The collection of bio-markers: nurses, interviewers, or participants?

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A number of surveys include collection of bio-measures

- More detailed health data than other social studies
- More detailed social data than other health studies
  - Identify health effects of social and economic policy initiatives…
  - … and relationship of health on social and economic outcomes
- Substantially enhances interdisciplinary research possibilities
  - Health economics, epidemiology, behavioural science, health psychology, medical sociology
- Provide objective health measures in order to understand the interactions of individuals’ behaviour, well-being, health, and disease within social context.

(McFall et al, 2012)
Models of biosocial collection

Clinic-based

- Centralised or mobile
- Detailed and high quality measurements
- High level of time commitment, increased burden to attend – higher selection effects?
- Expensive

- E.g., The Irish Longitudinal Study on Aging (TILDA); National Study of Health and Development (1946 Birth Cohort); UK Biobank; Avon Longitudinal Study of Parents and Children (ALSPAC); Whitehall II
Models of biosocial collection

In-home collection by nurses

- Separate visit from interviewers – additional cost and potential for attrition between interview & nurse visit
- High quality measurements, but lower tech equipment (than clinic)
- Collected in participant’s home – lower burden, no travel time

- E.g., English Longitudinal Study of Ageing (ELSA); Health Survey for England (HSE), Understanding Society (Waves 2/3)
Models of biosocial collection

Biomeasures collected by interviewers

- Non-clinically trained interviewers – same visit, lower cost, less attrition, longer interview (increased burden)
- More limited set of measures – no whole blood sample

- E.g., Health and Retirement Study (HRS), National Social Life, Health, and Aging Project (NSHAP)
Biomeasures and social interview carried out by nurses

- Nurses as interviewers – same visit, lower cost, less attrition, longer interview (increased burden)
- High quality measurements, but lower tech equipment (than clinic), includes whole blood

- E.g., 1970 British Cohort Study (2016 sweep)
What have we used on *Understanding Society*? Nurse collection

- Nurse visit some months after annual interview at Wave 2
- Nurse collection of:
  - Physical measures (height, weight, waist circumference, percent body-fat)
  - Lung function
  - Blood pressure, pulse
  - Grip strength
  - Blood samples (inc. for DNA, epigenetics)
- Around 58% successful nurse assessment


https://www.understandingsociety.ac.uk/research/publications/520753
What have we tested on Understanding Society? Interviewer collection

- Small piloting/feasibility study of interviewer-led collection of biomarkers (“iBio”)
- Interviewers trained to collect:
  - Physical measures
  - Blood pressure
  - Grip strength
  - Saliva/dried blood spots

What have we used on *Understanding Society*? Nurse/Interviewer/Web

- Innovation Panel Wave 12 (IP12)
- Experiment with modes of biomeasure collection
  - Survey response?
  - Biomeasure take-up?
  - (Cost? Sample quality?)
IP12 basic design

Households randomly allocated:

- Nurse visit
  - Nurse contact household, conduct annual IP interview, collect biomeasures

- Interviewer visit
  - Interviewer contact household, conduct annual IP interview, collect *some* biomeasures, introduce self-collection kit

- Web interview
  - Adults invited to complete annual IP interview online, self-collection kit introduced and posted out after interview if permission given
**IP12 mixed mode design**

- **Nurse**: 96%
- **Interviewer**: 86%
- **Web**: 73%

Mode of interview:
- ![Web](white)
- ![Interviewer](blue)
- ![Nurse](green)

Mode of issue:
- Nurse
- Interviewer
- Web
Who collected what in IP12?

<table>
<thead>
<tr>
<th>Nurses</th>
<th>Interviewers</th>
<th>Web</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood pressure pre-interview</td>
<td>Blood pressure pre-interview</td>
<td>Blood pressure pre-interview</td>
</tr>
<tr>
<td>Self-reported height/weight</td>
<td>Self-reported height/weight</td>
<td>Self-reported height/weight</td>
</tr>
<tr>
<td>Height/weight</td>
<td>Height/weight</td>
<td>X</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>Blood pressure</td>
<td>X</td>
</tr>
<tr>
<td>Hair sample</td>
<td>Leave hair sample kit</td>
<td>Send hair sample kit</td>
</tr>
<tr>
<td>Dried Blood Spot sample</td>
<td>Leave DBS kit</td>
<td>Send DBS kit</td>
</tr>
<tr>
<td>Whole blood</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Understanding Society: The UK Household Longitudinal Study
https://www.understandingsociety.ac.uk/
Key difference in sample kit (hair, dried blood spot)

- **Nurse**
  - **Use** the kit to take the sample

- **Interviewers**
  - Introduce the kit during the interview, explain what it is for and what is required
  - “Are you happy for us to leave these kits with you?”
  - Kit **handed over** by interviewer at point-of-interview

- **Web**
  - On-screen, participant read information about the kit, link to FAQ
  - “Are you happy for us to send these kits to you?”
  - Kit **sent** to participant through post after interview
Main Research Questions

1. Is there a difference in response to the annual interview between nurses and interviewers (and web)?
   - Some evidence suggests that nurses may be less successful at gaining cooperation for social surveys than interviewers: lower response, slower progress (Brown, Gilbert, Calderwood, Taylor, Morgan, 2019)
No difference in household response for mode of issue

- Nurse: 60%
- Interviewer: 59%
- Web: 60%
Within responding households – no differences in adult response rates

80%  78%  79%
Nurse  Interviewer  Web

Understanding Society: The UK Household Longitudinal Study  https://www.understandingsociety.ac.uk/
Nurses make more calls than interviewers

- Interviewers: 6.5
- Nurses: 7.4
And these calls are on households that end up as productive – nurses working harder to achieve the same response.
Main Research Questions

1. Is there a difference in response to the annual interview between nurses and interviewers (and web)?
   - No
Main Research Questions

1. Is there a difference in response to the annual interview between nurses and interviewers (and web)?
   • No

2. Is there a difference in take-up of biomeasures between nurses, interviewers, and web?
During the interview, high rates of consent to DBS taken/kit handed over/kit sent

Mode of issue / Mode of interview

<table>
<thead>
<tr>
<th>Mode</th>
<th>Nurse</th>
<th>Interviewer</th>
<th>Web</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consent</td>
<td>85%</td>
<td>79%</td>
<td>65%</td>
</tr>
<tr>
<td>Taken/Kit</td>
<td>88%</td>
<td>78%</td>
<td>62%</td>
</tr>
</tbody>
</table>
But lower rates of return of kits for groups issued to interviewer & web

Mode of issue / Mode of interview

<table>
<thead>
<tr>
<th>Mode</th>
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<th>Interviewer</th>
<th>Web</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate of return</td>
<td>95%</td>
<td>56%</td>
<td>47%</td>
</tr>
<tr>
<td></td>
<td>97%</td>
<td>51%</td>
<td>51%</td>
</tr>
</tbody>
</table>
So overall, lower rates when participant is in charge of taking samples and returning them.
Main Research Questions

1. Is there a difference in response to the annual interview between nurses and interviewers (and web)?
   • No

2. Is there a difference in take-up of biomeasures between nurses, interviewers, and web?
   • Yes
   • Nurses > Interviewers > Web self-completion
Additional experiments: Blood pressure

- Try to encourage participants to get their blood pressure measured before interview
- Request in advance letter
- 3 random groups
  - Control: Request to get BP measured
  - Information: Request plus address of local venue for BP measurement
  - Pro-social: Request plus rationale in letter
    - “High blood pressure has been called the ‘silent killer’ with 1 in 10 people living with undiagnosed or untreated high blood pressure. Researchers would like to use Understanding Society to investigate the causes and consequences of high blood pressure, but the data would be much less useful if we were not able to get information about blood pressure from a whole range of people.”
Did information or pro-social nudge help?

No – and no effect within modes

<table>
<thead>
<tr>
<th>Control</th>
<th>Information</th>
<th>Pro-social</th>
</tr>
</thead>
<tbody>
<tr>
<td>39%</td>
<td>40%</td>
<td>38%</td>
</tr>
</tbody>
</table>
No significant difference by mode of allocation

Interviewer: 36%
Web: 42%
Nurse: 38%
But those who completed online were more likely to provide a pre-interview blood pressure
Additional experiments: Feedback

- Random half of households – participants offered feedback of blood / dried blood spot results
- Feedback mentioned in advance letter, information leaflets, consent documents, questionnaire text
Other experiments: Feedback

Effect of offering feedback on blood results on…

• Response to the survey
• Giving a blood sample
No effect of offering feedback on survey response

- Household:
  - Non feedback: 57%
  - Feedback: 60%

- Adult in prod. HH:
  - Non feedback: 81%
  - Feedback: 80%

Understanding Society: The UK Household Longitudinal Study
https://www.understandingsociety.ac.uk/
But feedback did increase the proportion who gave a blood sample

Controlling for participant characteristics, those offered feedback are 1.36 times as likely to give a blood sample (logistic OR)
Feedback had a greater effect for interviewers and web participants.

- Nurses: 76% (Non feedback) vs 78% (Feedback)
- Interviewers: 36% (Non feedback) vs 43% (Feedback)
- Web: 27% (Non feedback) vs 35% (Feedback)
Early look at costs – compared to interviewers (= 100)

Per completed interview

Interviewers: 100
Web: 63
Nurses: 140

Per returned DBS sample

Interviewers: 100
Web: 91
Nurses: 85

Understanding Society: The UK Household Longitudinal Study
https://www.understandingsociety.ac.uk/
Summary

- We were able to use nurses to carry out social interviews at the same level as interviewers.
- Interviewers were more effective at getting participants to accept kit to take samples than in a web self-completion mode – but nurses were most successful.
- Offering feedback for results was effective, especially in modes with a lower take-up rate.
- Nurses were the most expensive per interview, but in terms of returned bio-samples they had the highest success and so per sample were the cheapest.
Next steps…?

• Understanding Society COVID-19 Study, March 2021
• Web-only survey
• Asked people for consent to send blood sample kit to test for COVID-19 antibodies
• 78% take-up rate (62% among web at IP12)
• 69% return rate (51% among web at IP12)
• Increased salience of COVID-19?
• More familiarity with home-testing?
• Possible implementation on main Understanding Society in 2024?
Thank you

More information online:

- https://www.understandingsociety.ac.uk/
- https://www.understandingsociety.ac.uk/topic/biomarkers-genetics-and-epigenetics
- https://www.understandingsociety.ac.uk/documentation/health-assessment

IP12 data: Will be here soon!

- https://beta.ukdataservice.ac.uk/datacatalogue/studies/study?id=6849