



## Mixed or Muddled? Combining Survey Modes in The 21st Century

Peter Lynn  
Institute for Social and Economic Research  
University of Essex

An initiative by the Economic and Social Research Council, with scientific leadership by the Institute for Social and Economic Research, University of Essex, and survey delivery by the National Centre for Social Research.

## Some History

- Sinclair, 1788: Mail Survey, Proxy
- Booth, 1866: Interview Survey, Proxy
- Rowntree, 1901: Personal Interview
- Bowley, 1912: Probability Sampling, Non-Response
- 1920s to 1950s: Mail and F2F
- 1966: First Nat. Telephone Interviewing Facility in USA
- 1971: CATI in USA (1981 in Europe)
- 1982: CAPI tests at Stats Sweden

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- 1987: CAPI (Dutch Labour Force Survey)
- 1980s: email surveys, disk-by-mail (CSAQ)
- 1990s: CASI and web
- 1990s-2000s: Mobile Phones

de Heer et al (1999); Couper & Nicholls (1998); Tucker & Lepkowski (2008);  
Kuusela et al (2008)

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## Changing Technology

- Telephones
- Mobile phones
- Computers
- Mobile Computers
- Home Computers
- Internet

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## Changing Constraints

- Literacy
- Coverage (Telephone, mobile phone, home computer, internet)
- Costs

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## Growing Methodological Knowledge

- Privacy (Accuracy – Honesty – Social Desirability)
- Interviewer Control ((Assumed) Accuracy)
- Technological Control
- Visual Display

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## Survey Processes

- Sampling
- Location
- Contact
- Persuasion/ Reminding
- Communicating Tasks:
  - Questions
  - Response Options
- Receiving Responses
- Processing Responses / Data

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## Combining Modes

- Different modes for different tasks:
  - e.g. Mail for prenotification; FtF for data collection; telephone for reminders; etc
- Different modes for same task:
  - e.g. Contact by phone / FtF
  - Risk of differential error
  - e.g. non-response error

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## Combining Modes

- Multi-mode vs. mixed modes.
- **Multi-mode**: different modes for different sets of survey items, but each survey item is collected by the same mode for all sample members.
- **Mixed mode**: the same item might be collected by different modes for different sample members

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## Modes / Methods

- A 'mode' is defined by the **channel(s) of communication** used to perform a particular survey task
- Channels:
  - Oral/ aural or visual
  - Computerised or paper
  - Interviewer present or not
- And context is relevant:
  - Degree of privacy, etc

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## Survey Method

- Is more than a simple "mode". It is typically a complex combination of modes of communication used in different ways for different tasks.
- Even for a single survey question, several combinations of modes are possible.

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## Examples of Mode for a Survey Question I: Interviewer Present

Question	Response Options	Response	Description
Aural	Aural	Oral	FTF (no card)
Aural	Visual	Oral	FTF (card)
Visual (CAI)	Visual (CAI)	Written (CAI)	CASI
Visual (paper)	Visual (paper)	Written (paper)	SAQ in-int'w
Aural (CAI)	Aural (CAI)	Written (CAI)	ACASI
Aural (CAI)	Visual (CAI)	Written (CAI)	ACASI

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## Examples of Mode for a Survey Question II: Interviewer on Phone

Question	Response Options	Response	Description
Aural	Aural	Oral	Telephone
Aural	Aural	Written (CAI)	TDE
Aural	Visual	Oral	T'phone w cards
Aural (rec)	Aural (rec)	Oral (CAI)	IVR

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## Examples of Mode for a Survey Question III: No Interviewer

Question	Response Options	Response	Description
Visual (paper)	Visual (paper)	Written (paper)	SAQ (e.g. mail)
Visual (CAI)	Visual (CAI)	Written (CAI)	Web / email
Aur & Vis (CAI)	Aur & Vis (CAI)	Written (CAI)	A-Web

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## Differences in Interviewer Presence

- Ability to build rapport / trust
- Perceived privacy
- Social norms
- Control of pace of interview
- Control (and knowledge) of response-generation process
- Nuances that are only possible in verbal communication (emphasis, tone, accent, pronunciation)
- Use of non-verbal communication
- Respondent multi-tasking
- Response environment (presence of others)

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## Why So Many Modes?

Big Differences in Key Dimensions:

- Cost
- Error
- Type of questions that can be asked
- Number of questions that can be asked

(See Groves et al 2004)

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## The Task (Question)

Relevant Dimensions include:

- Difficulty (of comprehension, of retrieval, of judgment)
- Sensitivity (embarrassment, emotion, sanction, ...)
- Salience

(Mode studies skewed towards sensitive items and those for which recall or judgment perceived to be difficult)

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## Observational Errors

Error is estimate-specific

$$\begin{aligned} \text{MSE}(y) &= E(y - Y)^2 \\ &= \text{Var}(y) + \text{Bias}^2(y) \end{aligned}$$

- Particular concern with bias
- Comparisons: Particular concern if different modes used for the groups being compared, e.g. surveys, survey rounds, sub-samples, etc.

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## Recent Trends

Increasing pressures to change modes or, particularly, to mix modes

- Due to changing cost ratios
- Due to changing non-response characteristics
- Due to desire to exploit technology

Consequences both good and bad

Good: More interest, awareness and methodological research

Bad: Potential for serious error and incoherent and incomparable survey data

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## Causality

Need to better understand causal mechanisms:

- As for substantive research, so for methodological research  
Aim should be to better inform how, when and why to mix / choose modes

Requires development and testing of behavioural theory

- Desire for generalisability / portability of knowledge

Survey measurement is a key arena for this activity (but also coverage, non-response)

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## Conceptual Framework for Mode Differences in Measurement

- (Jäckle, Roberts & Lynn, 2008)
- Start from model of question response process (Tourangeau *et al*): Comprehension – Retrieval - Judgement – Response;
- Identify how respondent behaviour may influence each of these stages;
- Consider factors which may influence these behaviours;
- And survey design features which may influence those factors
- Focus should be on how modes differ in terms of these features

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## Causes of Mode Effects on Measurement I

Respondent behaviours:

- Shortcutting (can affect comprehension, retrieval, judgment, response)
- Social desirability bias (can affect response)
- Shortcutting: can be affected by task difficulty, respondent motivation and respondent ability
- Social desirability bias: can be affected by perceived privacy and legitimacy

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## Causes of Mode Effects on Measurement II

Task difficulty: can be affected by stimulus (e.g. visual vs. aural; interviewer probing/clarification vs. online help vs. none; etc)

Respondent motivation: can be affected by interviewer presence, via pace of interview, non-verbal communication, multi-tasking

Respondent ability: cannot be affected by dimensions of mode

Perceived privacy and legitimacy: can be affected by interviewer presence/ behaviour (anonymity vs. rapport & trust)

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## Causal Mechanisms

Clearer theory of transmission mechanisms may help us to design more useful methodological studies

(contrast with Holbrook *et al* 2003)

May lead us to greater understanding

May also help us to integrate existing literature, e.g. satisficing literature, respondent recall literature, empirical mode comparisons literature

Possibly some reappraisal of practice

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## Empirical Evidence

Studies should be designed to isolate specific factors of interest (dimensions of communication; aspects of tasks; interactions with respondent characteristics) – theory-led

Studies should document all relevant features (considerable problem with existing literature)

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## Mixed Modes

Most of the discussion above applies to consideration of multi-mode data collection or alternative uni-mode designs

Mixed mode data collection has additional considerations, whether design is sequential or concurrent:

Error in any estimate is determined by:

- Characteristics of sample members who respond in each mode
- Measurement characteristics of each mode amongst the people who respond in that mode

'Mode studies' must take this into account (associations between  $x$  and mode; interactions of  $x$  with association between mode and measurement error)

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## Aiming to be mixed rather than muddled

- **Conceptual clarity:** tasks, channels of communication, contexts
- **Empirical clarity:** well-designed experiments; clear documentation
- **Causal clarity:** development and testing of theory
  - Including interactions between task characteristics and effects (on measurement of channels of communication and context)
- Dealing properly with mixed mode designs
- Context: differences in systematic measurement error relative to other survey error sources

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