

Technical note: errors and bias in surveys

Special focus on surveys involving children

Biases are cause of errors and will have an incidence over **quality** and **validity** of results. Bias introduces **systematic error** into the research design or analysis, rendering outcomes **unreliable or meaningless**. Survey research includes a spectrum of different types of bias, including researcher (or enumerator bias, survey bias, respondent bias, and nonresponse bias...).

Bias **can be intentional**, but often it is not. As it is systematic, it is **predictable...**

Types of bias

How to mitigate risks

1 Enumerator induced bias and errors (measurement bias or distortion)

- ✗ **Desire to help** the respondent: expression of empathy.
- ✗ **Reactions to responses:** 'surprise' or 'disbelief', that may easily bias the respondent's subsequent answers.
- ✗ **Failure to follow instructions** in administering the questions: **changing the wording** of a question or **emphasizing** a certain part, (Enunciating choice when they shouldn't); **Skipping** questions; Inappropriate **re-wording**; **Recording errors**; **Bad Translation "on the spot"**.
- ✗ **Posture and elite-bias** (social class, function, ethical group, gender), which will influence answers.

- ✓ Work on **attitude**: **neutral** posture, following instructions and respond with a uniform polite interest only.
- ✓ **Instrument**: **Un-ambiguous questionnaire** with **clear instructions, two-way translation**. Only include **necessary questions**!
- ✓ **Supervision** mechanism
- ✓ **Good planning and time management** – realistic sampling considering context, good treatment and motivation for enumerators. Team spirit.
- ✓ **Preparation**: **Testing** through role plays, **practice**, demonstrations of **effective interview techniques** should be done, especially focusing on how to properly execute prompting for responses and questions where prompting is not allowed.
- ✓ **Enumerators team selection, composition**

2 Respondent induced bias

- ✗ **Social desirability bias** – the tendency to present ourselves favorably or as socially acceptable fear to be impolite or offend, tendency to please and respond "yes", or to avoid saying "I do not know".

- Instrument**: **Un-ambiguous questionnaire**
- ✓ **non leading questions**
- ✓ Include some **open ended questions** or semi-structured
- ✓ **Avoid intrusive** questions
- ✓ Include "other", does not want to answer, cannot answer, or do not know
- ✓ **Avoid** using too much **repetitive scales and answer choices categories**
- ✓ Environment ensuring privacy, **confidentiality** → conducive to free talk

Types of bias

- ✗ **Cognitive:** **Recall errors** (dates, events, rounding up/down), **taboos**. Tendency to **choose first or last option, fatigue, misinterpretation** of the question, **HALO effect**: a series of question on a topic could influence next ones: a first question would have created a certain feeling or a certain answer logic.

How to mitigate risks

Instrument

- ✓ **Explain purpose** of survey, that there is **no right and wrong answers**.
- ✓ Use short and clearly defined **reference periods**
- ✓ **Not too long** questionnaires (very max: 50 minutes, less for children)
- ✓ Carefully check **order of questions**
- ✓ **Limit choice** to 5-6 (3 for children)
- ✓ Think well about your **choice categories!**
- ✓ **Test, review**, test, review again

- ✗ **Assumptions** – that allocation of relief will be guided by relative severity, → **Inference** exaggerations will improve their chances of getting increasing support.

- ✓ **Posture** Think in **recruiting external enumerators**
- ✓ **Triangulate sources**

But always explain surveys' objectives

3 Sampling problems (selection) *It is randomized sampling if "Every member of the population has an equal chance to be selected for the survey"*

- ✗ Degree of **Accuracy choice** and **methodology** chosen: stratified? cluster? or not?
- ✗ **Inaccurate background information** (list of villages or communities, population numbers)
- ✗ Under-coverage, insufficient random sampling size → no statistically valid generalisation possible; **No true representation**: No access to certain populations (log, social, time, security), certain portions of population left out of the survey
- ✗ Over-reliance on availability or "**convenience samples**" in small n-studies
- ✗ "**Voluntary**" response samples (you target and reach only the "enthusiastic")
- ✗ **Non response** (refuse to cooperate)
- ✗ **Shortcuts** (or lack of experience) → failure to respect sampling method.

- ✓ Increase sampling size to reduce sampling error
→ but caution: this is additional cost and time!
Consider review accuracy %
- ✓ Good sampling design → cluster
- ✓ If you realize that portion of a population is not responding, you could re-sample, **small SRS** to fill the gap
- ✓ Use **national census data** and projections
- ✓ **Record refusals**, use coding to adjust for errors in the survey
- ✓ **Practice** random sampling in the field beforehand!
- ✓ Have **clear logistical plan** for each day
- ✓ Quick **debrief every day** and quality control – sharing questions and clarification to all the group
- ✓ If not MDC → **Initiate data entry** after the first day of data collection!
If MDC → review answers on ongoing basis
- ✓ Ensure as much **privacy and comfort** as possible during interviews

Errors will always occur in data collection. Deal with errors in the data in a **systematic and clear manner**:

- ✓ Collect **extra questionnaires** so that sample size remains big enough to give statistically significant analysis, even if you have some null values or questionnaires that have to be discarded.
- ✓ Develop a **coding system** for the database to deal with null or unclear responses.
- ✓ Explain clearly in your reporting how you have **handled questionable data and responses**.

ACF Learning document KAP survey failures

Ask yourself and **think about your own potential bias** during design and analysis which would impact on reliability and validity of findings: **are you expecting a certain result from the survey?**

See following analysis bias

Preventing gender bias

Gender bias will cause a misleading picture of what is happening (present certain types of perspective and worldview). Gender disaggregation is not enough!

- ✓ Ensure that enumerators teams comprise women and men to ensure access to women and free talk
- ✓ If survey with key informants: ensure that you include women knowledgeable of their community, the needs of children, youth, elders and other women, from different socio-cultural-economic groups
- ✓ Include in the enumerator's training a session about gender bias
- ✓ Review your questionnaire from a gender perspective. Or ask a gender expert to do so!

4 Analysis bias

- ✗ **Confirmation bias** – relying only on information that corroborates our point of view and confirms our hypotheses.
- ✗ **Anchoring** – relying too much on the first piece of information obtained
- ✗ **Mirror imaging** – Assuming that, in a similar situation, the people studied would think or act the same as us
- ✗ **Group thinking** – Tendency to choose/adapt views held by the majority in the group
- ✗ **Hindsight** – Tendency to see an event as predictable after it occurred, despite not having any objective basis for a prediction
- ✗ **Framing** – Tendency to react to a specific issue/choice in different ways depending on how the issue/choice is presented

These are some of the main types of cognitive biases in analysis, but many more exist.

- ✓ Check if **enough information** has been collected in order to perform the analysis
- ✓ **Triangulate** the information with other **independent sources**
- ✓ Try to find instances that deny/invalidate the claims (try to **disproof hypotheses** instead of proving them)
- ✓ Ensure that **incoherent, ambiguous, and incomplete information** are accounted for and define how to deal with them
- ✓ **Compare** all possible alternative hypotheses and weigh them against the evidence obtained

Instrument – bias mitigation

Tips	Counter examples
<ul style="list-style-type: none">➤ Limit your question to one idea, do not merge two ideas.	<ul style="list-style-type: none">✗ How satisfied or unsatisfied are you with the service provided in center X and with assistance Z?✗ Please rate your perception of changes in your connections and engagement in promoting quality child protection services or policies compared to 2015?✗ How are managed exploitation, abuse, trafficking and violence against children on the move in your locality?✗ What is the tendency of social or family violence over children since 2014?✗ Since then, are children more exposed to violence from the side of families and society?✗ Should school days be shorter and start earlier?✗ If you saw or heard of a child being abused in their home, do you know where to report the case and would you report it? → 2 questions:<ul style="list-style-type: none">– Do you know where you can report a case of child abuse? (yes or no answer categories)– If you were aware that a child was being abused in their home, what would you do? (provide multiple choice answers)
<ul style="list-style-type: none">➤ Avoid negative questions or double negations.	<ul style="list-style-type: none">✗ Don't you think that we shouldn't...?✗ Do you not disagree with?
<ul style="list-style-type: none">➤ Ensure that the words used are straightforward: not ambiguous, easy to understand, avoid technical terms and acronyms,➤ Does not use vaguely defined words. Quantifying adjectives (e.g., most, least, majority). It is important to understand that these adjectives mean different short sentences meant to be pronounced orally things to different people. Be Specific.➤ Consider cultural interpretation of words	<ul style="list-style-type: none">✗ Do you know about CPMS?✗ What do you think about the "on the move" approach?✗ Have you already faced protection issues?✗ What are the difficulties that you are facing in child protection.✗ To your knowledge, how many children are unaccompanied in the area.✗ When do you wash your hands?✗ Are there children with special needs here in the site?✗ Are there any children in this area who have been or are committing acts of violence?✗ Do any children in your care work? <p>Words such as 'violence' and 'bad treatment' ('abuse' in the school version) are subject to cultural biases that could influence how the questions were understood.</p>
<ul style="list-style-type: none">➤ In the same line, avoid generalization and absolute	<ul style="list-style-type: none">✗ Do you always wash your hands before cooking?✗ Can you estimate the number of deaths and serious injuries to children due to any and all of the above causes? → (no ref. When, where)?✗ Are there any children in this area who have been or are committing acts of violence?✗ Have your children experienced violence in the past? (then) What did you do? (then) If you didn't do anything, why?
<ul style="list-style-type: none">➤ No "inductive question" – loaded questions. (be careful with Adjective!)	<ul style="list-style-type: none">✗ How much are you interested in the issues of children in the move? Justify your answer?✗ What are the protection needs in terms of accompaniment of children in the move?✗ Generally, it is recommended for women to breastfeed their child until X. Until when did you...✗ Don't you agree that...?✗ Over the last few weeks, have you noticed your children expressing abnormal extreme emotional distress (in a refugee camp, during need assessment).

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- **Neutral terms**, no pejoratives, gender and age neutral,
 - **No threatening, no taboo questions**, too sensitive or too intimate.
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- Multiple choice :
 - ensure that **categories are mutually exclusive** (no overlapping) and that, when required, **several options are possible**. No ambiguity!
 - Ensure that you **do not forget important choices**.
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- After a “*what is your opinion about X*”... “**justify you answer**”. Here, the justify you answer is a bit too direct in certain context.
 - Questions about sexual abuse, or mistreatment within the family.
- What are, the main causes of diarrhea that you know? (it was forgotten to mention that several options are possible → analysis impossible)
 - How often do you clean the water container before collecting the water? (several options possible) Every time it is used / Every day / Every three days / Whenever it looks dirty / Once a week / Once a month
 - What are the items that you would need the most: (shoes, house equipment, beds, clothes, cooking material, hygiene kits)
 - Please rate your experience of the webinars sponsored by X on the following dimensions:
High Quality – Above Average – Below Average – Low quality – Did not participate

- **For measuring behaviors and attitudes, or complex matters, Test reliability** using 2 different questions measuring the same constructs within one questionnaire → answer will be similar in valid questionnaire. (AB testing)
 - For a question about a behavior or attitude, if you use a introduction in order to depersonalize the issues, you may help in making a sensitive question less threatening. But no recipe!
 - ✗ Do you hit your child when he/she behaves badly?
 - ? Many people do resort to physical punishment to discipline their children; do you punish physically your child (hit or bunch) your child when he/she does not obey you?
 - ✓ How do you discipline your child when he/she does not behave well? (do not mention answer categories)
- Use good judgment – evaluate according to context and culture!**

On the questionnaire structure

- Start from **general** questions → go to more specific ones. **Leave the sensitive questions for the end**.
- Most **important** questions **in the beginning**, except **most sensitive** questions to move **to the end**.
- KAP: question on **behaviors** (what people do) **before** questions on **attitudes** (how people feel).
- Sometimes it is possible to **use an open question before prompted, closed or multiple choice questions** in order to keep the interest of the interviewee high cross check and validate. → Example: “*What do you think about the security in this area?*”, followed by “*Thanks. Based on what you have just said, would you say security is good, bad,...?*”
- Use **transition statements** to move from a topic to another, to break monotony.
- **HALO effect**: series of question on a topic could influence next ones: a first question would have created a certain feeling or a certain answer logic → **Avoid repetitive scales and answer categories**.
- “**Re-ask**” question in the end if misunderstanding. (To be considered). **Or control questions**: ask again a question but different way in different moment (family composition and members) – If MDC: include check questions is easy and real advantage to prevent mistakes!

Survey involving children – specific methodological and ethical considerations

The way children understand, recall and communicate is still in development. Special care should be given to the construction of questionnaires for children and adolescents → the **risk of errors** exposed above are the same but **magnified**. Therefore quality would be an issue, and more importantly we may manipulate children's voice without intending to be doing so.

"Young respondents between the age of 7 and 18 are a far from homogenous group. As children grow from infancy to adulthood, their thinking becomes more logical, and their reasoning skills develop more and more. At the same time memory and language develop and social skills are acquired". See classification in use in local research and according to local cultures! (Reference here: early middle childhood (7–10 y.), late middle childhood (10–12), Early adolescence (13–16), Late adolescence (16–18).

Do not proceed to interviews with children if your team does not count with trained and experience staff (psychologists, social workers, educators, or especially trained in communication techniques with children). This, especially during an emergency, where there is more probability for the children to have been gone through difficult moments and experienced protection concerns.

- A child aged 9 will manage 2,600 words, vs 5,000 at 9 and 10,000 for an adult.
- Children in middle childhood (7–12) cannot cope with ambiguity at all. Young adolescent (12–16) still experience major problems with ambiguity.
- Children in middle childhood (7–12) cannot handle negations.
- Early middle childhood (7–10) extremely sensitive to slightest suggestion.
- Memory of children (capacity and constructive process) not fully grown before 11. Processing speed comparable to adults after early adolescence (15–16).
- Sensitivity is not an issue in early middle childhood (7–10), but in later middle childhood (10–12), approval seeking become an issue.
- Questions that ask with numeric quantity cannot be handled correctly before 12.

"children as old as 8 years will assume that the adult knows everything already. In addition, they are afraid to say something wrong or foolish, especially in a situation that resembles school."

 *Improving data quality when surveying children and adolescents: cognitive and social development and its Role in Questionnaire Construction and Pretesting.*

Before engaging children in a survey – ask yourself the following questions

- ? Would a survey be **appropriate method** considering the cognitive and social maturity level of the age group considered?
Isn't it another method, better appropriate to ensure genuine participation of the children?
→ Quantitative survey maybe an appropriate method with adolescent (16-18), but for younger children, it is recommended to use qualitative techniques !
- ? Do we have **internal knowledge and experience** to be able to tailor our questionnaire to the specific cognitive and social maturity level of the children we would like to work with?
- ? Is the topic sensitive? Is there any risk that recalling some events would produce re-victimization?
→ **Do no harm first!**
- ? Do we have adequate **procedures** including a reporting follow up response mechanism in case a **protection** (violence, abuse) issue is disclosed during the survey?
- ? Would there be a possibility for **caregiver consent** and **child consent**?
Would the children understand the very concept of "informed consent"?
- ? Are there **existing pre-tested questionnaires** adapted to the children that we could rely partially on?
Do we know experts with whom we could pre-test our questionnaire?
- ? Would there be any **benefit** to children if they participate in the survey? Any **risk**?
Is the survey **necessary** to contribute to improvement of their situation?

Children's cognitive and social maturity – 4 levels

Practical recommendations

1 Question comprehension

- Order the questions in short blocks, each block addressing one topic with clear and short introduction.
- Keep questions as short as possible.
- Ask one question at a time, no complex construction. Ambiguity has more disastrous consequence over quality! For children 7–10, simple yes/no questions about doing something are better.
- Use age-relevant terms as well as terms relevant to children's everyday life, ban abstract terms.
- Ask children to respond to affirmative not negative statements (disagreeing with a negatively phrased statement is a cognitively complex task).
- Avoid questions asking for numerical quantities before age of 11.
- Keep your questionnaire short (max. 30 minutes).
- Give clear and easy instructions.
- When possible use visuals.

2 Recall of relevant information from memory

- **Avoid retrospective questions** that would refer to past events before the age of 10 – use "here and now" questions.

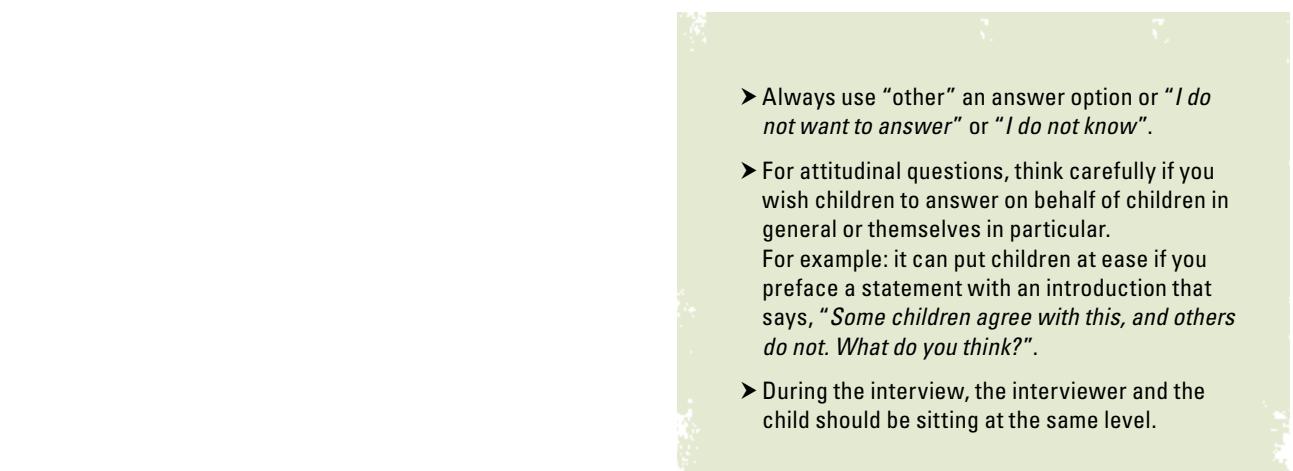
3 Judgment formation

Risks of Social desirability bias is higher: children have a very high sensitivity and feeling of what they think it could be a correct response and please interviewers. Children are very sensitive to the slightest suggestions.

Self-concept and peer pressure

From approximately 10 years on the effect of peers will be more present, children now fulfill to the cultural rules and the values of society, instead of judging behaviour by their own standards and values.

- Make sure that the questions do not resemble test items or school questions.
- In introducing the questionnaire it should be emphasized that this is not a school test, that there are no 'wrong' answers and that the researcher does not know the correct answer.
- For adolescent: Sensitivity of topic and privacy of interview situation become particularly important.
- Always balance the number of positive and negative response options (e.g. agree, agree a lot, disagree, disagree a lot).
- Think in resorting to visuals/pictures/drawings when working with young child.
- Ban any suggestive element from the question.
- Reverse the direction of some questions to reduce response bias.



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Dig deeper

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