

A PARADIGM FOR DEVELOPING BETTER MEASURES OF MARKETING CONSTRUCTS

Gilber A. Churchill (1979)

Introduced by Azra Dedic

in the course of “Measurement in Business Research”



Introduction

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- Measurements are “rules for assigning numbers to objects to represent qualities of attributes”.
- What is measured? ATTRIBUTES of objects. NOT objects themselves.
- What is the goal? To have measures that are RELIABLE and VALID

Construct

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- Construct, e.g. customer satisfaction
- True level of satisfaction (True score) denoted X_t
- Observed score X_0 , rarely similar to X_t due to differences in stable characteristics, transient personal factors, situational factors etc.

Validity and Reliability

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$$X_0 = X_t + X_s + X_r, \text{ where}$$

- X_s – systematic source of error
- X_r – random source of error

Validity: $X_0 = X_t$

Perfect reliability: $X_r = 0$

- Validity \Rightarrow Reliability
- Reliability is necessary but not sufficient for Validity

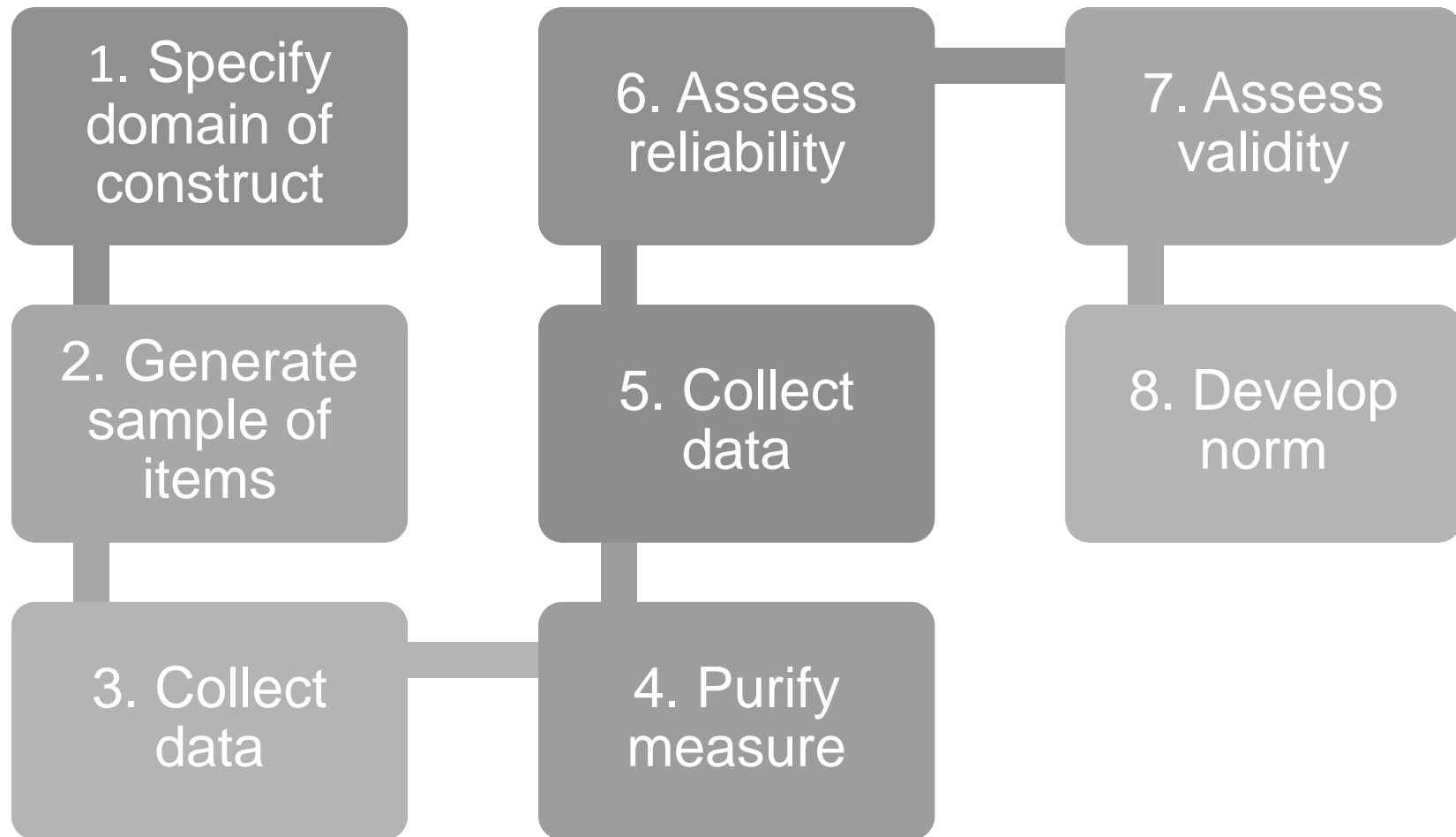
Validity and Reliability (2)

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- Objective: find X_0 that approximate X_t
- Measures are inferences, their “goodness” is supported by the evidence, that is based on reliability or validity index
- Reliability forms: split-half, test-retest etc.
- Validity forms: face, content, predictive, concurrent, pragmatic, construct, convergent, discriminant.

Procedure for developing measures

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Specify domain of the construct

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- Exactly defining what is included in the definition and what is excluded
- Consulting the literature
- Widely varying definitions should be avoided
- Example: to measure customer satisfaction
 - Measure both expectations at the time of purchase and reactions at some time after the purchase
 - Expectations: cost, durability, quality, operating performance, aesthetic features, sales assistance, advertising, availability of competitor's alternatives,

Generate sample of items

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- Literature searches
- Experience surveys
- Insight-stimulating examples
- Critical incidents and focus groups

Purify the measure

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- Domain sampling model: purpose of any particular measurement is to estimate the score that would be obtained if all the items in the domain were used
- In practice use of SAMPLE of items
- Measurement error due to inadequate sampling
- Correlation matrix of the items in the domain
 - Average correlation in the matrix
 - Dispersion of the correlation about the average
- Assumption: all items, “if they belong to the domain of the concept, have an equal amount of common core”

Coefficient Alpha

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- Measure of internal consistency of a set of items
- Low coefficient alpha indicates that the sample of items badly describes the construct which motivated the measure
- Procedure by low alpha: some items should be eliminated.
 - Calculate correlation of each item with total score
 - Plot the correlations by decreasing order of magnitude
 - Items with correlations near zero should be eliminated
 - Items of substantial drop in the item-to-total correlations also deleted
- Mistake to do split-half reliability

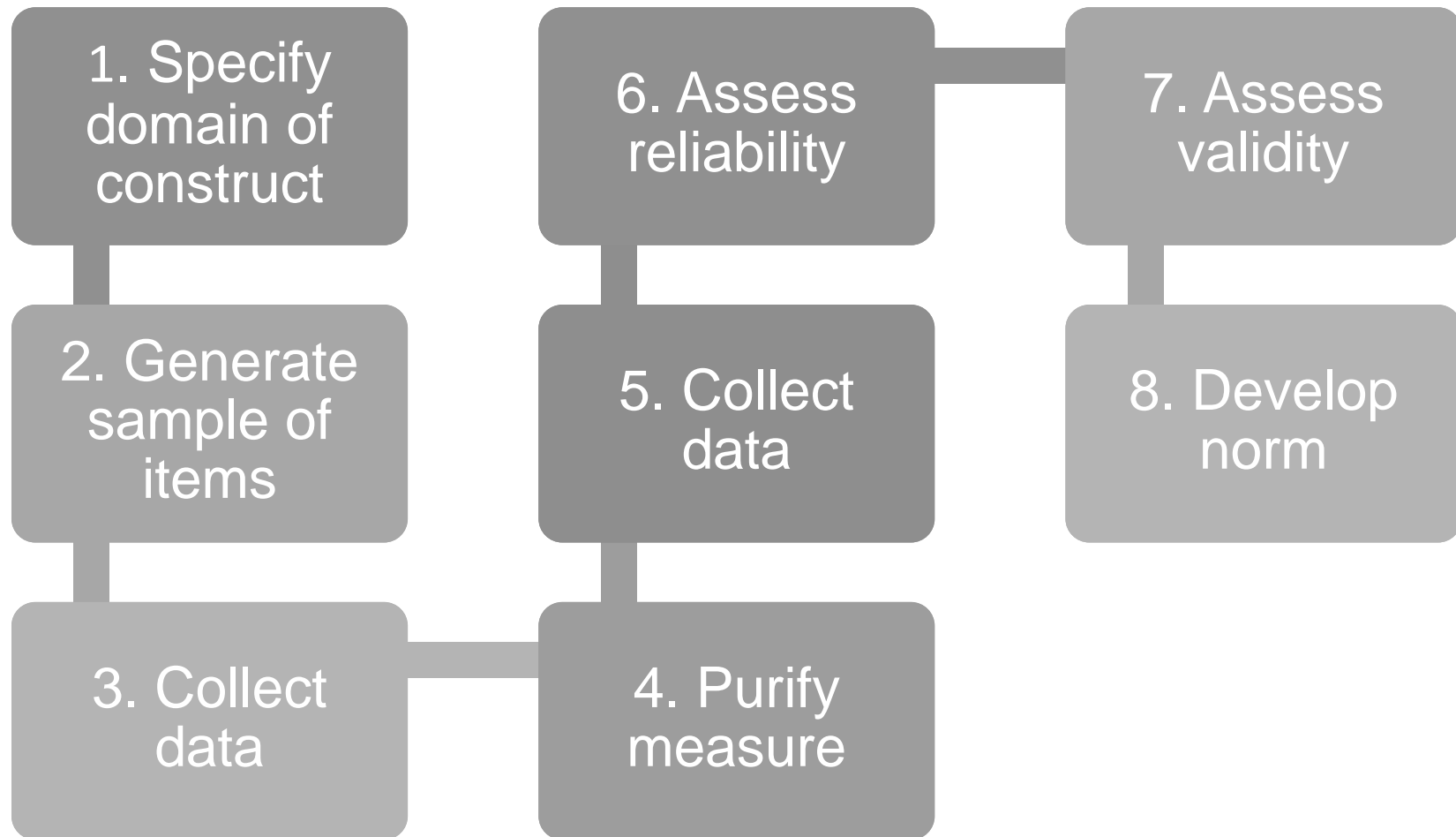
Purify the measure (2)

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- Desirable outcome: high coefficient alpha, dimensions agree with the conceptualized. Then, additional testing with a new sample of data.
- Second outcome: Factor analysis suggests the overlapping dimensions. Items with pure loadings on the new factor are retained, new alpha calculated.
- Non-desirable outcome: alpha coefficient is low and restructuring of items forming each dimension is unproductive. Loop back to 1. and 2.

Procedure for developing measures

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Assess reliability with new data

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- ❑ Source of error within a test or measure is the sampling of items.
- ❑ Coefficient alpha is the basic statistic for determining the reliability of a measure based on internal consistency, but it does not estimate errors external to the instrument.
- ❑ Collect additional data to rule out the chance possibility of previous findings
- ❑ Do not use test-retest reliability

Assess Construct Validity

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- Face or content valid measure has an appropriate sample
- To establish construct validity
 - Determine the extent to which the measure correlates with other measures designed to measure the same thing
 - Determine whether the measure behaves as expected

Correlations with Other Measures

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- Any construct or trait should be measurable by at least two different methods
- Convergent validity – extent to which it correlates highly with other methods designed to measure the same construct
- Discriminant validity – the extent to which a measure a novel
- Multitrait-multimethod matrix: methods and traits generating it should be as independent as possible

Multitrait-multimethod matrix

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		Method 1--Likert Scale			Method 2--Thermometer Scale		
		Job Satisfaction	Role Conflict	Role Ambiguity	Job Satisfaction	Role Conflict	Role Ambiguity
Method 1-- Likert Scale	Job Satisfaction	1					
	Role Conflict	.896	2				
	Role Ambiguity	-.236	.670	3			
Method 2-- Thermometer Scale	Job Satisfaction	-.356	.075	.817	4		
	Role Conflict				-.147	2	
	Role Ambiguity				-.170	.289	4

Table 1 of .450, .395 and .464 are all significant at the .01 level.

relation coefficient such as the coefficient of concordance can be computed if there are a great many

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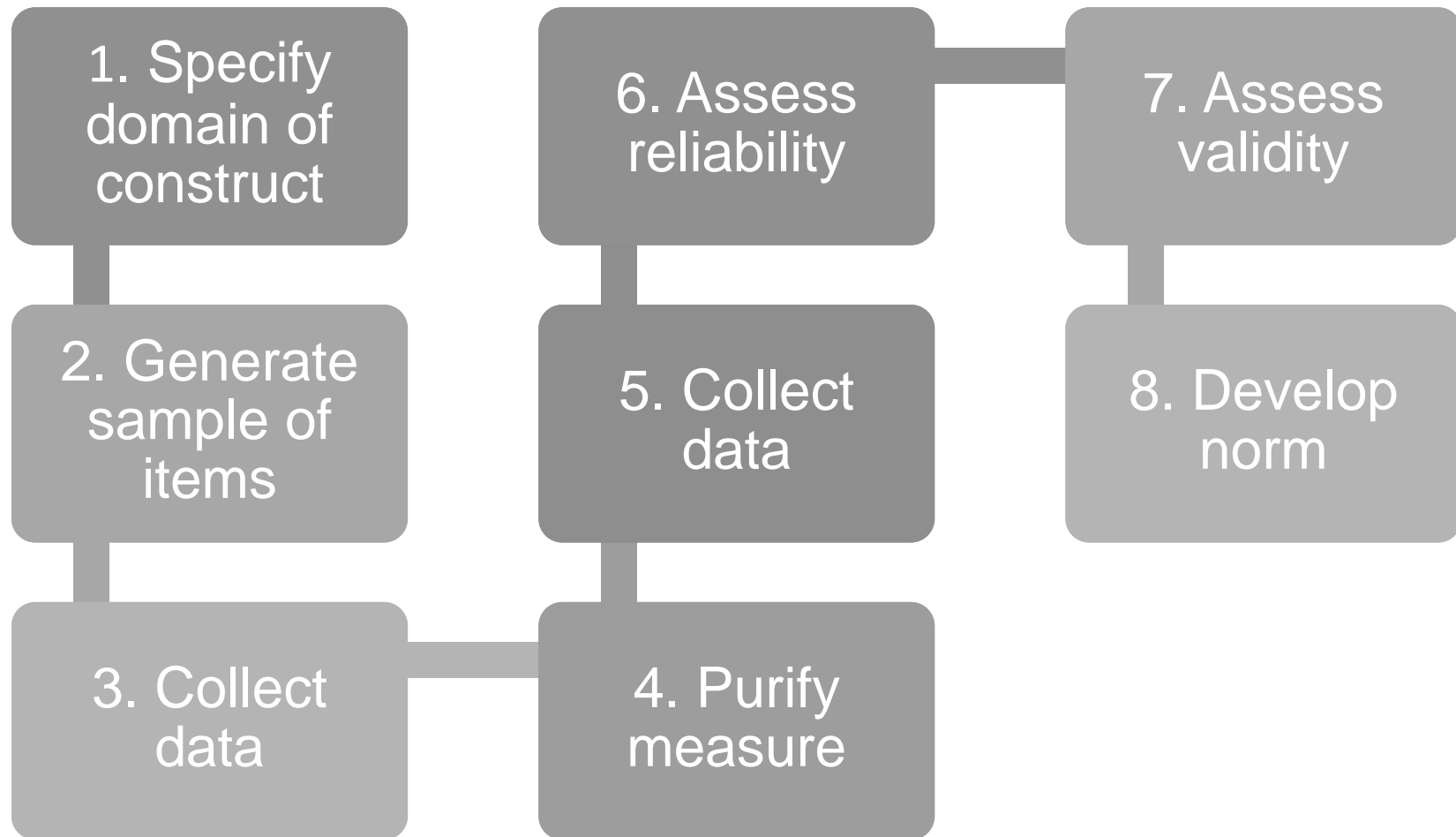
Does the measure behave as expected?

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- Internal consistency is insufficient condition for construct validity
- Assess whether scale correctly predicts criterion measure (criterion validity)
 - The constructs job satisfaction (A) and likelihood of quitting the job (B) are related.
 - The scale X provides a measure of A.
 - Y provides a measure of B.
 - X and Y correlate positively.
- Establish the validity by relating the measure to a number of other constructs and not only one

Procedure for developing measures

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Developing Norms

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- Assessing the position of the individual on the characteristic is to compare the person's score with the scores achieved by other people
- Norm quality depends on both the number of cases on which the average is based and their representativeness