

## **DEVELOPMENT OF MOTHER-INFANT ATTACHMENT SCALE**

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### **ABSTRACT**

*A 15 item mother-infant attachment scale was developed. It is a simple, brief and easy to comprehend even by the illiterate rural woman. The split half reliability was found to be 0.83 and there was high internal consistency. It has high face and construct validity. The babies separated for longer period had shown lesser attachment subsequently, compared to those who had no separation.*

*Key words: Mother-infant attachment. Bonding*

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*Received for publication: March 20, 1991;*

*Accepted: October 4, 1994*

The post-partum period is the most sensitive period of life for development of mother-child interaction and bonding. Studies have highlighted the importance of early and close contact between the mother and her newborn baby(1-6). Conclusions drawn from these studies reveal that early contact of the mother with her baby helps towards establishing later maternal infant attachment. It was also suggested that personality, expectation, previous experience of the mother and her socio-cultural environment are important determinants of early attachment(7-9). Any measurement of attachment between infant and mother must depend upon mother's expectations, cultural practices and local beliefs, hence the western scale can not be used in different cultures. It was, therefore, considered appropriate to develop such a scale since no objective tool to quantify the mother-infant attachment has been designed or evaluated on Indian population.

### **Material and Methods**

#### ***Development of the Scale***

Before developing the statements for the scale, a workable operational rationale was evolved to enable the researchers to select only those items which confirm the rationale. For this, attachment is described as an enduring relationship between parent and child within which they can interact positively and negatively, secure in the knowledge that their love for each other will remain intact and that each others well being is of prime importance. Attachment can be seen operating between people in their behavior towards each other. In the mother child relationship, it is the child's (infant's) behavior she responds to. Feeling good about one's infant now and forecasting

for future are the major blocks of attachment process(10).

On the assumption of above premises items were developed for the scale. A large number of items were borrowed and adapted from the scale 'Parents judgement regarding particular child(11). Opinions of the pediatricians, sociologists and psychologists were sought about suitability of the items for the assessment of attachment between infant and mother and whether items appear to confirm the assumption as cited earlier. On the basis of their opinion a pool of 30 items was chosen for the scale. After a pilot tryout and critical examination of the responses on each item, finally 20 items were retained. Nine statements were negative and 11 were positive to avoid chance of a fixed response set. Responses on each statement were rated on five point scale ranging from 'strongly agree', 'agree', 'do not know', 'disagree' and 'strongly disagree'. A score of five was assigned to a most favorable response and one to most unfavorable response. After developing the scale, response categories of the items and scoring procedure, it was considered ready for standardization.

#### **Sample for Standardization**

One hundred mothers visiting neonatal follow up clinic of the Postgraduate Institute of Medical Education and Research, Chandigarh for the care of their babies were interviewed. They were further categorized according to the duration of separation of their babies from them in the premature nursery after birth. The babies were admitted in the premature nursery because of prematurity and low birth weight. The mothers were categorized as those of babies who were not separated, separated for a period upto one week and

those more than one week. The mothers were interviewed within six months of the birth of the child, and were administered the 20 item scale individually. The demographic characteristics of the mothers and child are shown in *Table I*.

#### **Results**

Item analysis of the scale was done with a view to find out which of the 20 items are discriminatory. This was achieved by finding out the endorsement rate of each item

**TABLE I**—*Demographic Characteristics of the Mothers and Babies*

Characteristics	n (100)
<i>Age of the Mother</i>	
upto 25 years	64
above 25 years	36
<i>Education of the Mother</i>	
Upto primary	30
VI to IX class	18
X to XII class	29
College	23
<i>Habitat</i>	
Urban	53
Rural	47
<i>Parity</i>	
First child	60
Second child	25
Third and above	15
<i>Sex of the Child</i>	
Male	58
Female	42
<i>Duration of Separation</i>	
Upto 1 week	28
More than one week	23
No separation	49

and its discriminating value (*Table II*) using E 1/3 procedure(12). The non discriminating items were deleted and item-item correlations were determined to find out how many clusters(13) the remaining items formed. Only 15 items had sufficient discriminating value (*Table II*). The correlation matrix yielded three clusters. The first cluster contained seven items and the second and third clusters contained 4 items each. A perusal of the items clearly indicated that the nature of the items was dis-

tinct in cluster one compared to clusters two and three (*Fig. 1*).

#### *Internal Consistency of the Clusters*

Each protocol was re-scored for each of the clusters separately. The correlation amongst the clusters and with total score is given in *Table III*. Each of the cluster had the highest correlation with the total score thereby showing that the total score was more reliable. The correlations amongst clusters were significant but low suggesting

**TABLE II—Discrimination Value of the Items: Percentage of the 'Yes' 'No' Responses in Upper, Middle and Low Scoring Groups**

	Low		Middle		Upper		E 1/3 value
	Y	**N	Y	**N	Y	**N	
1.	19	14	21	13	21	12	0.06*
2.	15	18	22	12	23	10	0.24
3.	23	10	32	2	33	0	0.30
4.	17	16	24	10	26	7	0.27
5.	25	8	32	2	33	0	0.24
6.	26	7	28	6	33	0	0.21
7.	21	12	27	17	33	0	0.36
8.	30	3	34	0	33	0	0.09*
9.	16	17	28	6	25	8	0.27
10.	29	4	34	0	32	1	0.09*
11.	9	24	16	18	20	13	0.33
12.	27	6	32	2	33	0	0.18*
13.	19	14	26	8	33	0	0.42
14.	24	9	31	3	31	2	0.21
15.	33	0	34	0	33	0	0.0*
16.	17	16	24	10	29	4	0.36
17.	23	10	29	5	33	0	0.30
18.	23	10	33	1	32	1	0.27
19.	15	18	24	10	28	5	0.39
20.	16	17	24	10	30	3	0.42

\* Had low discriminating value, and hence deleted.

\*\* It includes strongly disagree, disagree and do not know responses.

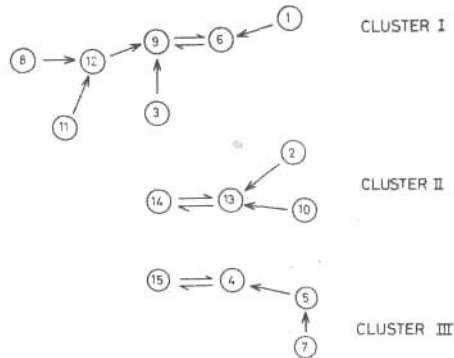


Fig.1. showing clusters of the items. The numbers represent the serial number of the items of the appended scale.

The three clusters were more or less independent of each other but contributing to the total score.

**Reliability**

The reliability of the scale was tested by split-half method, dividing the scale into two halves, the first half contained all the odd numbers and the second half contained items placed at even numbers. The odd even items correlation was 0.83 after correcting for the length. The correlation of each half with the total score was 0.90 and 0.87 for odd and even items, respectively. These figures of correlations are very high suggesting that the seal as sufficient reliability.

**Validity**

To find out the conceptual validity it was hypothesized that the longer the separation of the child from the mother after birth, lesser would be the attachment. To test this hypothesis, 51 subjects who were separated from the mothers were taken into account. The babies who were separated for less than a week were 28 and those for more than a week were 23. The mean and SD of these two groups are shown in Table IV.

TABLE III—Intercorrelations of Clusters 1, 2 and 3

	Total	C1	C2	C3
Total	-	0.83	0.64	0.63
C1	0.83	-	0.25	0.23
C2	0.64	0.25	-	0.41
C3	0.63	0.23	0.41	-

**Discussion**

The development of the scale for mother-infant attachment posed many problems. While selecting the items there was no clear rationale to identify the items. The young mothers had difficulty in giving their opinions about the attachment of their infants because most of the time mother-in-law's were looking after the baby. Mother is considered by her only as a feeder and not as a fondler to. enable her to establish interaction with' the child. This difficulty was overcome by interviewing educated mothers and those who had no elderly person to interfere between the mother and the child. The items of the scale collected had good content validity because the pediatrician and other child care experts had expressed their satisfaction to the items shown to them. The reliability of the items was significantly high. It was further strengthened by the fact that the three clusters arrived at through linkage analysis correlated more with the total score than amongst themselves. The content of the items when again reviewed gave an impression that Cluster I consisting of seven items is related to attachment and the last group of four items each represented the expectation of the mother from the child. There was greater commonality between Clusters II and III than clusters I and II and clusters I and III.

TABLE IV—Comparison of Mean Attachment Score in Two Groups of Separation

Cluster	Separation upto 7 days	Separation more than 7 days	t
Cluster I	n = 28	n = 23	
Cluster I	30.07(4.56)	27.00(5.75)	2.08
Cluster II	17.42(2.57)	16.69(3.08)	2.01
Cluster III	17.53(2.67)	15.78(3.04)	2.16
Total Score	65.02(6.84)	59.47(9.87)	2.28

Values given in the parenthesis represent SD. All 't' values are significant at .025 (one tail)

These two para-meters indicate attachment variable to which most of the clinicians cling on while rating for the attachment. Mothers who have high expectations from the child will have greater attachment with the child thus the cluster I and pool of II and III are complimentary to each other.

Since there was no parallel instrument to test the validity objectively, a construct was framed that longer the separation of the child from the mother after birth, lesser would be the attachment. To test this construct (hypothesis), score on the scale by mothers whose babies were separated for less than a week were compared with the scores of those mothers whose babies were separated for more than a week. The results have confirmed the hypothesis that longer the separation lesser was the attachment. This happens particularly because the mothers of the babies who were separated for longer period tend to decline in their expectation from the child because of doubt about the future prospects of baby as a normal being. The scale as developed here (*Appendix*) thus can be considered a brief instrument which is reliable and valid measure of mother-infant attachment.

#### Acknowledgements

This study is a part of the research work supported by the PGI research grant for the year 1987-1988.

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**APPENDIX-Mother Infant Attachment Scale**

Items	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
1. I feel that this child does not love me					
2. I love this child so much that I can not bear to be away from him (her) even for a short time					
3. This child is difficult to bring up					
4. I am extremely proud of this child					
5. When this child is out of my sight I always worry that some thing may not happen to him (her)					
6. I am annoyed by this child					
7. It seems that this child has great fortune					
8. It seems that this child obeys me					
9. This child has troubled me a lot					
10. This child is of my expectation					
11. This child has increased our difficulties					
12. I feel angry with this child					
13. This child is much affectionate to me					
14. This child seems to be a promising child					
15. This child has a lot of patience					

This is merely an English translation of a standardized Hindi scale.