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Scaling Techniques: Measurement in Qualitative Research

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Scaling Techniques

**Vijayamohan Pillai N
CDS**

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Measurement in Qualitative Research

Scaling
The process of measuring or ordering entities wrt quantifiable attributes or traits.

Eg., estimating individuals' levels of extraversion, or the perceived quality of products.

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* **The type of information collected can influence scale construction.**

*Types of data that arise in the theory of scale types developed by the American psychologist Stanley Smith Stevens (1906 – 1973)

SCIENCE
Vol. 103, No. 2684 Friday, June 7, 1946
On the Theory of Scales of Measurement
S. S. Stevens
Director, Psycho-Anatomic Laboratory, Harvard University

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* Levels of measurement or Scales of measure

*all measurement in science conducted using four different types of scales:

- *"nominal",
- *"ordinal",
- *"interval" and
- *"ratio"

*Types of Data

Categorical (data that are counted)

- Nominal
- Ordinal

Quantitative or Numerical (data that are measured)

- Interval
- Ratio

Nominal

Examples of nominal variables :

- Gender (male, female)
- Community (SC, ST, Other Backward, Forward)
- Surgical outcome (dead, alive)
- Marital status (Married, Separated, Divorced, Widowed)

When only two possible categories exist, the variable is sometimes called **dichotomous, binary, or binomial.**

Ordinal

often describe the respondent's characteristics, attitude, behavior, or status.

Examples :

- Education level (elementary, secondary, college); Income group (U, M, L)
- Pain level (mild, moderate, severe)
- Satisfaction level (very dissatisfied, dissatisfied, neutral, satisfied, very satisfied)
- Agreement level (strongly disagree, disagree, neutral, agree, strongly agree)

Interval (Scaled variables)

Variables that have constant, equal distances between values, but the zero point is arbitrary.

Examples :

- Temperature (Degree C / F)
- Date when measured from an arbitrary epoch (such as AD)

Ratios are not allowed since 20 °C cannot be said to be "twice as hot" as 10 °C,

Multiplication/division not possible between any two dates directly.

Ratio

Variables have equal intervals between values, the zero point is meaningful, and the numerical relationships between numbers is meaningful.

Examples :

- Weight (50 kilos, 100 kilos, 150 kilos, etc.)
- Height
- Age

* Pyramid of scales with their properties according to Stanley Smith Stevens

		Nominal scale	Ordinal scale	Interval scale	Ratio scale
Logical/ math operations	x	✗	✗	✗	✓
	÷	✗	✗	✗	✓
	+	✗	✗	✓	✓
	-	✗	✗	✓	✓
	<	✗	✓	✓	✓
	>	✗	✓	✓	✓
=	✓	✓	✓	✓	
≠	✓	✓	✓	✓	

*** Comparison**

OK to compute....	Nominal	Ordinal	Interval	Ratio
frequency distribution.	Yes	Yes	Yes	Yes
median and percentiles.	No	Yes	Yes	Yes
add or subtract.	No	No	Yes	Yes
mean, standard deviation, standard error of the mean.	No	No	Yes	Yes
ratio, or coefficient of variation.	No	No	No	Yes

Scaling

Two types:

Comparative scaling

the items are directly compared with each other

(eg.: Do you prefer 7Up or Cola?).

Noncomparative scaling

each item is scaled independently of the others

(eg.: How do you feel about Cola?).

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Comparative scaling techniques

Pairwise comparison scale

Rank Ordering

Bogardus social distance scale

Guttman scale

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Pairwise comparison scale

A respondent is presented with two items at a time and asked to select one

(eg. : Do you prefer 7Up or Cola?).

an ordinal level technique

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Rank-ordering

A respondent is presented with several items simultaneously and asked to rank them

(eg. : Rate the following advertisements On a scale from 1 to 10.).

an ordinal level technique.

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Rank-ordering

Statistical tests based on ranks:

- Friedman test
- Kruskal–Wallis test
- Rank products
- Spearman's rank correlation coefficient
- Wilcoxon rank-sum test
- Wilcoxon signed-rank test

Bogardus social distance scale

Created by Emory S. Bogardus (1882 – 1973)
American sociologist

to empirically measure people's willingness to participate in social contacts of varying degrees of closeness with members of diverse social groups, such as racial and ethnic groups.

It asks how willing the respondent is to make various associations.

The results are reduced to a single score on a scale

Bogardus social distance scale

The scale asks people the extent to which they would be accepting of each group (a score of 1.00 for a group indicating no social distance):

1. As close relatives by marriage (*i.e.*, as the legal spouse of a close relative) (score 1.00)
2. As my close personal friends (2.00)
3. As neighbors on the same street (3.00)
4. As co-workers in the same occupation (4.00)
5. As citizens in my country (5.00)
6. As non-citizen visitors in my country (6.00)
7. Would exclude from entry into my country (7.00)

Bogardus social distance scale

The scale asks people the extent to which they would be accepting of each group

The Bogardus social distance scale is a cumulative scale (a Guttman scale), because agreement with any item implies agreement with all preceding items.

Bogardus Social Distance Statements

1. "Would marry."
2. "Would be willing to have my brother or sister marry."
3. "Would be willing to have my son or daughter marry."
4. "Would have as chums."
5. "Would have a minority in my social club, fraternity, or lodge."
6. "Would have as a majority in my social club, fraternity, or lodge."
7. "Would debar from my social club, fraternity, or lodge."
8. "Would have as my regular friends."
9. "Would decline to have as friends."
10. "Would have merely as speaking acquaintances."
11. "Would decline to speak to."
12. "Would have as my guests at public dinners."
13. "Would decline to be seen with in public."
14. "Would have as my guests at private dinners."
15. "Would entertain overnight in my home."
16. "Would decline to invite to my home."
17. "Would allow one family only (of their group) to live in my city block."
18. "Would allow several families (of their group) to live in my city block."

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19. "Would live surrounded by them in their neighborhood."
20. "Would rejoice when as my neighbors they gained increased social standing."
21. "Would feel disturbed when as my neighbors they gained increased social standing."
22. "Would debar from my neighborhood."
23. "Would take as my guests at church."
24. "Would have a few as members of my church."
25. "Would have one-half of my church composed of their group."
26. "Would have as my pastor, or religious guide."
27. "Would have as my teachers."
28. "Would allow a few of their children to attend school with my children."
29. "Would have none of their children attend school with my children."
30. "Would have two-thirds of the school attended by my children composed of their children."
31. "Would have their children attend segregated schools."
32. "Would have my small children play with them regularly."
33. "Would have their young people as social equals for my adolescent sons and daughters."
34. "Would forbid my children from playing with their children."

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Bogardus Social Distance Statements

35. "Would dance with in public regularly."
36. "Would dance with in private regularly."
37. "Would play bridge or golf with regularly."
38. "Would play bridge or golf with occasionally."
39. "Would decline to play bridge or golf with."
40. "Would take as guests on automobile trips."
41. "Would ride with them as their automobile guests."
42. "Would decline to ride in an automobile with them."
43. "Would have them ride in segregated sections of street cars."
44. "Would ride in same seat with them in street cars."
45. "Would have as mayors of cities in my country."
46. "Would have several of them in our Congress."
47. "Would debar them from being Congressmen."
48. "Would have as president of my country."
49. "Would have as voting citizens of my country up to 1/5 of total population."
50. "Would have as voting citizens of my country up to 1/3 of total population."
51. "Would have as voting citizens of my country up to 2/3 of total population."

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Bogardus Social Distance Statements

Bogardus Social Distance Statements

52. "Would allow as visitors in my country but without citizen-ship rights."
53. "Would keep out of my country entirely either as visitors or citizens."
54. "Would work beside in an office."
55. "Would decline to work with in same office."
56. "Would work- under as my supervisor."
57. "Would have them as my business partners."
58. "Would have them in a competitive business near my business location."
59. "Would have them in a noncompetitive business near my business location."
60. "Would debar them as competitors in my business."

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Bogardus social distance scale

Each of the 60 statements typed on a 3 by 5 slip of paper.

Approach a large number of judges.

Each judge given the 60 different slips of paper

and asked to distribute them in seven boxes or piles representing seven different degrees of social distance:

1 = **no social distance**
7 = **Max social distance**

Bogardus social distance scale

Add the judgments, ranging from 1 to 7 for each of the 60 statements by the judges

and take the arithmetic mean.

In order to obtain a series of equal social-distance situations,

select the statements having means nearest to 1, 2, ..., 6 and 7

Bogardus social distance scale

Suppose the seven statements are:

1. Would marry
2. Would have as regular friends
3. Would work beside in an office
4. Would have several families in my neighborhood
5. Would have merely as speaking acquaintances
6. Would have live outside my neighborhood
7. Would have live outside my country

Give in every instance your first feeling reactions on a scale 1 to 7:

1 = **no social distance**; 7 = **Max social distance**

Guttman scale

Named after Louis Guttman (1916 – 1987; Israeli mathematician)

A procedure to determine whether a set of items can be rank-ordered on a unidimensional scale.

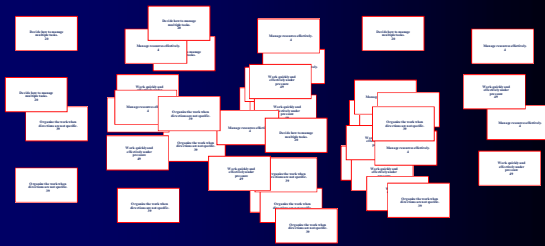
It utilizes the intensity structure among several indicators of a given variable.

Statements are listed in order of importance.

The rating is scaled by summing all responses until the first negative response in the list.

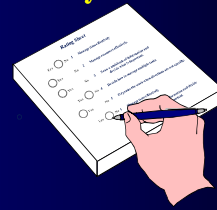
Guttman Scale

Start with a **large set of statements** that you think all reflect the same construct.



Guttman Scale

Get a number of judges **rate** each statement whether it is favorable with respect to the construct – a **yes/no** rating.



* Guttman scale

Also known as **scalogram analysis and cumulative scaling**

- * For example, a series of items could be
- * (1) "I am willing to be near ice cream";
- * (2) "I am willing to smell ice cream";
- * (3) "I am willing to eat ice cream"; and
- * (4) "I love to eat ice cream".
- * Agreement with any one item implies agreement with the lower-order items.
- * Uni-dimensional scale.

Guttman scale

Suppose that we test a set of Children

we assess their mastery of the following types of mathematical concepts:

- 1) counting from 1 to 500,
- 2) solving addition problems,
- 3) solving subtraction problems,
- 4) solving multiplication problems, and
- 5) solving division problems

Sorting by row and column shows whether there is a cumulative scale. Perfect Scale

Guttman scale

Children	Problems				
	Counting	Addition	Subtraction	Multiplication	Division
C ₁	1	1	1	1	1
C ₂	1	1	1	1	0
C ₃	1	1	1	0	0
C ₄	1	1	0	0	0
C ₅	1	0	0	0	0

Imperfect Scale

Children	Problems				
	Counting	Addition	Subtraction	Multiplication	Division
C ₁	1	1	1	1	1
C ₂	1	1	0	1	0
C ₃	1	1	1	0	0
C ₄	1	0	1	0	0
C ₅	1	0	0	0	0

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Guttman scale

For each of the following, indicate if you 'Agree' (Y) or 'Disagree' (-)

1. Crime is a serious problem in our nation.
2. Police should be given more powers.
3. More criminals should be given the death penalty.
4. Our nation ought to do something about drug exporting countries.
5. The military ought to be used to patrol our streets.
6. Inmates on death row ought to be executed quickly.
7. Most politicians are too soft on crime.
8. Lethal injection is too merciful for those who deserve it.

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Guttman scale

Respondent	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8
1	Y	Y	Y	Y	Y	Y	Y	Y
2	Y	Y	Y	Y	Y	Y	Y	-
3	Y	Y	Y	Y	Y	-	Y	-
4	Y	Y	Y	Y	Y	Y	-	-
5	Y	Y	Y	Y	Y	-	-	-
6	Y	Y	Y	Y	-	Y	-	-
7	Y	Y	Y	Y	-	-	-	-
8	Y	Y	Y	Y	-	-	-	-
9	Y	Y	Y	Y	-	Y	-	-
10	Y	Y	-	Y	-	-	-	-

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Respondent	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8
1	Y	Y	Y	Y	Y	Y	Y	Y
2	Y	Y	Y	Y	Y	Y	Y	-
3	Y	Y	Y	Y	Y	Y	Y	-
4	Y	Y	Y	Y	Y	Y	-	-
5	Y	Y	Y	Y	Y	Y	-	-
6	Y	Y	Y	Y	Y	Y	-	-
7	Y	Y	Y	Y	Y	-	-	-
8	Y	Y	Y	Y	-	-	-	-
9	Y	Y	Y	Y	-	Y	-	-
10	Y	Y	-	Y	-	-	-	-

Guttman scale

Error

Number of errors = 4
 Total possible errors = 10 x 8 = 80
 Error proportion = 4/80 = 0.05
 Coefficient of Reproducibility = 1 - 0.05 = 0.95

Max Permissible Error Proportion = 10%

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Guttman scale

Respondent	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Score
1	Y	Y	Y	Y	Y	Y	Y	Y	8
2	Y	Y	Y	Y	Y	Y	Y	-	7
3	Y	Y	Y	Y	Y	-	Y	-	6
4	Y	Y	Y	Y	Y	Y	-	-	6
5	Y	Y	Y	Y	Y	-	-	-	6
6	Y	Y	Y	Y	-	Y	-	-	5
7	Y	Y	Y	Y	Y	-	-	-	5
8	Y	Y	Y	Y	-	-	-	-	4
9	Y	Y	Y	-	Y	-	-	-	4
10	Y	Y	-	Y	-	-	-	-	3
f	10	10	9	9	7	4	3	1	
p	1	1	0.9	0.9	0.7	0.4	0.3	0.1	

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Guttman scale

The Guttman scale is related to Rasch measurement; specifically, Rasch models bring the Guttman approach within a probabilistic framework.

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Non-comparative scaling techniques

- Likert scale
- Thurstone scale
- Semantic differential scale

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Likert scale

Named after its inventor, Rensis Likert (1903–1981) American psychologist.

Developed the Likert scale in 1932 in his PhD thesis, using it to identify the extent of a person’s beliefs, attitudes, and feelings towards international affairs.

The traditional Likert scale asks people the extent to which they agree or disagree with a statement on a 5-point scale.

The scale ranges from “strongly agree” to “strongly disagree” – a 5 point scale

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Likert scale

Never Seldom Sometimes Often Always

Strongly Agree Agree About 50/50
Disagree Strongly Disagree (Don't Know)

Strongly Approve Approve Need more
information Disapprove Strongly Disapprove

Strongly Opposed Definitely Opposed A bit of
both Definitely Unopposed Strongly
Unopposed

A 7-point scale by adding 'very'.

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Rosenberg Self-Esteem Scale

SE1: I feel that I have a number of good qualities.
(5) almost always true
(4) often true
(3) sometimes true
(2) seldom true
(1) never true

SE2: I wish I could have more respect for myself.
(1) almost always true
(2) often true
(3) sometimes true
(4) seldom true
(5) never true

SE3: I feel I'm a person of worth, at least on an equal plane with others
(5) almost always true
(4) often true
(3) sometimes true
(2) seldom true
(1) never true

Milton Rosenberg
(1965: *Society and the Adolescent Self-Image*. Princeton, NJ: Princeton University Press.)

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Rosenberg Self-Esteem Scale

SE4: I feel I do not have much to be proud of.
(1) almost always true
(2) often true
(3) sometimes true
(4) seldom true
(5) never true

SE5: I take a positive attitude toward myself.
(5) almost always true
(4) often true
(3) sometimes true
(2) seldom true
(1) never true

SE6: I certainly feel useless at times.
(1) almost always true
(2) often true
(3) sometimes true
(4) seldom true
(5) never true

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Rosenberg Self-Esteem Scale

SE7: All in all, I am inclined to feel that I am a failure.
(1) almost always true
(2) often true
(3) sometimes true
(4) seldom true
(5) never true

SE8: I am able to do things as well as most other people.
(5) almost always true
(4) often true
(3) sometimes true
(2) seldom true
(1) never true

SE9: At times I think I am no good at all.
(1) almost always true
(2) often true
(3) sometimes true
(4) seldom true
(5) never true

SE10: On the whole, I am satisfied with myself.
(5) almost always true
(4) often true
(3) sometimes true
(2) seldom true
(1) never true

Rosenberg Self-Esteem Scale

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Rosenberg Self-Esteem Scale

	almost always true	often true	sometime s true	seldom true	never true
SE1 (+)	X (5)				
SE2 (-)			X (3)		
SE3 (+)		X (4)			
SE4 (-)				X (4)	
SE5 (+)			X (3)		
SE6 (-)			X (3)		
SE7 (-)				X (4)	
SE8 (+)	X (5)				
SE9 (-)					X (5)
SE10 (+)		X (4)			

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Rosenberg Self-Esteem Scale

Max score: 50 Min: 10 Neutral: 30

For the present subject:

5 + 3 + 4 + 4 + 3 + 3 + 4 + 5 + 5 + 4 = 40

Moderately high self esteem

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Methods of Analysis

Depending on how the Likert scale questions are treated:

- Analysis methods used for individual questions (ordinal data):
 - bar charts and dot plots
 - not histograms (data is not continuous)
 - central tendency summarised by median and mode
 - not mean
 - variability summarised by range and inter-quartile range
 - not standard deviation
 - analyzed using non-parametric tests (differences between the medians of comparable groups)
 - Mann-Whitney U test
 - Wilcoxon signed-rank test
 - Kruskal-Wallis test

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Methods of Analysis

- Analysis methods used when reduced to nominal levels of agree vs. disagree:
 - Chi-square test
 - Cochran Q test
 - McNemar test

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Thurstone scale

Developed by Louis Leon Thurstone (1887 – 1955, U.S. psychometrician) in 1928,

as a means of measuring attitudes towards religion.

Made up of statements about a particular issue, each statement has a numerical value indicating how favorable or unfavorable it is judged to be.

People check each of the statements to which they agree, and a mean score is computed, indicating their attitude.

Developing an AIDS attitude scale

1. People get AIDS by engaging in immoral behavior
2. You can get AIDS from toilet seats
3. AIDS is the wrath of God
4. Anybody with AIDS is either gay or a junkie
5. AIDS is an epidemic that affects us all
6. people with AIDS are bad
7. People with AIDS are real people
8. AIDS is a cure, not a disease
9. You can get AIDS from heterosexual sex
10. People with AIDS are like my parents
11. You can get AIDS from public toilets
12. Women don't get AIDS
13. I treat everyone the same, regardless of whether or not they have AIDS
14. AIDS costs the public too much
15. AIDS is something the other guy gets
16. Living with AIDS is impossible
17. Children cannot catch AIDS
18. AIDS is a death sentence
19. Because AIDS is preventable, we should focus our resources on prevention instead of curing

Developing an AIDS attitude scale

20. People who contract AIDS deserve it
21. AIDS doesn't have a preference, anyone can get it.
22. AIDS is the worst thing that could happen to you.
23. AIDS is good because it will help control the population.
24. If you have AIDS, you can still live a normal life.
25. People with AIDS do not need or deserve our help
26. By the time I would get sick from AIDS, there will be a cure
27. AIDS will never happen to me
28. You can't get AIDS from oral sex
29. AIDS is spread the same way colds are
30. AIDS does not discriminate
31. You can get AIDS from kissing
32. AIDS is spread through the air
33. Condoms will always prevent the spread of AIDS
34. People with AIDS deserve what they got
35. If you get AIDS you will die within a year
36. Bad people get AIDS and since I am a good person I will never get AIDS
37. I don't care if I get AIDS because researchers will soon find a cure for it.

Developing an AIDS attitude scale

38. AIDS distracts from other diseases that deserve our attention more
39. Bringing AIDS into my family would be the worst thing I could do
40. Very few people have AIDS, so it's unlikely that I'll ever come into contact with a sufferer
41. If my brother caught AIDS I'd never talk to him again
42. People with AIDS deserve our understanding, but not necessarily special treatment
43. AIDS is an omnipresent, ruthless killer that lurks around dark alleys, silently waiting for naive victims to wander passed so that it might pounce.
44. I can't get AIDS if I'm in a monogamous relationship
45. The nation's blood supply is safe
46. Universal precautions are infallible
47. People with AIDS should be quarantined to protect the rest of society
48. Because I don't live in a big city, the threat of AIDS is very small
49. I know enough about the spread of the disease that I would have no problem working in a health care setting with patients with AIDS
50. The AIDS virus will not ever affect me
51. Everyone affected with AIDS deserves it due to their lifestyle

Developing an AIDS attitude scale

- 52. Someone with AIDS could be just like me
- 53. People infected with AIDS did not have safe sex
- 54. Aids affects us all.
- 55. People with AIDS should be treated just like everybody else.
- 56. AIDS is a disease that anyone can get if there are not careful.
- 57. It's easy to get AIDS.
- 58. The likelihood of contracting AIDS is very low.
- 59. The AIDS quilt is an emotional reminder to remember those who did not deserve to die painfully or in vain
- 60. The number of individuals with AIDS in Hollywood is higher than the general public thinks
- 61. It is not the AIDS virus that kills people, it is complications from other illnesses (because the immune system isn't functioning) that cause death
- 62. AIDS is becoming more a problem for heterosexual women and their offsprings than IV drug users or homosexuals
- 63. A cure for AIDS is on the horizon
- 64. Mandatory HIV testing should be established for all pregnant women

Developing an AIDS attitude scale

Next step ;

Have your participants (i.e., judges) rate each statement on a 1-to-11 scale in terms of how much each statement indicates a favorable attitude towards people with AIDS.

Rate the "favorableness"

**1 = "extremely unfavorable attitude towards people with AIDS" and
11 = "extremely favorable attitude towards people with AIDS."**

Developing an AIDS attitude scale

**Next step ;
analyze the rating data.**

**For each statement,
compute the Median and the Interquartile Range.**

Developing an AIDS attitude scale

Statement Number	Median	Q1	Q3	Interquartile Range
23	1	1	2.5	1.5
8	1	1	2	1
12	1	1	2	1
25	1	1	2	1
39	1	1	2	1
5	1	1	2	1
56	1	1	2	1
57	1	1	2	1
18	1	1	1	0
34	1	1	1	0
51	1	1	1	0
27	2	1	5	4
45	2	1	4	3
16	2	1	3.5	2.5
42	2	1	3.5	2.5
24	2	1	3	2
44	2	2	4	2
36	2	1	2.5	1.5

Statement Number	Median	Q1	Q3	Interquartile Range
43	2	1	2.5	1.5
33	3	1	5	4
48	3	1	5	4
20	3	1.5	5	3.5
28	3	1.5	5	3.5
31	3	1.5	5	3.5
19	3	1	4	3
22	3	1	4	3
37	3	1	4	3
41	3	2	5	3
6	3	1.5	4	2.5
21	3	1.5	4	2.5
32	3	2	4.5	2.5
9	3	2	3.5	1.5
1	4	3	7	4
26	4	1	5	4
47	4	1	5	4
30	4	1.5	5	3.5
13	4	2	5	3

Developing an AIDS attitude scale

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Statement Number	Median	Q1	Q3	Interquartile Range
11	4	2	4.5	2.5
15	4	3	5	2
40	5	4.5	8	3.5
2	5	4	6.5	2.5
14	5	4	6	2
17	5.5	4	8	4
49	6	5	9.75	4.75
50	8	5.5	11	5.5
35	8	6.25	10	3.75
29	9	5.5	11	5.5
38	9	5.5	10.5	5
3	9	6	10	4
4	9	7	11	4
53	10	6	10.5	4.5
7	10	7.5	11	3.5
46	10	8	11	3
54	10	8.5	11	2.5
10	11	9.5	11	1.5
55	11	10	11	1

Developing an AIDS attitude scale

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Developing an AIDS attitude scale

Next,
Select the final statements for your scale.

In the example,
select one statement for each of the eleven median values.

Within each value, select the statement with the smallest Interquartile Range.

→ the statement with the least amount of variability across judges.

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- Let the following be items for our scale:**
- ❖ **People with AIDS are like my parents** (6)
 - ❖ **Because AIDS is preventable, we should focus our resources on prevention instead of curing** (5)
 - ❖ **People with AIDS deserve what they got.** (1)
 - ❖ **Aids affects us all** (10)
 - ❖ **People with AIDS should be treated just like everybody else.** (11)
 - ❖ **AIDS will never happen to me.** (3)
 - ❖ **It's easy to get AIDS** (7)
 - ❖ **AIDS is a disease that anyone can get if they are not careful** (9)
 - ❖ **If you have AIDS, you can still lead a normal life** (8)
 - ❖ **AIDS is good because it helps control the population.** (2)
 - ❖ **I can't get AIDS if I'm in a monogamous relationship.** (4)
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Developing an AIDS attitude scale

Agree	Disagree	People with AIDS are like my parents
Agree	Disagree	Because AIDS is preventable, we should focus our resources on prevention instead of curing
Agree	Disagree	People with AIDS deserve what they got.
Agree	Disagree	Aids affects us all
Agree	Disagree	People with AIDS should be treated just like everybody else.
Agree	Disagree	AIDS will never happen to me.
Agree	Disagree	It's easy to get AIDS
Agree	Disagree	AIDS is a disease that anyone can get if they are not careful
Agree	Disagree	If you have AIDS, you can still lead a normal life
Agree	Disagree	AIDS is good because it helps control the population.
Agree	Disagree	I can't get AIDS if I'm in a monogamous relationship.

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Agree	Disagree	People with AIDS are like my parents (6)
Agree	Disagree	Because AIDS is preventable, we should focus our resources on prevention instead of curing (6)
Agree	Disagree	People with AIDS deserve what they got. (1)
Agree	Disagree	Aids affects us all (10)
Agree	Disagree	People with AIDS should be treated just like everybody else. (11)
Agree	Disagree	AIDS will never happen to me. (3)
Agree	Disagree	It's easy to get AIDS (7)
Agree	Disagree	AIDS is a disease that anyone can get if they are not careful (8)
Agree	Disagree	If you have AIDS, you can still lead a normal life (8)
Agree	Disagree	AIDS is good because it helps control the population. (2)
Agree	Disagree	I can't get AIDS if I'm in a monogamous relationship. (4)

Seven items as Agree

Average scale values for these seven items
 $(6 + 5 + 10 + 11 + 9 + 8 + 4) ,$
 $= 7.57.$

1 = "extremely unfavorable attitude towards people with AIDS"
 11 = "extremely favorable attitude towards people with AIDS."

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* Semantic Differential

* Charles Egerton Osgood (1916 –1991) American psychologist

- * A rating scale designed to measure the semantics or meaning of words, particularly adjectives, and their referent concepts.
- * The meanings are used to derive the attitude towards the given object, event or concept.
- * The respondent is asked to choose where his or her position lies, on a scale between two bipolar adjectives
- * (for example:
- * "Adequate-Inadequate", "Good-Evil" or
- * "Valuable-Worthless").

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Please Rate Your Mother								
Bad	1	2	3	4	5	6	7	Good
Unfriendly	1	2	3	4	5	6	7	Friendly
Sad	1	2	3	4	5	6	7	Happy
Cruel	1	2	3	4	5	6	7	Kind
Dirty	1	2	3	4	5	6	7	Clean
Foolish	1	2	3	4	5	6	7	Wise

The score on attitude-toward-mother scale =
 add up the numerical values of the scales endorsed.
Maximum score = 42
Minimum = 6

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Subjects develop some type of response bias (respond to all scales with the same ratings, leaving the impression the subject may not have read the individual scales) the polarity of some of the scales could be reversed.

Please Rate Your Mother								
Bad	1	2	3	4	5	6	7	Good
Friendly	7	6	5	4	3	2	1	Unfriendly
Sad	1	2	3	4	5	6	7	Happy
Kind	7	6	5	4	3	2	1	Cruel
Dirty	1	2	3	4	5	6	7	Clean
Wise	7	6	5	4	3	2	1	Foolish

- * Osgood and Tannenbaum's classic work on the semantic differential:
- * *The Measurement of Meaning*
- * They isolated three major dimensions of word meanings through
- * the use of factor analysis.
- * These dimensions are
- * evaluative (good or bad),
- * potency (strong or weak) and
- * activity (fast or slow).
- * (EPA)

Semantic Scales Identifying the Factors of Evaluation, Potency, and Activity*

Evaluation	Potency	Activity
Good-Bad	Hard-Soft	Active-Passive
Kind-Cruel	Strong-Weak	Fast-Slow
Wise-Foolish	Heavy-Light	Difficult-Easy
Beautiful-Ugly	Masculine-Feminine	Hot-Cold
Happy-Sad	Deep-Shallow	Motivated-Aimless
Candid-Deceitful	Potent-Impotent	Moving-Still
Sociable-Unsociable	Severe-Lenient	Excitable-Calm
Friendly-Unfriendly	Domineering-Lax	Alive-Dead
Willing-Unwilling	Brave-Cowardly	Emotional-Unemotional
Honest-Dishonest	Large-Small	Complex-Simple

* The left hand adjective identifies the positive end of the semantic scale.

Please Rate Your Mother								
Good	7	6	5	4	3	2	1	Bad
Shallow	1	2	3	4	5	6	7	Deep
Active	7	6	5	4	3	2	1	Passive
Cruel	1	2	3	4	5	6	7	Kind
Strong	7	6	5	4	3	2	1	Weak
Slow	1	2	3	4	5	6	7	Fast
Wise	7	6	5	4	3	2	1	Foolish
Heavy	1	2	3	4	5	6	7	Light
Ease	7	6	5	4	3	2	1	Difficult

Evaluation factor first,
Potency factor second,
Activity factor third

Please Rate Your Mother								
Good	7X	6	5	4	3	2	1	Bad
Shallow	1	2	3	4	5X	6	7	Deep
Active	7	6	5X	4	3	2	1	Passive
Cruel	1	2	3	4	5	6X	7	Kind
Strong	7	6	5	4X	3	2	1	Weak
Slow	1	2	3	4	5X	6	7	Fast
Wise	7X	6	5	4	3	2	1	Foolish
Heavy	1	2	3X	4	5	6	7	Light
Easy	7	6	5	4X	3	2	1	Difficult

Evaluation	Value	Potency	Value	Activity	Value
Good – Bad	7	Shallow – deep	5	Active – Passive	5
Cruel – Kind	6	Strong – Weak	4	Slow – Fast	5
Wise – Foolish	7	Heavy – Light	3	Easy – Difficult	4
Total	20	Total	12	Total	14

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Evaluation	Value	Potency	Value	Activity	Value
Good – Bad	7	Shallow – deep	5	Active – Passive	5
Cruel – Kind	6	Strong – Weak	4	Slow – Fast	5
Wise – Foolish	7	Heavy – Light	3	Easy – Difficult	4
Total	20	Total	12	Total	14

Maximum score = 21; Minimum = 3; Neutral = 12

The subject rated the referent "mother" very high on evaluation (20/21), neutral (neither positive or negative) on potency and somewhat positive on activity.

Summing all the semantic scores, Total Score = 46
Maximum score = 63; Minimum = 9; Neutral = 36

→ The subject had a slightly positive attitude toward the referent "mother".

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* Another example,
* Attitude towards your church

Please Rate Your Church								
Valuable								Worthless
Clean								Dirty
bad								Good
Unfair								Fair
Large								Small
Strong								Weak
Deep								Shallow
Fast								Slow
Active								Passive
Hot								Cold
	1	2	3	4	5	6	7	

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Please Rate Your Church								
Valuable								Worthless
Clean								Dirty
bad								Good
Unfair								Fair
Large								Small
Strong								Weak
Deep								Shallow
Fast								Slow
Active								Passive
Hot								Cold
	1	2	3	4	5	6	7	

* The first four adjective pairs → evaluative dimension;
* the next three → potency;
* and the last three → activity.
* Pairs reversed be scored in reverse,
* so that positive is always (7)
* and negative (1)

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