Scale Development

Based on **Robert F. DeVellis**

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Assessment Methods

- Direct observation
- Electro mechanical measurement
- **Self or Other reported (Questionnaire or Schedule)**

When to Construct a New Scale?

- no scale exists measuring a specific construct
- existing scales do not represent the construct adequately:
  - lack of reliability
  - lack of validity
  - outdated (old words; meaning of words changed; attitudes changed)
  - trait measure vs. state measure
  - –insensitive for changes

STEPS IN SCALE DEVELOPMENT

Determine clearly what it is you want to measure

Generate the Item pool

Determine the format for measurement

Have the initial item pool reviewed by experts

Consider inclusion of Validation items

Administer Items to a development sample

Evaluate the items

Optimize scale length

Step 1 : Determine Clearly What is you want to measure

- **Deceptive**
  - Many Researchers Think they have a clear idea of what they wish to measure, only to find that their ideas are more vague than they thought

- **Theory as an Aid to clarity**
- **Specificity as an Aid to Clarity**
- **Being clear about What to include in a measure**

- scope of the scale (level of abstraction)
  - what is to be measured?
  - broad or narrow construct?
    - well-being vs. specific emotion
- definition of the construct in literature?
  - adopt a definition vs. work out an own definition
  - clearly describe what is meant by your construct (and what is not meant)

- write out a brief, formal description of the construct

- relate it to other constructs

- search literature for information about dimensionality / facets
  - may also help to avoid known problems with respect to unclear instructions, problematic response formats, etc.

Step 2 : Generate the Item pool

- Chose Items That reflect the scale's Purpose
- Redundancy
- Number of Items
- Beginning the process of writing Items
- Characteristics of Good and Bad Items
- Positively and negatively worded items

basic principles of item writing

- avoid frequencies in item wording
  - Sometimes, I am happy
- avoid item wordings including negative mood terms
  - "I worry about…" $\rightarrow$ neuroticism
- avoid negatives to reverse meaning of an item, but include negative aspects
  - I am not happy $\rightarrow$ I am sad

Step 3: Determine the format for measurement

- Thurstone Scaling

- Guttman Scaling

- Scale with equally weighted Items

- What is the Optimum number of response categories

- Specific types of Response formats

Step 4:Have the initial item pool reviewed by experts

- Rate *how relevant they think each item is to what you intend to measure*
  - The mechanics of obtaining evaluations of item relevance usually involve providing the expert panel with your working definition of the construct.
- Reviewers also can *evaluate the items' clarity and conciseness.*
- *Pointing out ways of tapping the phenomenon that you have **failed** to include.*

The final decision to accept or reject the advice of your experts is your responsibility as the scale developer.

Step 5: Consider inclusion of Validation items

- include some additional items in the same questionnaire that will help in determining the validity of the final scale.

- Two Types of Items
  - The first type of item serves to detect flaws or problems (ex. social desirability scale)
  - Items pertaining to the construct validity of the scale (Correlating variable found from theory).

Step 6: Administer Items to a development sample

- Administer along with the pool of new items, to some subjects.

- 300 samples desirable for hypothetical universe

- Sample size depends on number of scale

Step 7: Evaluate the items

- Initial Examination of Items' Performance
  - *Reverse Scoring*
  - *Item-Scale Correlations*
  - *Item Variances*
  - *Item Means*
- Factor Analysis
- Coefficient Alpha

Step 8: Optimize scale length

- Effect of Scale Length on Reliability
- Effect of Dropping Bad Items
- Tinkering with scale length
- Split Samples