DEVELOPING AND STANDARDIZING A SCALE FOR MEASURING ATTITUDES TOWARDS INFANT FEEDING

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ABSTRACT

A Likert type scale was designed to assess the attitudes of urban college girls towards infant feeding. The scale was administered to a sample population of 50 girls and the scores thus obtained were used to calculate the internal consistency of the scale. The scale had a reliability of 0.82 ($p < 0.01$ at df 48).

Key words: *Attitudes, Likert scales, Infant feeding.*

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Received for publication: December 2, 1992; Accepted: May 12, 1993

It is mandatory for success of any health education programme that equal attention is paid to formation of positive attitudes rather than only to imparting knowledge. Assessment of attitudes, therefore, assumes importance. For this, various types of scales are available, of which, Likert-type scales are the ones most commonly used. Although very simple to construct, not many clinicians are aware of the methodology to design a Likert-type scale. In this communication, designing and standardizing a Likert-type scale for assessing attitudes of urban college girls regarding infant feeding is described as an example.

Material and Methods

The proposed attitude scale was meant to assess attitudes of urban college girls. The areas regarding which attitudes were to be assessed included prelacteal feeds, breast feeding, weaning, supplementary feeding and food fads. The statements concerning these aspects were collected from literature and informal discussions with a sample of respondents and subject experts, keeping in view the general guidelines(1). The statements were framed into affirmative sentences. Eight statements were framed positively and were presented in the form of a questionnaire. The respondents were requested to indicate their agreement or otherwise with the statements by ticking one of the 3 choices provided, (Yes, Cannot say, No). Complete anonymity was maintained. The list of statements used for the purpose is given in *Appendix 1.*

The questionnaire was administered to a representative sample of 50 students. Scores were assigned to each statement (3, 2 and 1 for positive statements and 1, 2 and 3 for negative statements). Total scores were computed separately for odd numbered and even numbered statements. Co-efficient of

TABLE I–*Scores on Odd and Even Items*

S. No.	x (odd) score	y (even) score	dx	dy	dx^2	dy^2	dx dy
1.	21	24	+ 5.1	+ 0.1	26.01	0.01	- 0.51
2.	31	22	+ 4.9	- 1.9	24.01	3.61	- 9.31
3.	24	23	- 2.1	- 1.9	4.41	0.81	+ 1.89
4.	23	24	- 3.1	+ 0.1	9.61	0.01	- 0.31
5.	22	20	- 4.1	- 3.9	16.81	15.21	+ 15.99
6.	22	19	- 4.1	- 1.9	16.81	24.01	+ 20.09
7.	23	21	- 3.1	- 2.9	9.61	8.41	+ 8.99
8.	29	31	+ 2.9	+ 7.1	8.41	50.41	+ 20.59
9.	23	21	- 3.1	- 2.9	9.61	8.41	+ 8.99
10.	25	22	- 1.1	- 1.9	1.21	3.61	+ 2.09
11.	30	27	+ 3.9	+ 3.1	15.21	9.61	+ 12.99
12.	27	24	+ 0.9	+ 0.1	0.81	0.01	+ 0.09
13.	23	22	- 3.1	- 1.9	9.61	3.61	+ 5.89
14.	26	22	- 0.1	- 1.9	1.01	3.61	+ 0.19
15.	27	23	+ 0.9	- 0.9	0.81	0.81	- 0.81
16.	25	22	- 1.1	- 1.9	1.21	3.61	+ 2.09
17.	24	21	- 2.1	- 2.9	4.41	8.41	+ 6.09
18.	24	20	- 2.1	- 3.9	4.41	15.21	+ 8.19
19.	25	22	- 1.1	- 1.9	1.21	3.61	+ 2.09
20.	24	25	- 2.1	+ 1.1	4.41	1.21	- 2.31
21.	27	24	+ 0.9	+ 0.9	0.81	0.01	+ 0.09
22.	27	23	+ 0.9	- 0.9	0.81	0.81	- 0.81
23.	25	21	- 1.1	- 2.9	1.21	8.41	- 3.19
24.	29	26	+ 2.9	+ 2.1	8.41	4.41	+ 6.09
25.	25	21	- 1.1	- 1.9	1.21	3.61	+ 2.09
26.	22	20	- 4.1	- 3.9	16.81	15.21	+ 15.99
27.	23	21	- 3.1	- 2.9	9.61	8.41	+ 8.99
28.	29	25	+ 2.9	+ 1.1	8.41	1.21	+ 3.19
29.	34	32	+ 7.9	+ 8.1	62.41	65.41	+ 63.99
30.	25	26	- 1.1	+ 2.1	1.21	4.41	- 2.31
31.	31	28	+ 4.9	+ 4.1	24.01	16.81	+ 20.09
32.	27	24	+ 0.9	+ 3.1	0.81	9.61	+ 2.79
33.	30	25	+ 3.0	+ 1.1	15.21	1.21	+ 4.29
34.	23	23	- 3.1	- 0.9	9.61	0.81	+ 2.79
35.	31	27	+ 4.9	+ 3.1	24.01	9.61	+ 15.19
36.	26	22	- 0.1	- 1.9	1.21	3.61	+ 0.19

S. No.	x (odd) score	y (even) score	dx	dy	dx^2	dy^2	dx dy
37.	22	23	- 4.1	- 0.9	16.81	0.81	+ 3.29
38.	31	29	+ 4.9	+ 5.1	24.01	26.01	+ 24.99
39.	28	18	+ 1.9	- 5.9	3.61	34.81	- 11.21
40.	31	17	+ 4.9	- 6.9	24.01	47.61	- 33.81
41.	31	27	+ 4.9	+ 3.1	24.01	9.06	+ 15.19
42.	23	25	- 3.1	+ 1.1	9.61	1.21	- 3.41
43.	28	33	+11.9	+ 9.1	141.61	82.81	+108.29
44.	34	33	+ 7.9	+ 9.1	62.41	82.81	+ 71.89
45.	32	38	+ 5.9	+ 8.1	34.81	65.61	+ 47.79
46.	37	34	+10.9	+10.1	118.81	102.01	+110.09
47.	18	26	- 8.1	+ 2.1	65.61	4.41	- 17.01
48.	16	15	-10.1	- 8.9	102.01	79.21	+ 89.89
49.	17	14	- 9.1	- 9.1	82.81	98.01	+ 90.09
50.	16	24	-10.1	+ 0.1	102.01	0.01	- 1.01
	$\bar{X}$ = 26.12	$\bar{Y}$ = 239	Σ dx = 1	Σ dy = 2	Σdx^2 = 1167.5	Σdy^2 = 952.9	Σ dxdy = 743

Applying the Pearson Product moment correlation formula(2)

$$r = \frac{(50 \times 743) - 2}{\sqrt{[(50 \times 1167.5) - 1 \times (50 \times 952.9) - 4]}}$$

$$r = \frac{37148}{\sqrt{58374 \times 47596}} = \frac{37148}{52668.8}$$

r = 0.70 (half scale).

Applying Spearman Brown formula(2)

$$\text{r of full scale} = \frac{2 \times \text{r of half scale}}{1 + \text{r of half scale}}$$

$$\frac{2 \times 0.70}{1 + 0.70} = \frac{1.40}{1.70} = 0.82$$

$p < 0.01$ at 48 df (significant).

correlation was calculated between the two sets of scores using Pearson - product - moment - correlation formula(2). This gave the reliability of half scale, which was converted to reliability of full scale using Spearman - Brown - Prophecy formula(3). The value thus obtained was tested for significance against 48 degrees of freedom.

Results

Fifty respondents took the test. The scores on odd and even items are shown in *Table I*. The correlation between odd and even items was 0.70. The reliability of full scale was calculated to be 0.82, which had a significance of 0.01 at 48 df.

Discussion

Construction of attitude scales is the first step in attitude assessment. It is essential that the proposed scales should be reliable. For determining the reliability, various techniques are available. The best method, probably, would be to administer the same scale twice and see if the results are consistent. This measure of test-retest reliability(4) is not practical with attitude scales because the 'practice effect' comes into picture and may distort the results. The other method is to measure the internal consistency of the scale. This tells us, if all the items of the scale are consistently measuring the attitudes in the same dimension. For practical purposes, this can be taken as the method of choice for determining the reliability of attitude scales.

Our scale had a reliability of 0.82 which was highly significant. This means that by using this scale for assessing attitudes, consistent results would be obtained on all dimensions of infant feeding.

In practice, there may be situations, where the values obtained may not be significant. In such situations, the statements may be rephrased or arranged in a different order and scale readministered. In some cases, even this simple rearrangement may give an acceptable reliability. In case, the figures obtained are still not acceptable, one can use other statistical methods like Cronbach -alpha(4), which calculate the correlation between scores on individual items and scores on rest of the scale *minus* that item. By applying this technique, items which need to be changed or excluded can be identified.

It should be clearly understood that the estimates for reliability are applicable for the particular scale in a particular population. The results obtained in one type of test sample may not be applicable to another and therefore, it is imperative that reliability should be checked each time the scale is administered. It should also be noted that merely by changing the order of statements, the figures for reliability might change. Therefore, if it is desired to alter the order for any reason, the reliability should be recalculated.

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APPENDIX 1. The Administered Questionnaire

Given below are certain statements. Please indicate if you agree or disagree with them. If you cannot decide, please tick the middle column but do not leave any column blank. You are not required to identify yourself or put your signatures.

	Statement	Agree	Cannot say	Disagree
1.	Babies should be breast fed from the first day itself.			
2.	Ghutti should be given to the baby as first feed, as it will help the baby to pass stool and clear the intestines.			
3.	Babies should not be given colostrum since it can make them sick.			
4.	Mother should eat panjiri and papaya to increase the breast milk.			
5.	Breastfeeding should be continued as long as mother has milk.			
6.	Early introduction of bottle feeds is necessary, otherwise babies refuse bottle feeds.			
7.	It is so easy to breastfeed a baby when you are away from home.			
8.	If a baby cries after a breastfeed it does not mean that he is still hungry.			
9.	Babies should be given demand feeding rather than scheduled feeds.			
10.	Undiluted milk should not be given as it will cause indigestion and liver trouble in babies.			
11.	As long as powder milk is used for feeding, one need not worry about baby's nutrition.			
12.	Goat's milk is nearest to breastmilk and therefore it is the best substitute for breastmilk.			
13.	Breastfeeding causes mother to become fat and spoils her figure.			
14.	It is necessary to prepare special weaning foods for the baby because usual diet is difficult to digest.			

	Statement	Agree	Cannot say	Disagree
15.	Commercial baby foods (like Cerelac, Farex *etc.*) are very convenient and allow the mother a lot of free time.			
16.	Babies should not be fed frequently otherwise their habits are spoilt.			
17.	If early weaning is started babies develop protruberant bellies as they cannot digest the food well.			
18.	Babies cannot digest 'dal' (pulses) and hence dal water should be given instead as it is equally nutritious.			
19.	Cerelac is very nutritious and makes the healthiest babies.			
20.	Babies cannot become healthy unless they receive regular vitamins and tonics.			
21.	Eggs should be avoided in summer as they are hot and cause diarrhea.			
22.	Banana/curd being cold foods can cause chest infections and should be avoided in winters.			
23.	Eggs are highly nutritious for babies and should be given as far as possible.			
24.	Soothers are very useful as they keep the baby quiet and help him to sleep.			