

Key Points:

Hybrid Seminar

QUESTIONNAIRE DEVELOPMENT & CULTURAL ADAPTATION OF QUESTIONNAIRE

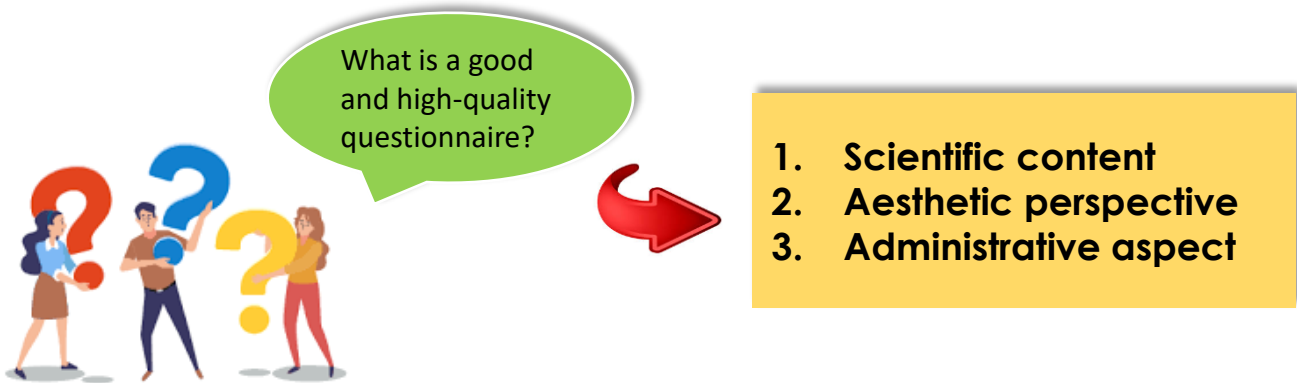


SPEAKERS:

ASSOC. PROF. DR. CHEW BOON HOW
DR. YEW SHENG QIAN

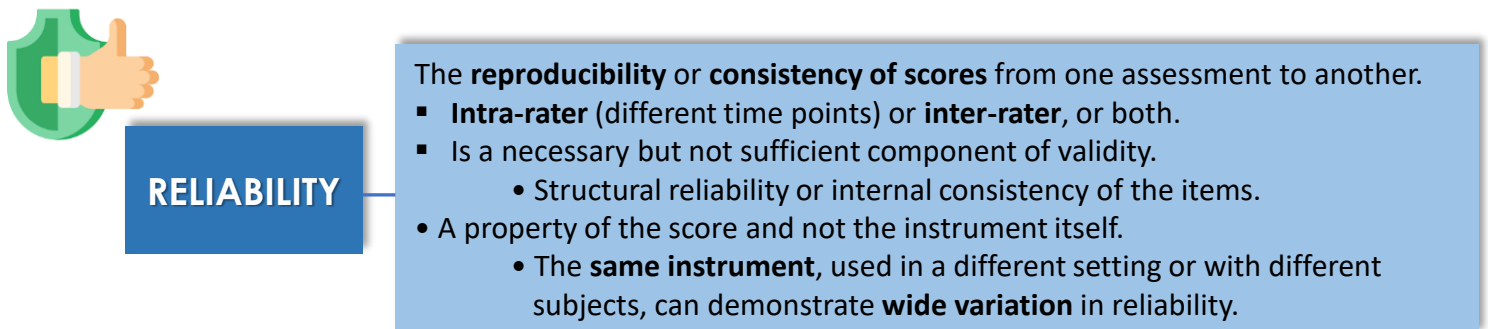
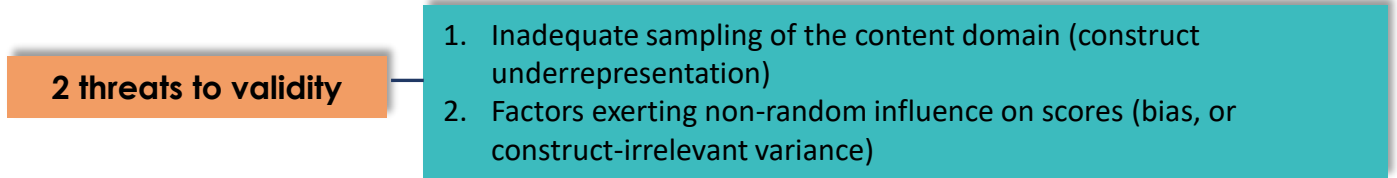
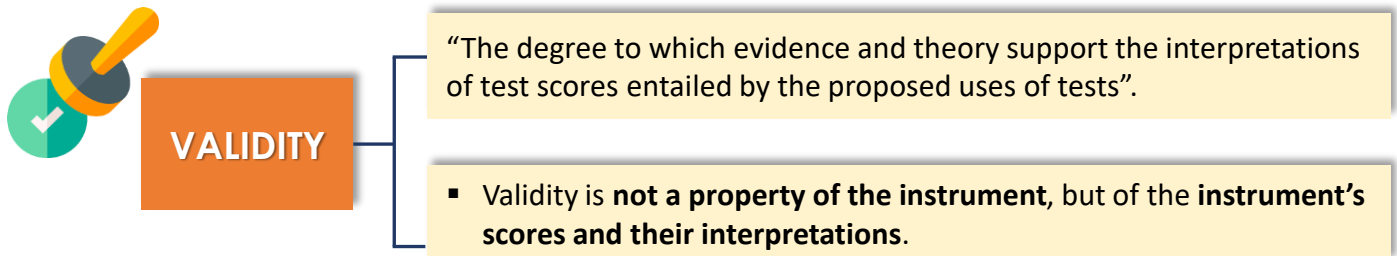


Article by: Nurfaizah Saibul



Validity and reliability?

- Validity and reliability related to the **interpretation of scores** from **psychometric instruments**.
- The degree to which a score can be interpreted as representing the intended underlying construct.



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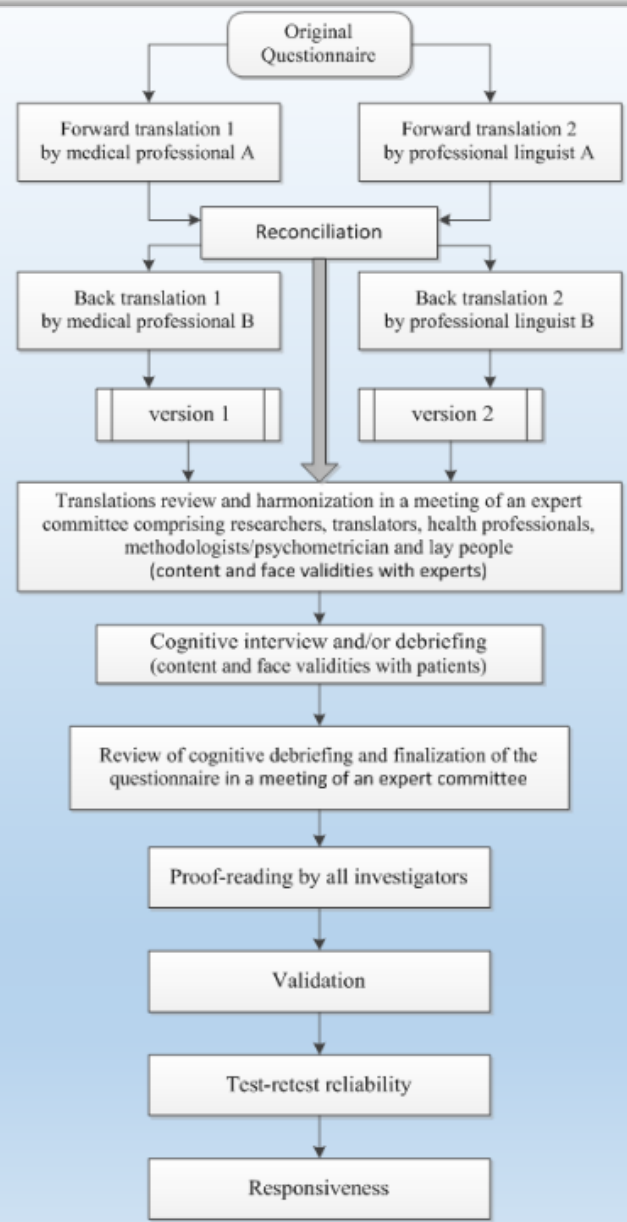
Translation and cross-cultural adaptation

The translation, adaptation and validation process

Validity?

- “the degree to which evidence and theory support the interpretations of test scores entailed by the proposed uses of tests”
- Validity is *not a property of the instrument*, but of the *instrument’s scores* and their interpretations
- Not categorical and not perfect
- Evidence to support the validity argument from 5 sources:
 1. **Content**: do instrument items completely represent the construct?
 2. **Response process**: the relationship between the intended construct and the thought processes of subjects or observers
 3. **Internal structure**: acceptable reliability and factor structure
 4. **Relations to other variables**: correlation with scores from another instrument assessing the same construct
 5. **Consequences**: do scores really make a difference?

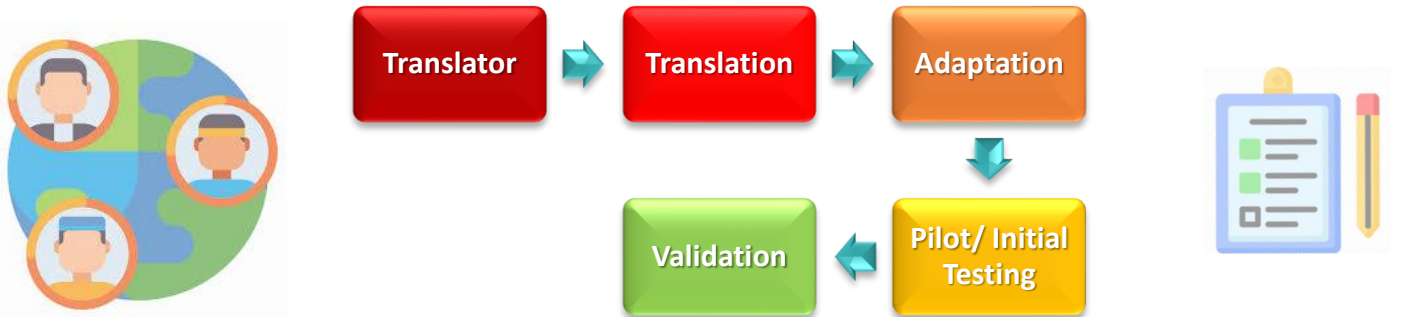
- **Reconciliation** is a process whereby two or more independent forward translations are merged into a single translation.
- **Harmonization** is the step in which all new translations are compared with each other and the source version.
- **Cognitive debriefing** allows researchers to check for misunderstandings, incomplete concept coverage, and inconsistent interpretations.
- **Content validity** includes face validity
- **Construct validity** includes structural validity, hypotheses testing and cross-cultural validity.
- **Responsiveness** refers to the ability of an instrument to detect change over time.



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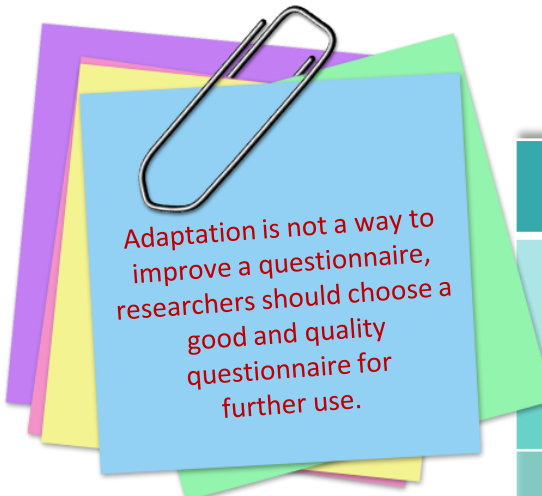
The steps and their essential concepts in **translation** and **cross-cultural adaptation** of questionnaires



Translator	<p>Qualified translators:</p> <ul style="list-style-type: none"> • Bilingual - Fluent in both source and target languages. • Bicultural - Familiar with both cultures. • Knowledgeable of the content of the instrument. 	
Translation	<ul style="list-style-type: none"> • Multiple translators in forward and backward translation. • A panel or committee of translators is better than individuals. • Back translation should not be mandatory but can be useful as a communication tool with the author of the original questionnaire - unnecessary if the adaptation team speaks both source and target languages. • Reconciliation, harmonization and review of the translated versions can be better done by an expert committee that is composed of researchers, translators, health professionals, methodologists, and lay people. 	
Adaptation	<ul style="list-style-type: none"> • A process of considering differences between the source and the target culture to maintain equivalence in the questionnaire. • Involves input from qualified translators, clinicians, and patients in checking for content validity, with focus groups and/or committees. 	
Pilot/ Initial Testing	<ul style="list-style-type: none"> • The examiner is fluent in the target language. • Examinees from different social economic backgrounds and relevant geographic regions. • Focus groups (6 – 10 people) or one-to-one cognitive debriefing interviews. • Cognitive interviews should be used as a follow-up to focus groups. • Assessment of face and content validity of the adapted questionnaire during the focus groups and/or cognitive interviews. 	
Validation	<p>Reliability:</p> <ul style="list-style-type: none"> ▪ Internal consistency ▪ Reliability ▪ Measurement error 	<p>Validity:</p> <ul style="list-style-type: none"> ▪ Content validity ▪ Construct validity ▪ Criterion validity
	Responsiveness	

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Adaptation is not a way to improve a questionnaire, researchers should choose a good and quality questionnaire for further use.

Herdman's concepts of equivalence between the **original** and **translated questionnaires**:

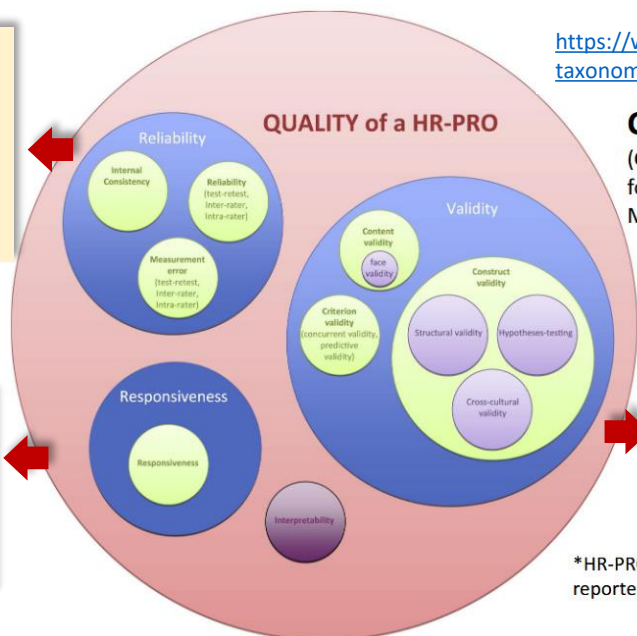
Concepts of equivalent	Definition
Conceptual equivalence	Domains have the same relevance, meaning, and importance regarding the explored concept in both cultures.
Item equivalence	Items are as relevant and acceptable in both cultures.
Semantic equivalence	The meaning of the items is the same in both cultures.
Operational equivalence	The questionnaire can be used in the same way by its target population in both cultures.
Measurement equivalence	No significant difference in psychometric properties (construct validity, reliability, responsiveness, and so forth) of the two versions.
Functional equivalence	A summary of the preceding five equivalences: both versions of the questionnaire "do what they are supposed to do equally well."



Validity Constructs for Questionnaires & Tools

Reliability: The degree to which the measurement is **free from measurement error**, and it contains the measurement properties **internal consistency, reliability, and measurement error**.

Responsiveness: The ability of an **outcome measure to detect change over time in the construct to be measured**. It refers to the validity of a change score, following an intervention.



<https://www.cosmin.nl/tools/cosmin-taxonomy-measurement-properties/>

COSMIN initiative
(**C**onsensus-based **S**tandards for the selection of health **M**easurement **I**nstruments)

Validity: The degree to which an outcome measure measures the construct it purports to measure and contains the measurement properties: **content validity** (including face validity), **construct validity** (including structural validity, hypotheses testing, and cross-cultural validity/ measurement invariance), and **criterion validity**.

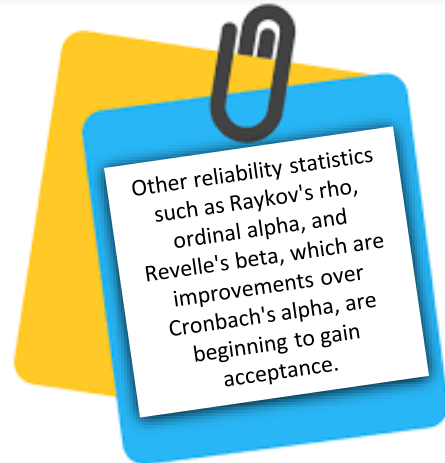
*HR-PRO = health-related patient-reported outcomes (instruments)

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Cronbach's Alpha

- A **measure of scale reliability** – internal consistency.
- How closely related a set of items are as a group.
- A **low** may mean:
 - ✓ not enough questions on the test.
 - ✓ poor interrelatedness between test questions.

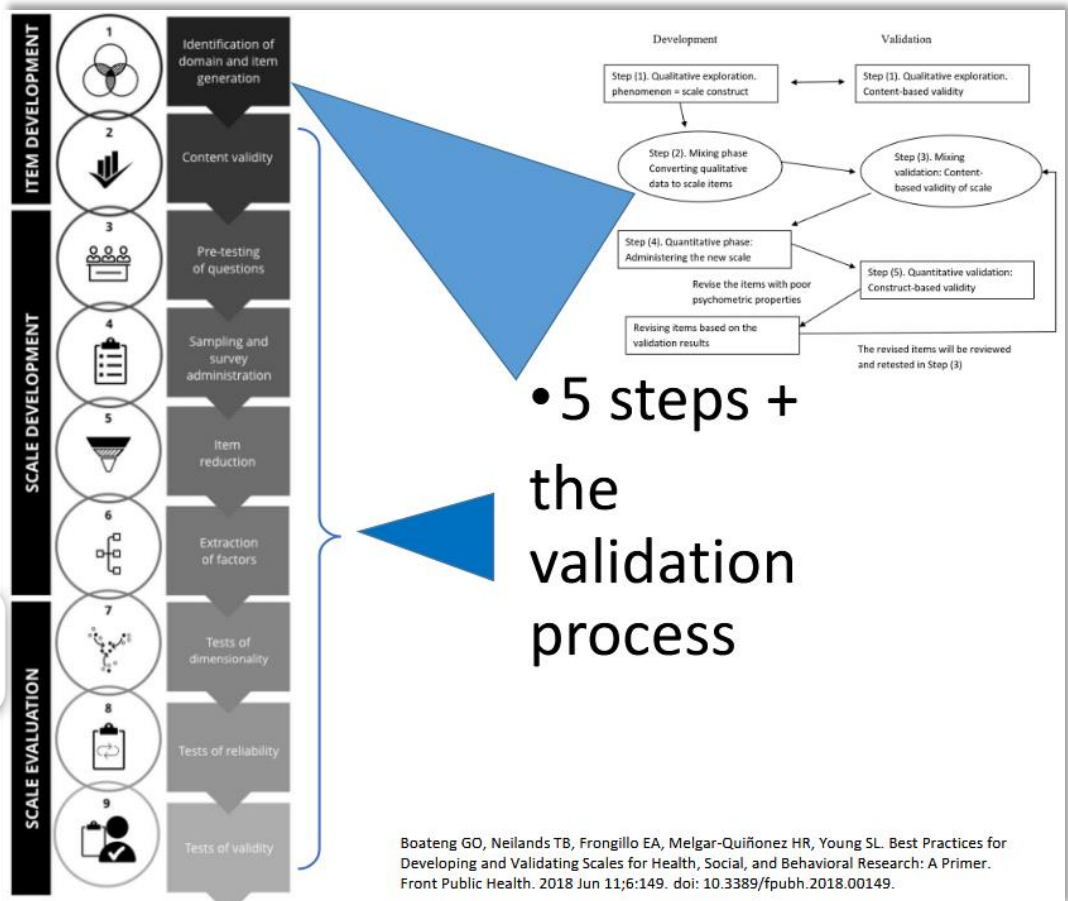
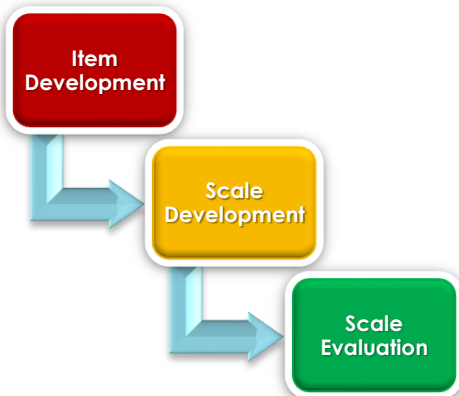


Alpha Cronbach Value	Interpretation
0.91 – 1.00	Excellent
0.81 – 0.90	Good
0.71 – 0.80	Good and Acceptable
0.61 – 0.70	Acceptable
0.01 – 0.60	Non-acceptable

Confirmatory Factor Analysis (CFA)
A special form of factor analysis to test whether measures of a construct are consistent with a researcher's understanding of the nature of that construct.

DEVELOPING A NEW QUESTIONNAIRE

Developing a new questionnaire



Boateng GO, Neilands TB, Frongillo EA, Melgar-Quifonez HR, Young SL. Best Practices for Developing and Validating Scales for Health, Social, and Behavioral Research: A Primer. Front Public Health. 2018 Jun 11;6:149. doi: 10.3389/fpubh.2018.00149.

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DEVELOPING A NEW QUESTIONNAIRE

5 STEPS + THE VALIDATION PROCESS

1

Deductive
methods

Inductive
methods

What **information*** are to be collected?
Conducting a formal scoping exercise to:

- Clarify goals
- Agreed with the compromise of the stated study objectives and amount the researchers.
- Assist in deciding the length of the questionnaire
- How the questionnaire might be administered.

*Conceptualization & definition of the domain

Qualitative approach: To explore the research area with a particular population subgroup would help to understand the range of possible responses and focus key areas for the study.

✓ *The initial pool of items developed should be at minimum twice as long as the desired final scale.*

2

Questionnaire items: Open or closed-ended.

- Questions must be phrased and **be careful with certain words** that have **many interpretations** such as frequently, regularly, commonly, usually, many, some, and hardly ever. These words must be matched to the possible response options.
- **Open-ended:** Insert a free text box at the end of the questionnaire for inviting further responses.
- **Instructions** (perhaps with examples) should be stated for both open and closed-ended questions.

3

Ensure that the questions **do not reveal or being suggestive** of the purpose of the study. Respondents may out of courtesy or to be socially acceptable shape their answer to what they perceive to be your needs.

Respondents can be less thoughtful about the meaning of a question, search their memories less comprehensively, integrate retrieved information less carefully, or even select a less precise response choice.

Questions should be kept simple, straightforward, and should follow the conventions of normal conversation.

4

Include **at least a verification question to another question that is perceived to be important** but may be taken lightly or overlooked by the respondents.

5

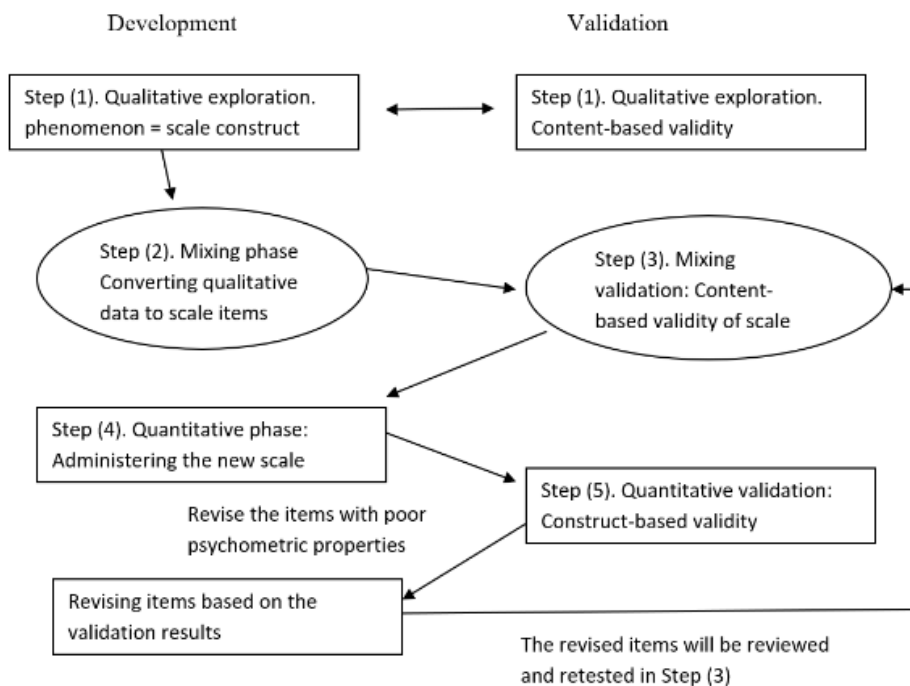
- Questions should be **short and to the point** (around **12 words or less**) as the **physical layout of the questionnaire might affect response rates.**
- A **sensitive questions or those enquiring about personal issues**, longer sentences are preferred to avoid- being regarded as too abrupt and threatening.

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DEVELOPING A NEW QUESTIONNAIRE

Mixed Methods Model of Scale Development and Validation Analysis.
 Adapted from Zhou, 2019



	1	2	3	4	5
I feel that training for GDM is lacking among clinicians. (survey item from quotation)	Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Validation of a newly translated questionnaire is an ongoing procedure that requires the performance of the questionnaire in a range of settings, patient groups and quantifying its changes after certain intervention over specified periods of time.

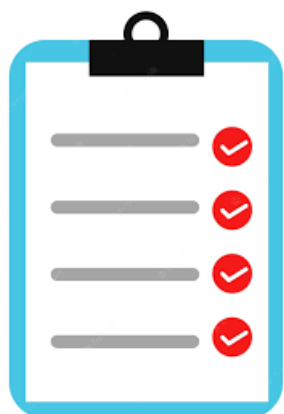


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Checklist for preparing a Questionnaire or Survey form

Section	Quality Criterion
Title	<ul style="list-style-type: none"> Is it clear and unambiguous? Does it indicate accurately what the study is about? Is it likely to mislead or distress participants?
Introductory letter, information sheet or opening instruction	<ul style="list-style-type: none"> Does it provide an outline of what the study is about and what the overall purpose of the research is? Does it say how long the questionnaire should take to complete? Does it adequately address issues of anonymity and confidentiality? Does it inform participants that they can ask for help or stop completing the questionnaire at any time without having to give a reason? Does it give clear and accurate contact details of whom to approach for further information? If a postal questionnaire, do participants know what they need to send back?
Overall layout	<ul style="list-style-type: none"> Is the font size clear and legible to an individual with 6/12 vision? (Retype rather than photocopy if necessary) Is graphics, illustrations and colour used judiciously to provide a clear and professional overall effect? Are the pages numbered clearly and stapled securely? Are there adequate instructions on how to complete each item, with examples where necessary?
Demographic information	<ul style="list-style-type: none"> Has all information necessary for developing a profile of participants been sought? Are any questions in this section irrelevant, misleading or superfluous? Are any questions offensive or otherwise inappropriate? Will respondents know the answers to the questions?
Measures (main body of questionnaire)	<ul style="list-style-type: none"> Are any items unnecessary or repetitive? Is the questionnaire of an appropriate length? Could the order of items bias replies or affect participation rates (in general, put sensitive questions towards the end)?
Closing comments	<ul style="list-style-type: none"> Is there a clear message that the end of the questionnaire has been reached? Have participants been thanked for their participation and co-operation?
Accompanying materials	<ul style="list-style-type: none"> If the questionnaire is to be returned by post, has a stamped addressed envelope (with the return address on it) been included? If an insert (eg leaflet), gift (eg book token) or honorarium is part of the study protocol, has this been included?



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9 Tips in Developing and Validating Questionnaire *For students*



References:

1. Cook DA, Beckman TJ. Current concepts in validity and reliability for psychometric instruments: theory and application. *Am J Med.* 2006 Feb;119(2):166.e7-16. doi:10.1016/j.amjmed.2005.10.036. <https://doi.org/10.1016/j.amjmed.2005.10.036>
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5. Boateng GO, Neilands TB, Frongillo EA, Melgar-Quiñonez HR, Young SL. Best Practices for Developing and Validating Scales for Health, Social, and Behavioral Research: A Primer. *Front Public Health.* 2018 Jun 11;6:149. doi: 10.3389/fpubh.2018.00149.