

# Combining cognitive interviews with eye-tracking

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# Purpose of cognitive interviewing & eye tracking

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## Cognitive interviewing

- Explores (conscious) thought processes involved in data information processing
- Uses verbal reports

## Eye-tracking

- Measures eye movements in response to a stimulus
- Uses observation

# Case study 1: Testing paper documents

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## ■ Aims:

- To explore the use of party identifiers (name, emblem, description) on what party identifiers people use when voting
- Whether similar identifiers on ballot papers lead to confusion

## ■ Methods:

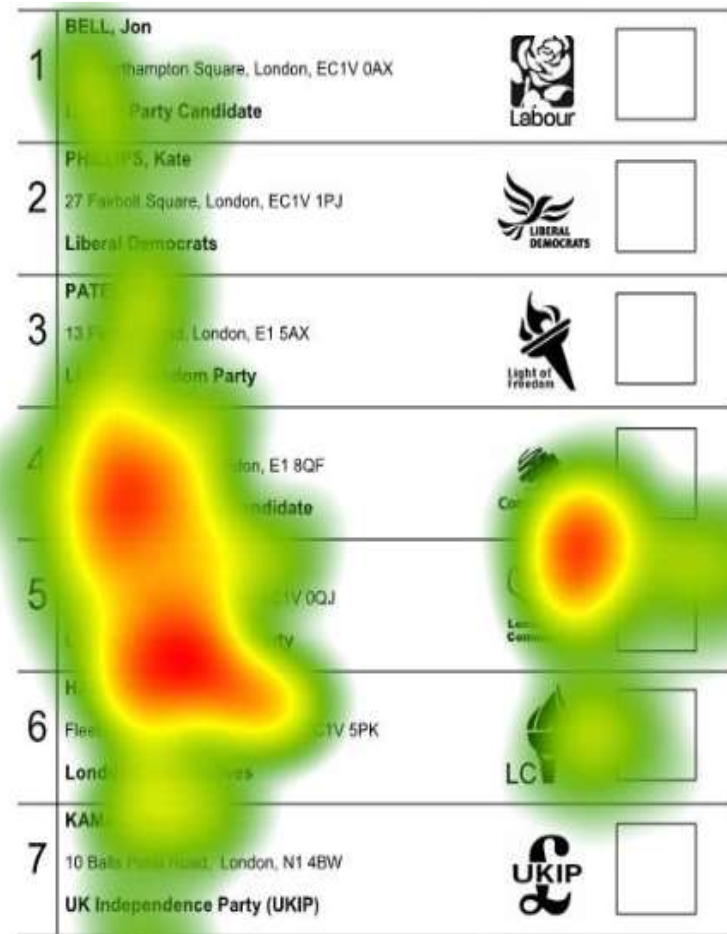
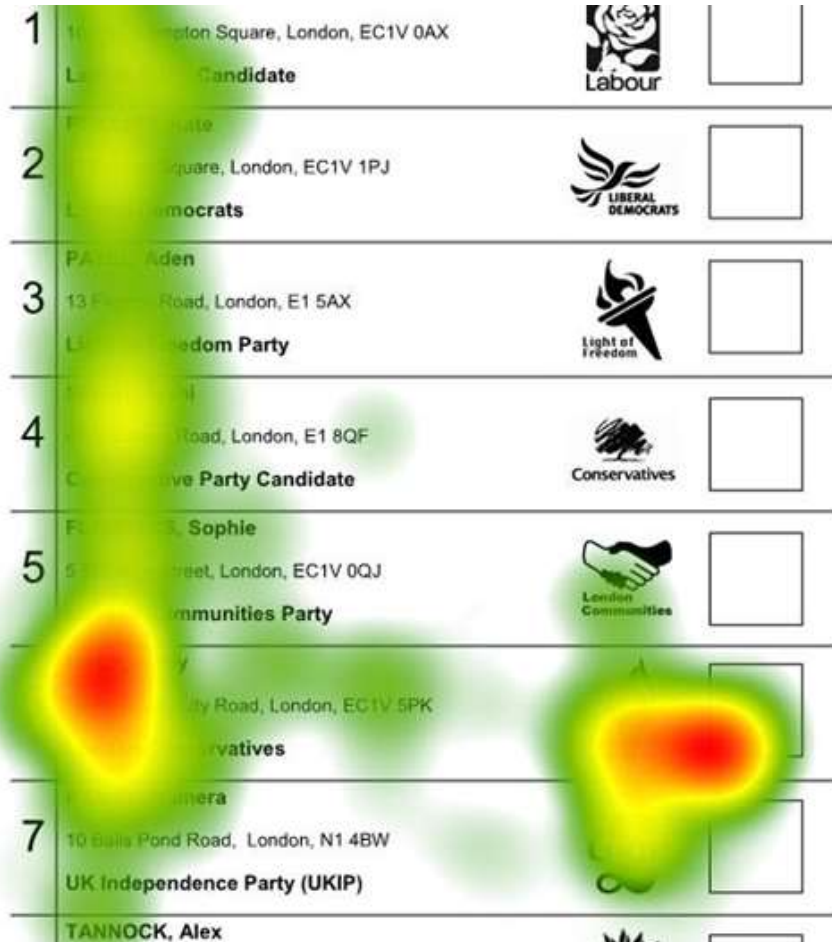
- Paper versions of test ballot papers produced
- Participants given scenarios
- Eye-tracking group: retrospective think aloud and probing whilst reviewing gaze-replay.
- Cognitive testing group: concurrent think aloud and retrospective probing

# Scenario setting...

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- Participants were given a campaign flyer for a fictitious political party (two variants were used).
- Participants were asked to vote for the party who sent them the flyer.
- The flyer was removed.
- Participants were asked to vote using a local election ballot paper and an EU parliamentary election ballot paper.

# Heat maps showing length of time spent looking at an area of the ballot paper



# Case study 2: Testing web questionnaires

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## ■ Aims:

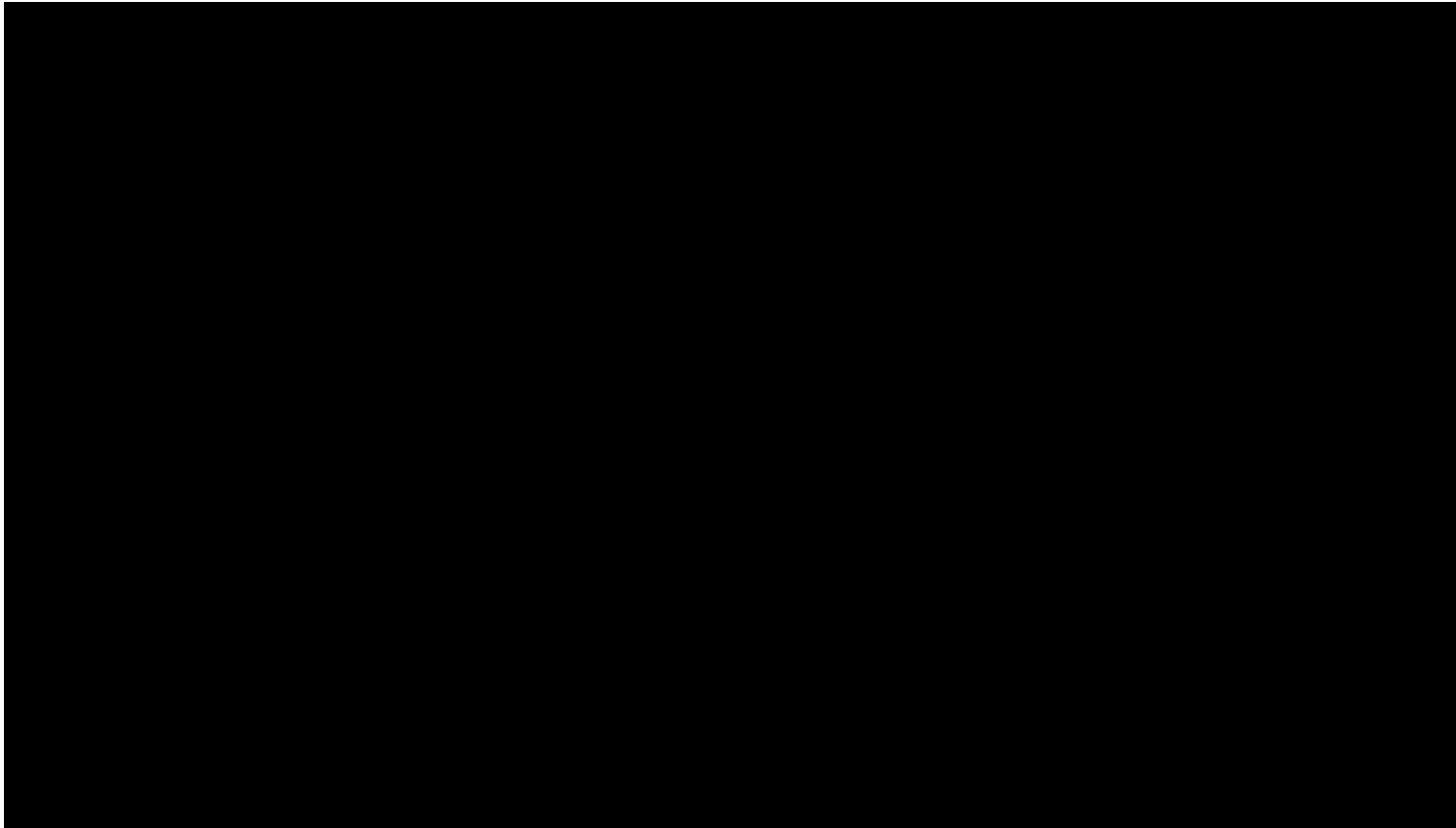
- To test the design the first generation web questionnaire to be used for Understanding Society (IP5)
  - Ease of logging in/ using different question formats/ skipping Qs

## ■ Methods:

- Programme a 'short' version of the IP5 instrument
  - Login page and different question formats ( scales, grids, dates etc)
- Respondents complete short questionnaire with eye-tracker
- Scenarios given such as 'try and skip this question'
- Retrospective think aloud and probing whilst reviewing gaze-replay.

# Gaze-replay video

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# How does eye-tracking supplement cognitive interviewing?

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Cognitive elicitation method		Impact of eye-tracking	
Observation		✓	Increased accuracy
Think Aloud	<i>Concurrent</i>	-	No impact
	<i>Retrospective</i>	✓	Gaze-replay can prompt participants
Probing	<i>Scripted</i>	-	No impact
	<i>Spontaneous</i>	✓	Better targeting based on improved observations



# Learning points 1: Design and fieldwork

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- Laboratory setting
  - Cost per interview
  - Sample diversity?
- Accuracy of eye-tracking data is reliant on participants sitting still!
  - Shorter test instruments- focussed aims.
  - Retrospective rather than concurrent probing.
  - Observe 'live' tracking...

# Learning points 2: Eye-tracking outputs

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- Which outputs will help address your test aims?

Output	Advantages and disadvantages
<b>Qualitative feedback</b>	<ul style="list-style-type: none"><li>• Most important output for getting depth information on <i>why</i> issues occurs and participant's views on how to resolve issues.</li></ul>
<b>Gaze-replay videos</b>	<ul style="list-style-type: none"><li>• Useful 'in-interview' to elicit qualitative feedback.</li><li>• Useful post-interview to recount what people looked at etc.</li></ul>
<b>Heat maps/ average fixations on areas of interest</b>	<ul style="list-style-type: none"><li>• Easy to generate for static images (paper/ single web-pages)</li><li>• Less easy for dynamic or heavily routed web instruments.</li><li>• Treatment of 'poor tracker' cases?</li><li>• Interpretation of findings?</li></ul>

# Conclusions

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- Eye-tracking a useful *supplement* to cognitive interviews but not a *substitution* for existing methods.
- Qualitative feedback still the main output for analysis.
- Eye-tracking can help improves the accuracy of observations and retrospective think-aloud (and more targeted spontaneous probes).
- Eye-tracking increases cost-per-interview and the laboratory environment may be off-putting for some groups.

# Thank you

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If you want further information or would like to contact the author,

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