Response latencies as indicators of survey data quality

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I’m going to begin this article by asking you to answer a survey question:

In the last 12 months, how often, if at all, have you visited a science museum?

• Once a month or more
• Several times in the past 12 months
• Once in the past 12 months
• Not in the past 12 months
• I have never visited a science museum

How long did it take you to choose an answer? You may have done it in a few seconds, or you might have taken a minute or more. Why does it matter? Well, survey methodologists are increasingly interested in how long it takes respondents to answer questions, so-called ‘response latencies’. This is primarily because response latencies have the potential to be used as an indicator of data quality, and also because they offer the potential to improve the cost-effectiveness of data collection. Time is money, and if we understand why some questions take longer to answer than others, it may be possible to reduce the length of interviews.

In cognitive psychology, response latencies have long been used as an indicator of attitude strength, with shorter latencies taken as indicative of more strongly held attitudes. For instance, a life-long fan of West Ham football club takes little time to respond to a question about her attitude to Tottenham Hotspur, because it is strong and readily accessible. However, if this same individual is asked to evaluate the government’s record on investment in ‘green technologies’, it may take considerably longer to formulate a response if she has not previously given the issue much thought. From this perspective, shorter response times are taken to indicate that an issue is salient to the respondent and that they have a strong attitude about it.

Alternatively, however, short latencies are argued to represent the amount of cognitive effort a respondent has expended in answering a question, with shorter response times indicating less effort and, therefore, a lower quality response. For example, if a respondent is asked a set of opinion questions using the same response scale, he might select the same answer to all questions, so-called ‘straight-lining’, rather than carefully thinking about each individual question and differentiating his answers accordingly. In both cases, the respondent has provided an answer that is acceptable in the context of the survey interview, but which is less accurate than it might have been had more cognitive effort been expended on the task.

Attitude strength and cognitive effort are both respondent-level influences, but another key driver of response latencies is the characteristics of the questions themselves. The number of words, complexity of language, orientation of response options, presence of interviewer instructions, and so on, all affect response latencies in rather obvious ways; longer, more complex questions generally take longer to answer. And, for face-to-face surveys, interviewers also seem to exert an influence on the time a respondent takes to answer questions. It is not entirely clear how this interviewer effect comes about. One theory is that the pace an interviewer reads questions signals to the respondent the speed that they are expected to produce their answers.

NCRM has been undertaking research into the joint influences of respondents, questions and interviewers on response latencies using wave 3 of Understanding Society. Response times for every question are recorded automatically from the key strokes of interviewers as they enter responses into their laptops. We have linked the latencies to the survey data and information about the characteristics of questions, and a separately conducted survey of interviewers who worked on Understanding Society at wave 3, to produce a data file with over 3 million individual records.

How might these results help us to improve survey practice? Well, one thing we can do with the results of our models is to use them to rank questions and interviewers according to the amount of influence they have on response times. The figure above shows an example of this sort of data visualisation, the black diamonds represent interviewers and are ranked according to the proportion of variability contributed to response times across all the questions they asked on the survey (the red horizontal line indicates the mean of these values across all interviewers). Although these values fall within a reasonably narrow range of low values, it is clear that some interviewers have substantially more influence on response times than others. This information can potentially be used to monitor interviewer performance or to identify problematic questions.

Patrick presented these findings at the NatCen-ESS ERIC-City methodology seminar series in London on 11 October.
Identity boxes: data collection through objects
Nicole Brown, University College London

As our understanding of research and data has changed, so have data collection methods. Consequently, qualitative researchers are actively seeking to expand traditional interview and survey techniques, looking to reduce the power differential between researcher and participant and getting closer to participants’ experiences and emotions. This was also the starting point for my development of identity boxes.

I explore identity under the influence of fibromyalgia. Fibromyalgia is a complex and contested condition that is characterised by widespread, persistent pain, fatigability, cognitive dysfunctions, sleep disturbances and psychological disorders. Typically, symptoms wax and wane, change and move within days, often within hours. Most fibromyalgia research relies heavily on interviews, questionnaires and surveys, and focuses mostly on the pain aspect of the condition. I wanted to explore fibromyalgia more holistically to account for and concentrate on the complexity and elusiveness of the fibromyalgia experience.

Language is often insufficient to adequately express sensations and feelings and human understanding is embodied and founded in metaphor. Therefore I developed a research approach that involved identity boxes.

Participants were asked questions and required to identify objects to show their identity. They then placed these objects into a box, took a photograph and emailed the photograph with a brief statement of what the objects were and what they stood for. Then the next question would be released. There were five questions:

1. Who are you?
2. What affects you?
3. How do others see you?
4. What role does fibromyalgia play?
5. What does life with fibromyalgia feel like?

I carried out preliminary analysis of the objects and emails to extrapolate key issues and questions, which were then discussed in a video interview by Skype. Through the work with the identity boxes, participants were effectively practicing the idea that they considered the entirety of their experiences, reduced to that a specific essential element, which they subsequently elaborated on and explained in the conversations.

The data generated through this process was immensely rich for three main reasons. Firstly, the tasks meant that participants were provided with specific tools for reflective practices. Even participants who would not usually keep journals or engage in regular reflective cycles and practices were able to deepen their thoughts and access their experiences, which went far beyond the superficial description. Secondly, the approach made use of creativity and playfulness within the research process. Consequently, this meant participants felt they were engaging in a creative, fun activity and so were keen to engage with the process without experiencing interview-fatigue. Thirdly, participants collected and collated personal items that were particularly meaningful and relevant to them, and were therefore emotionally more engaged. For example, in response to the question “Who are you?” one participant added one gardening glove into the box. In her email she stated briefly that she saw herself as a gardener, as she enjoyed gardening and working outdoors. However, she had only added one glove, because she did not consider herself very good at it, as her condition made certain work unbearably painful and difficult for her.

Research work with objects and metaphors for elicitation purposes is not new and its effectiveness is well documented. My innovation came in that I did not interpret the objects as a ‘way in’ to the mind and thoughts of participants, or as stimuli for conversations. For me, the objects themselves counted and counted as data. There is something to be said about the meaning of the objects, of how participants organised their boxes and of how and where they placed their objects. The image is a good example, as the participant separated the objects as the participant counted the objects. The image is a good example, as the participant separated the objects as the participant counted the objects. The image is a good example, as the participant separated the objects as the participant counted the objects.

It seems that everywhere we look, researchers are applying machine learning (ML) and artificial intelligence (AI) to new fields. Can what we do, as researchers, is there is a potential for software to help a researcher in coding qualitative data and understanding emerging themes and trends from complex datasets?

Firstly, why would we want to do this? The power of qualitative research comes from uncovering the unspoken questions and complex issues that defy easy questions and answers. Quantitative research methods typically struggle with the richness of data and that only qualitative approaches are essentially quantitative methods of qualitative data. However, while qualitative machines may not be ready to take the place of a researcher in setting research questions and evaluating complex answers, there are areas that could benefit from a more automated approach. Qualitative analysis is time consuming and hence costly, greatly limiting where it is utilised. Training a computer system to act as a guide for a qualitative researcher wading through large, long and longitudinal qualitative datasets could open many doors.

Few qualitative research projects have a second coder to independently read analyses and check interpretations, but an automated tool could perform this function, giving some level of assurance and suggesting quotes or topics that might have been overlooked.

Qualitative researchers could use larger data sources if a tool could speed up the work. While in qualitative research we are often focusing on the small, often this means focusing on a narrow population group or geographical area. With faster coding tools, we could design research using the same resources that includes more diverse populations, showing relevant and trends are. It could also facilitate secondary analysis: qualitative research generates huge amounts of detail that is typically only used to answer one set of research questions. ML tools could help explore existing qualitative data and view new research questions, getting increased value from archived and/or multiple sets of data.

I'm also excited about the potential for including wider sources of qualitative data in research projects. While most researchers go straight to interviews or focus groups with respondents, analysing policy or media on the subject would help understand the culture and context of a research issue.

With an interdisciplinary team from the University of Edinburgh, we experimented with current ML tools to see how feasible these approaches are. We used publicly available datasets with conventional ‘off-the-shelf’ Natural Language Processing (NLP) tools to try and ‘understand’ the researcher and to automate coding processes while maintaining the integrity of the data. We first appeared as ‘sloppy study looking at care and intimacy’. The project was part funded by the Scottish Digital Health & Care Institute.

References
Researching ageing: methodological opportunities and challenges

Elisabeth Schrider-Butterfitt from the Centre for Research in Ageing at the University of Southampton will introduce the important things to consider when undertaking overseas research with older populations, including ethical, cultural and practical issues. Her recent projects include working with older Transylvanian Saxons in Romania, as well as working with older populations in Indonesia.

In the afternoon Kritika Samtani, Research Fellow at King’s College London, will introduce the important aspects of this work. Kritika has over 10 years’ experience of undertaking qualitative research with older adults with dementia, and her current project looks at what might be the optimal time for a person with dementia to move into a care home.

I will then discuss the final topic which is the consideration researchers should have when using secondary data analysis for researching older adults. This includes the varied places that quantitative and qualitative data can be found and questions to ask, particularly regarding sampling, before starting your analysis.

For information on future gerontology courses, check the NCRM training database at www.ncrm.ac.uk/training

You can read a discussion paper on innovative approaches to methods challenges facing ageing cohort studies at http://eprints.ncrm.ac.uk/3075/


3. Ageing & Society https://www.cambridge.org/core/journals/ageing-and-society


Gerontology is the study of ageing across the life course, and is a large and varied area of research, spanning many disciplines. In 2014, the median age of the UK population exceeded 40 for the first time1. The UK population is ageing, that is, the proportion of older people is increasing relative to younger people, driven by both falling fertility rates and falling mortality rates, particularly in the over 65s2.

Policy makers are looking at areas that are likely to be significantly affected by population ageing and increasing life expectancy into the oldest ages. These include older workers, lifelong learning, housing, the role and shape of families, health and social care and the role of technologies and transport3. Gerontology as a research area has a huge amount to contribute to these policy areas and much more.

The diversity of gerontology can be seen by taking a look at the most recent issues of the journal of Ageing & Society4 and the journal of social trust and wellbeing among older adults. There are some groups of older adults who are often excluded from research, for example those with dementia, those who have multiple health conditions, those who live in a care home and those simply considered frail. These groups are often not eligible, or not able, to take part in projects aimed at the general population (e.g. many household surveys). There exists a gap in methods training for undertaking research with, and for, these groups of older adults, where additional methodological consideration is required, be that in how groups are sampled and accessed, how data is collected or how it is analysed.

To address this gap in standard methods training, NCRM is running a training event entitled ‘Researching ageing: key issues for research methods in gerontology’, to consider a selection of methodological issues that most commonly arise when undertaking research with older adults.

These are:

• Research with older adults living in a care home
• Overseas research with older adults
• Ethical research with older adults with dementia
• Considerations in using secondary data analysis for researching older adults

I will be leading the course at the University of Southampton on the 5th November. I shall start by outlining the key practical and ethical issues involved in undertaking data collection and analysis in care homes for older adults. This is based on my experience working on a number of care homes research projects and a report I led whereby my co-authors and I asked care homes researchers to give us more details as to what worked and did not work in their research5.

It is not always possible to collect quantitative data to estimate a wide variety of population parameters. There may be logistical, ethical or physical barriers that prevent data collection. Therefore, there are often gaps in quantitative models that need to be filled in other ways. Frequently, we turn to scientific and expert knowledge to fill these gaps, and this is often done in an ad-hoc manner, relying on gut feeling whilst disregarding the well-known issues of biases in judgements and the limitations of making a single best guess.

From the 6-7th December in Leeds, I will be running a course on ‘Expert elicitation techniques for social scientists’. In this course, we will introduce participants to a more formal process for capturing expert knowledge and translating it into something that will be useful in subsequent quantitative analyses. The goal of expert elicitation techniques is to make assumptions behind judgements explicit, and to standardise the process involved in gathering associated qualitative and quantitative evidence. Here, well-designed protocols have been established that help us to capture expert knowledge and convert it into probability distributions in a transparent manner. The protocols for expert elicitation have been designed with the aim of reducing the impact of the biases and heuristics of human judgement.

Interest in expert elicitation has been growing in recent years, as quantitative research in different fields embraces more probabilistic analyses and Bayesian methods. Gaps in quantitative models can be filled in a rigorous and transparent manner, even when data collection processes are not possible or are too costly. Although it is not a full replacement for a well-designed study, it can help us understand where uncertainties are now according to current scientific understanding, and where future data collection will be most effective.

These methods have a history of use in climate change, safety risk assessments and health economics. There is, however, an untapped potential for these techniques to be more widely used in other disciplines of the social sciences – where data quality is not always optimal, and quantitative models can be improved using sensitivity analyses adjusting for widespread and pervasive issues such as measurement error and missing data.

Over the past decade, efforts have been made to standardise and formalise the procedures.

For more information on the course, visit the NCRM website at www.ncrm.ac.uk.
Show me the data: research reproducibility in qualitative research
Louis Corri, UK Data Archive

In quantitative methods, reproducibility is held as the gold standard for demonstrating research integrity. But threats to scientific integrity, such as fabrication of data and results, have led to some journals requiring data, syntax and prior registration of hypotheses to be made available as part of peer-review. While qualitative research reproducibility has been questioned in the past, it has been protected from the recent transparency agenda. What if journals mandated the sharing of data and analysis for qualitative research?

These issues were addressed at a session I ran at this year’s NCRM Research Methods Festival, where a panel of speakers debated whether there was indeed a ‘crisis’ and what ‘reproducibility’ approaches and standards might look like for qualitative research. The speakers took various positions, showing how qualitative researchers might respond creatively to a reproducibility crisis, how various ‘crises’ surrounding transparency in qualitative research have emerged and how data sharing might help mitigate this (Sarah Nettleton); practical strategies for teaching replication in the qualitative tradition in the classroom (Nicole Janz); and practical examples of what reproducibility might look like, based on existing archived data collections (Maureen Haaker).

Is there a crisis? We can observe the increasing drive for openness and sharing of value and transparency in our daily lives, be it in data science, open access, or public participation in research. But qualitative research tends to be more challenging, as it relies on iterative processes of data collection and analysis. In contrast, the idea of production transparency (the elucidating conditions of production) is a core aspect of qualitative research.

The DA-RT initiative helpfully identifies data, analytic and production transparency in research as different entities. Given that much fieldwork is impossible to fully replicate, the idea of production transparency (the elucidating methods used to collect data) is likely to be more appealing to the qualitative researcher. The DA-RT initiative seeks to extend their reproducibility agenda to qualitative research, which could be useful specifically here. Putting aside ethical issues that can arise in sharing data, we can think about what kinds of documentation and materials might help us.

It is also useful to consider the spectrum of immersivity in qualitative research — e.g. from passive observation to participatory research or ethnography — which likely require different layers of description. Examples of supporting materials from archival research datasets that might help us include data breakdowns, a list of data categories, and methodology descriptions. This is exactly what the UK Data Service data catalogue is for. Data papers such as the Open Heath Data further provide a valuable outlet for describing the rationale and methods that created a published dataset.

Nettleton recounts her experiences of archiving data from a previous study. She expressed her surprise that these data have been used for teaching medical students as well as research. While she had agonised over the appropriate level of anonymity at the time of depositing data, she reflected that it was a helpful experience for her. Yet archiving data cannot and should not be done in response to the transparency crisis, this could undermine trust, reinforce naïve empiricism and undermine the intellectual foundations of qualitative research. Future journal policies should appreciate that presenting context needs to be rigorous, yet not prescriptive, and be sufficiently nuanced to allow for the flexibility and messiness of qualitative research.

With the spectre of essay mills and cheating looming, providing early guidance for students on the importance of academic rigour and integrity is vital. At RMF, we launched A Data Management Plan (DMP) and a DMP Toolkit to help researchers frame their data management plan. To provide some context, I am grateful to one of the collaborators on this work, Louise Corti, for her generous help. The toolkit is meant to be prescriptive, and be sufficiently nuanced to allow for the diversity of qualitative research.

Overcoming inequalities in schools and learning communities is a current concern for many countries. Doing this through research requires a methodological approach oriented not only to describe and explain reality, but to look for solutions to the challenges that systematic underrepresented populations face in their daily lives. Aligned to the transformative paradigm, Communicative Methodology (CM) uses dialogue as a tool to produce socially relevant knowledge oriented to transform the reality studied. The premise of the CM is that scientific knowledge is constructed dialogically, engaging transformative dialogues between researchers, who contribute with the research-based knowledge, and the participants, who bring their ‘lifeworlds’ into the creation of new knowledge. This aligns with the current global debate of co-creation in social sciences research. Hence, CM is a methodological response to the dialogic turn of societies and sciences.

CM is orientated to transform situations of inequality, aiming at achieving scientific, political and social gains, and engaging in a continuous egalitarian and intercultural dialogue between researchers and the participants. This egalitarian dialogue starts at the very beginning of the research process and continues throughout, including through the analysis and the dissemination of findings. It is oriented to and responds to the demand for co-creation, based in a dual conception of society (Habermas) and in a dialogical understanding of human beings as transformative agents oriented to action (Freire). With the purpose to achieve socially relevant results for the beneficiaries and communities, the research ‘on’ vulnerable populations to doing research ‘with’ and ‘for’ them.

A communicative organisation of the research implies creating spaces of egalitarian dialogue among all potential participants. The main purpose is contrasting the research-based knowledge with the everyday knowledge of the participants. A powerful resource is the ability to communicate in the same language. In the case of professional panels of experts, the committee is formed of representatives of all people participating in the research. Working with vulnerable groups requires the participation of the very representatives of these groups. For example, when doing research with Roma people, a social worker who has a long experience with the Roma population does not really represent the most vulnerable people in that group. The advisory committee guarantees the inclusion of the voices of those who suffered those inequalities and who fight to transform their reality. This committee discusses the contributions (i.e. documents, materials, etc.) and results obtained in the project. Hence, it validates the research production through an egalitarian and intercultural dialogue among all participants. Working in this way, the research results are orientated towards the transformation or improvement of living conditions of the most vulnerable groups.

When applying communicative data collection techniques, such as daily life stories, communicative focus groups, and communicative observations, the data collection involves a dialogical process during the fieldwork and the data interpretation. It implies the reality of the participants is constructed by combining the main theoretical background and the practical vision of the participants simultaneously. In that way, the role of the researcher is to incorporate the main theoretical advancements into the dialogue with the participants who stand on an equal footing. All participants are treated equally, sharing global feelings, opinions and different visions, obtaining a dialogical interpretation of reality instead of a descriptive one. The final interpretation is always in the hands of both the researcher and the participants, overcoming interpretative hierarchies from a communicative rationality. The communicative analysis has a toolset design: on the one hand, it includes an ‘exclusionary dimension’ to identify barriers and problems which causes the situation of inequality; and on the other hand, it has a ‘transformative dimension’ to envision possible ways to overcome these. Therefore, it allows the involved parties to find pathways to overcome the obstacles with their own hands through the egalitarian dialogue between researchers and participants.

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References

The Communicative Methodology (CM) will be presented at two international conferences in 2019. Altor is the keynote speaker at the Fifteenth International Congress of Qualitative Inquiry (15-18 May 2019). https://oqj.org/home/plenaries/.


Many research results obtained through the application of CM have tuned into recommendations for effective educational practices internationally. Moreover, educational and social policies and, most importantly, the lives of participants have been transformed through the CM, raising social and policy impact through research. For more information about this approach see: 1.

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NCRM Training and Events 2018 – 2019

Qualitative research for quantitative researchers
21st November, Edinburgh
Graham Crow and Kate Orton-Johnson

Advanced participatory gathering using Ketso
22nd November, Manchester
Joanne Tippett

Expert elicitation techniques for social scientists
6–7 December, Leeds
John Gosling & Jose Pina-Sanchez

Quant for qual researchers
8–10 January 2019, Cardiff
Luke Sloan & Malcolm Williams

Understanding small areas: spatial analysis of population and neighbourhood data
7–8 February 2019, Manchester
Alan Smith & Andy Newing

How to write your methodology chapter
26 February 2019, Southampton
Patrick Brindle

Spatial interaction modelling
28–29 March 2019, London
Andy Newing & Adam Dennett

Using creative research methods
3 April 2019, Cardiff
Helen Kara

ABOUT NCRM

The ESRC National Centre for Research Methods (NCRM) was established in 2004 as part of the Economic and Social Research Council’s (ESRC) strategy to improve the standards of research methods across the UK social science community.

NCRM acts as a strategic focal point for developments in research, training and capacity building related to research methods, cutting across social science disciplines.

NCRM brings together researchers from across the UK and internationally with a wide range of research methods expertise, at the frontiers of developments in research methodology.

NCRM disseminates innovations and developments in research methods through training courses and events and through other direct engagement with researchers, but also by cooperating with other organisations and initiatives with an interest in social science research methods.

For more information about NCRM and its activities please see our website www.ncrm.ac.uk

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