner, 2015;
Pernice & Nielsen, 2009)

Why (not) use think aloud technique?

- ✓ Provide concurrent data on the test subjects' thought processes
- ✓ Might reduce interviewer-induced bias

- ✗ Uncomfortable, unnatural situation
→ compromises the simulation
- ✗ Interfere with the task and eye-movements
- ✗ Test subjects need to be „trained“ for it

Design

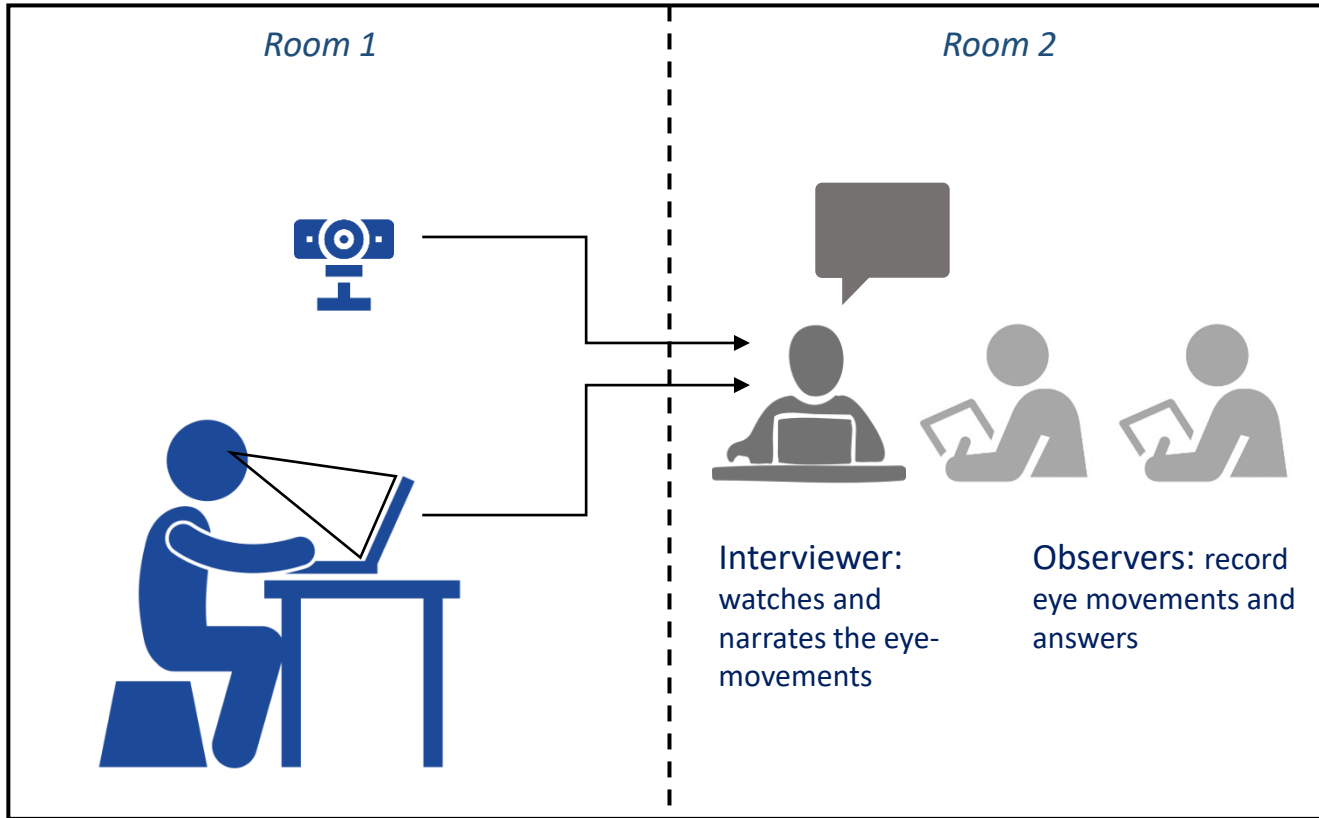
Eye-tracking

Interview

Analysis



Two-phase, semi-sequential data collection protocol



Phase 1: Eye-tracking



Phase 2: Cognitive interview

Design

Eye-tracking

Interview

Analysis



Observation of the eye movements

1. Assessment of individual reading patterns (reading a sample text)
2. Observation of questionnaire completion: detection of conspicuous eye movements
 - longer fixation
 - skipping / disregarding a survey component
 - sudden changes in reading speed
 - unusual reading order
 - scanning, unusually fast or visibly superficial reading
 - bouncing eye movements
 - repeated reading
 - Other, non-eye movement related

Design

Eye-tracking

Interview

Analysis



How to probe?

Probes

Example

Scripted probes

What does the term „day-to-day activities“ mean to you?

Spontaneous probes

You mentioned that... What did you mean?

Semi-spontaneous probes based on the eye-tracking phase observations

The eye-tracker showed us, that you hesitated between option A and B. What were your thoughts?

Questions on general (user) experiences

*On overall, how did you find the user interface?
How did you find the navigation between questions/topics?*

Additional memory-joggers

Printed questionnaire

Design

Eye-tracking

Interview

Analysis



How to analyse and interpret the data

- Qualitative method: findings are factual, not statistical!
- Eye-tracking data and the result of the cognitive interview are complementary
- Theme coding: in-depth data reduction process, bottom-up approach
 1. Observation & interview
 2. Summaries for each question
 - a) Raw analysis of eye-movements
 - b) Cognitive interview data

Design

Eye-tracking

Interview

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KSH

Conclusions: Dos & Don'ts

	<i>Dos</i>	<i>Don'ts</i>
Sampling	Complex quota system (parallel & interlocked quotas), reserve sample	Convenience sampling
Protocol	Retrospective probing	Concurrent protocol, think-aloud method
Presence of the researchers	During eye-tracking: simulate real-life situation as accurately as possible During CI: one-on-one interview	Additional observers present
Using eye-movement data	Factual results, complementary to CI data	Statistical data



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Thank you for your attention!

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