BAYLEY SCALES OF INFANT DEVELOPMENT, given at 3, 6, 9, 12, 18 and 24[1] months
The instrument consists of three parts:

- a section evaluating the child's mental development,
- a section devoted to the child's motor development,
- a section to assess the child's social reactions and task orientation during the test situation, as expressed in attitudes, interests, emotions, energy, activity, and tendencies to approach or withdraw from stimulation (Infant Behavior Record).

The **Mental Scale** consists of 163 items (BxMI1-BxMI163), with a value of 1 (Pass/Yes) or 2 (Fail/No). A raw score is obtained from summing the 1's, and it is transformed to a standard score, the child's Mental Development Index (MDIx).

The **Motor Scale** consists of 81 items (BxPDI1-BxPDI81) with the same values as the mental scale items. A raw score is obtained in the same fashion as has already been described, and it is transformed into a Psychomotor Development Index (PDI).

The last section, known as the **Infant Behavior Record (IBR),** is completed after the Mental and Motor Scales have been administered. It consists of 30 items (IBRxI1-IBRxI30), 1-24 evaluating the infant's behavior, and 25-30 evaluating the child in comparison to others of his/her age. For some items, responses are either 1 (Yes, Normal, etc.) or 2 (No, Exceptional, etc.)[2]. In others they range from 1-5, and in still others, from 1-9, with either end of the scale representing an extreme, and the other values, degrees of each extreme, converging toward the middle. **Neither extreme of the scale is desirable behavior.**

Items with values of 1 or 2:	9, 10, 29 30
values of 1-5:	2, 3, 25-28
values of 1-9:	1, 4-8, 11-24

From the IBR items, David McPhee created four cluster scores:

Task Orientation	(TASKx)	sum of items 8, 11, 12 and 20
Activity Level	(ACTVx)	sum of items 14, 21 and 25
Cooperativenss	(COOPx)	sum of items 2, 4, 5 (reverse-scored), 7 and 13
Sociability	(SOCIABx)	sum of items 1 and 3

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[1] Apparently only the Infant Behavior Record section (IBR) was administered at 24 months

[2] For some instruments, the coding of yes/no variables as 1/2, where 2=No, was problematic. What was done in the calculation of subscales was to sum only the items with values of 1. This was done in deriving the Bayley mental and psychomotor development indices. For the Infant Behavior Record, it is not a problem because none of the cluster scores depends upon any yes/no items. If, however, some future analysis wishes to use those items, their coding needs to be taken into consideration.

INFANT BEHAVIOR INVENTORY

This questionnaire was filled out only for FPG preschool experimental subjects, by daycare teachers. The data were collected twice a year, from age 2 1/2 to school entrance. Forty-two items had **values of 1 (not at all like), 2 (very little like), 3 (somewhat like), or 4 (very much like)**. A supplement, consisting of 10 items, was scored the same. From these, 15 subscales were derived:

Verbal expressiveness	IBISCA1	sum of items 1,15,29
Distractibility	IBISCA2	sum of items 2,16,30
Attentiveness	IBISCA3	sum of items 3,17,31
Belligerence	IBISCA4	sum of items 4,18,32
Positive Social Response	IBISCA5	sum of items 5,19,33
Self-consciousness	IBISCA6	sum of items 6,20,34
Concentration	IBISCA7	sum of items 7,21,35
Hyperactivity	IBISCA8	sum of items 8,22,36
Perseverence	IBISCA9	sum of items 9,23,37
Withdrawal	IBISCA10	sum of items 10,24,38
Creativity	IBISCA11	sum of items 11,25,39
Irritability	IBISCA12	sum of items 12,26,40
Good-natured	IBISCA13	sum of items 13,27,41
Curiosity	IBISCA14	sum of items 14,28,42
Verbal Intelligence	IBISCA15	sum of items 43-52

and three cluster scores, derived from the subscales:

Extraversion	IBICLEXT	IBISCA1 + IBISCA5 - IBISCA6 - IBISCA10 + 19
Competent	IBICLCOM	IBISCA3 + IBISCA7 + IBISCA9 + IBISCA14 + IBISCA11 - IBISCA2
Hostility	IBICLHOS	IBISCA4 + IBISCA8 + IBISCA12 - IBISCA13 + 5

Documentation about this instrument was taken from notebook, "CBI, PEI, IBI, SAI". In that notebook was a program for a version of the instrument having been input into dataset IBI_V1.SSD on the mainframe. Since it looks like this instrument was used many times, yet there's only one dataset mentioned (with 203 obs), and it was administered to only Preschool Experimental children, I think that there may, indeed, be only one dataset, with multiple observations per child corresponding to the various times the instrument was given. IBI_V1.SSD was not downloaded to the PC, and there's no indication that any data from this instrument exists in a dataset on the PC.

David MacPhee

PROCEDURE FOR CALCULATING TEMPERAMENT FACTORS FROM THE BAYLEY INFANT BEHAVIOR RECORD

1) Input statement (SAS):

```
#3 @10 (A1-A25) (1.)        items for 3 mo. IBR
#4 @10 (B1-B25) (1.)        items for 6 mo. IBR
#5 @10 (C1-C25) (1.)                  9
#6 @10 (D1-D25) (1.)                  12
#7 @10 (E1-E25) (1.)        items for 18 mo. IBR
```

2) Item 5 must be reversed or it will have a negative factor loading:

```
A5=(10-A5);                 item rated on a 9 point scale
B5=(10-B5);
C5=(10-C5);
   etc.
```

3) Label statement:

```
LABEL A1  = Responsiveness to persons-IBR3
      A2  = Responsiveness to examiner-IBR3
      A3  = Responsiveness to mother-IBR3
      A4  = Cooperativeness-IBR3
      A5  = Approach-IBR3,
      A7  = Emotional tone-IBR3
      A8  = Object orientation-IBR3
      A11 = Goal-directedness-IBR3
      A12 = Attention span-IBR3
      A13 = Endurance-IBR3
      A14 = Activity level-IBR3
      A20 = Interest in manipulation-IBR3
      A21 = Interest in body motion-IBR3
      A25 = Level of energy-IBR3

           etc. for 6 through 18 months.
```

COMMENT: Data is available for cohorts II - IV on the 24 month IBR, given in conjunction with the Stanford-Binet. However, the factor structure is not at all clear and does not replicate the preceding 5 factor analyses.

COMMENT: Not all 25 IBR items were used. A few are dichotomous variables, scored present/absent. The rest had insignificant loadings on the first four factors and did not load consistently (if the loading reached .40) across ages.

4) Factor analysis:

```
PROC FACTOR METHOD=PRIN NFACT=4 ROTATE=VARIMAX:
VAR A1 A2 A3 A4 A5 A7 A8 A11 A12 A13 A14 A20 A21 A25;
TITLE1 FACTOR ANALYSIS OF THE BAYLEY IBR;
TITLE3 AGE = 3 MONTHS;
```

Bayley IBR
Method for computing cluster scores

developed by Dave MacPhee with Kaye Fendt

July 1980

1. The subjects used in all factor analyses were the Experimental and Control groups from all four cohorts in the Abecedarian files, ages 3,6,9,12 and 18 months.

2. All items on the IBR scored on a 5- or 9-point-scale were factored using a principal components factor analysis with varimax rotation.

3. Those items that loaded higher than .40 were retained. These 14 items loaded consistently on the same factors across all ages, except 9 months.

The formula for deriving cluster scores is:

	Item #	Column #	Description
Task orientation:	8	17	Object orientation
	11	20	Goal-directedness
	12	21	Attention span
	20	29	Interest in manipulation
Activity level:	14	23	Activity level
	21	30	Interest in body motion
	25	34	Level of energy
Cooperativeness	2	11	Responsiveness to examiner
	4	13	Cooperativeness
	*5	14	Approach
	7	16	Emotional tone
	13	22	Endurance
Sociability	1	10	Responsiveness to persons
	3	12	Responsiveness to mother

Most of the cluster scores are uncorrelated with each other across ages, except at 9 months:

	Task or	Activity	Cooper.	Sociab.
Task or Activity	.43			
Cooper.	.38	.64		
Sociab.	.38	.37	.22	

all r > .37 significant p < .0001

Further, only Task orientation is significantly correlated with same-age IQ scores: .46 to .70, median r = .63

I looked through my printouts and the only data I have printed out by subject is a summary score from the IBR, not cluster scores. But, using SAS, all I did was:

*Item 5 is an item reversal. (10-Item 5)