

## **Observational Study – Background Information**

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## 1. Play actions linked to communication levels

✓ indicates where a particular play behaviour could be associated - on a regular basis - with a particular level of communicative ability.

PLAY ACTION	COMMUNICATION LEVEL		
	Pre-verbal	1 word	2 word plus
<b>Self play</b>			
Body movement	✓		
Visual stimulation	✓		
Mouthing body parts	✓		
Vocalisations	✓	✓	✓
Playing with body products	✓		
Stimulating body parts with hands/fingers	✓		
<b>Exploratory play</b>	<b>Pre-verbal</b>	<b>1 word</b>	<b>2 word plus</b>
Oral exploration	✓		
Visual exploration	✓	✓	✓
Simple tactile exploration	✓		
Use of other body parts for tactile exploration	✓		
Complex tactile exploration	✓	✓	✓
Use of toy for actual exploratory process	✓	✓	✓
<b>Relational play</b>	<b>Pre-verbal</b>	<b>1 word</b>	<b>2 word plus</b>
Use of non-related objects together	✓		
Use of related objects together	✓	✓	✓
Relating separate parts of a single toy together	✓	✓	✓
Relating toy to people appropriately	✓	✓	✓
<b>Physical play</b>	<b>Pre-verbal</b>	<b>1 word</b>	<b>2 word plus</b>
Self movement	✓	✓	✓
Movement related to an object	✓	✓	✓
<b>Communicative play</b>	<b>Pre-verbal</b>	<b>1 word</b>	<b>2 word plus</b>
Undirected vocalisation	✓	✓	✓
Directed communication/vocalisations		✓	✓
Responses to communications from others		✓	✓
Communicative turn taking		✓	✓
<b>Simple pretend play</b>	<b>Pre-verbal</b>	<b>1 word</b>	<b>2 word plus</b>
Self directed pretend actions using real or miniature object		✓	✓
Simple, single pretend action with other or toy		✓	✓
Theme linked sequence of pretend actions			✓
<b>Imaginative play</b>	<b>Pre-verbal</b>	<b>1 word</b>	<b>2 word plus</b>

Use of objects for different, imaginary action; use of pretend objects in play			✓
Role play with variety of objects and / or people			✓

## 2. Overview of the groupings of the children during the observations

In the table below, the order each child was observed in as well as the number of children in each group observed is shown as follows: 3/4 indicates the child was the 3<sup>rd</sup> to be observed from a group of 4 children. \* indicates the child was not observed during that session.

Child	Study group	Obs.1	Obs.2	Obs.3	Obs.4	Obs.5	Obs.6
1	2	1/4	4/4	2/2	2/2	2/2	1/2
2	2	2/4	3/4	1/1	*	1/2	2/2
3	2	3/4	1/4	1/2	1/2	1/1	*
4	2	4/4	2/4	*	*	*	*
5	1	1/1	3/4	1/3	2/2	2/4	*
6	1	*	1/4	2/3	*	3/4	*
7	1	*	2/4	3/3	1/1	4/4	1/1
8	1	*	4/4	*	1/2	1/4	*
9	3	1/3	3/4	1/4	3/3	*	2/4
10	3	2/3	2/4	4/4	2/3	1/1	4/4
11	3	3/3	4/4	2/4	1/3	*	1/4
12	3	*	1/4	3/4	*	*	3/4
13	4	*	1/3	1/2	1/2	*	1/1
14	4	1/2	2/3	*	*	*	*
15	4	2/2	3/3	2/2	1/1	*	1/2
16	4	*	*	*	2/2	*	2/2
17	5	3/3	2/3	3/3	3/3	*	4/4
18	5	*	1/3	3/3	1/3	1/1	3/4
19	5	2/3	*	1/3	1/1	*	2/4
20	5	1/3	3/3	1/1	2/3	*	1/4
21	6	1/2	3/3	1/2	1/2	1/2	2/2
22	6	*	1/3	2/2	2/2	2/2	—
23	6	2/2	2/3	*	*	*	*
24	7	*	*	*	*	1/2	3/3
25	7	1/1	3/3	*	2/2	*	2/3
26	7	*	1/3	*	1/2	2/2	1/3
27	7	1/1	2/3	*	*	*	*
28	8	1/4	2/3	*	*	*	*
29	8	3/4	3/3	2/2	1/3	*	3/3
30	8	2/4	1/3	1/2	2/3	1/2	2/3
31	8	4/4	*	*	3/3	2/2	1/3
32	9	2/3	2/3	2/4	2/4	1/3	—
33	9	1/3	3/3	1/4	1/4	3/3	2/4
34	9	*	*	3/4	3/4	2/3	—
35	9	3/3	1/3	4/4	4/4	*	4/4

### 3. List of toys and play action categories

Toy	Code
Large ball	1
Small Ball	2
Doll's bed and bed clothes	3
Doll and clothes	4
Doll's bottle	5
Elephant soft toy	6
Toy tea set (4 each of cups, saucers, plates etc)	7
Spoons, forks, knives	8
Small dustbin and lid	9
Wind up toy radio	10
Mask puppet	11
Brush, comb and mirror	12
Pull along toy telephone	13
Large domino game	14
Assorted paper	15
Pencils in zip case	16
6 books - picture and narrative	17
Pull along shape sorter	18
Activity centre	19
Tinsel	20
Noisy rattle	21
Rattle with string and beads	22
Shape sorting hammer toy	23
Rubber hammer	24
Stickle bricks	25
Plastic blocks	26
Small collection of Lego	27
Matching game	28
Large beads and string in container	29
Small suitcase	30
Magnetic numbers and letters in container	31
Variety of play people and accessories in container	32
Pop up stacking toy	33
Jumping frog game	34
Child's basket	35
6 toy cars	36
Large pull-top bag (for all toys to go into)	37
2 large pieces of material	38
Large jigsaw	39
Moving badge	40
Wind up walking dog	41
Assorted dressing up clothes	42
Plastic scissors	43
Fuzzy felt and board	44
Shapes on a stick	45

Yo-yo	46
Noise box	47
Pull along dog	48

**Other play objects that were not toys, but were observed and coded:**

2 toys together	49
More than 2 toys together	50
Large pull top toy bag with toys in	51
Other person	52
Self - no toys or other person	53

**Play interactions were coded as follows:**

- 1 -*Solitary* - isolated play; no obvious interaction with peers; no reciprocation of others interaction
- 2 -*Parallel* - no initiation or maintenance of interaction, but plays alongside peers without disruption or withdrawal
- 3 -*Co-operative* - initiates and reciprocates play interaction; plays with others constructively.

**4. Format for transcribing taped information for analysis**

Child number				Gender				Age				Aetiology							
Observation number				Observational position				Number of children in observation group											
Toy	Act	Int	Dur	Toy	Act	Int	Dur	Toy	Act	Int	Dur	Toy	Act	Int	Dur	Toy	Act	Int	Dur
(1)				(2)				(3)				(4)				(5)			
(6)				(7)				(8)				(9)				(10)			
(11)				(12)				(13)				(14)				(15)			
(16)				(17)				(18)				(19)				(20)			
(21)				(22)				(23)				(24)				(25)			
(26)				(27)				(28)				(29)				(30)			
(31)				(32)				(33)				(34)				(35)			
(36)				(37)				(38)				(39)				(40)			
(41)				(42)				(43)				(44)				(45)			
(46)				(47)				(48)				(49)				(50)			
(51)				(52)				(53)				(54)				(55)			
(56)				(57)				(58)				(59)				(60)			
(61)																			

**5. Example of the complete coded record of one child’s six observations**

**Raw Data**

<b>Episode</b>	<b>Obs. 1</b>	<b>T</b>	<b>A</b>	<b>I</b>	<b>D</b>	<b>Obs. 2</b>	<b>T</b>	<b>A</b>	<b>I</b>	<b>D</b>	<b>Obs. 3</b>	<b>T</b>	<b>A</b>	<b>I</b>	<b>D</b>
1		49	23	1	15		47	25	1	20		0	0	0	0
2		42	23	1	10		47	23	1	1		0	0	0	0
3		49	23	1	5		45	23	1	2		0	0	0	0
4		49	23	1	5		45	23	1	2		0	0	0	0
5		53	41	1	10		45	26	1	50		0	0	0	0
6		49	23	1	10		45	31	1	7		0	0	0	0
7		53	53	2	5		45	26	1	40		0	0	0	0
8		49	23	1	20		53	53	2	2		0	0	0	0
9		22	22	1	10		45	26	1	48		0	0	0	0
10		22	53	2	5		47	23	1	3		0	0	0	0
11		53	53	2	15		45	26	1	17		0	0	0	0
12		9	23	2	10		23	23	1	20		0	0	0	0
13		9	23	1	10		47	26	2	17		0	0	0	0
14		49	23	1	15		19	23	2	5		0	0	0	0
15		49	25	1	5		19	23	1	7		0	0	0	0
16		27	23	1	2		19	23	2	4		0	0	0	0
17		49	23	1	10		19	23	1	29		0	0	0	0
18		49	23	1	5		53	23	1	14		0	0	0	0
19		51	23	1	10		1	23	1	2		0	0	0	0
20		50	23	1	15		1	26	1	17		0	0	0	0
21		9	23	1	5		0	0	0	0		0	0	0	0
22		53	23	1	10		0	0	0	0		0	0	0	0
23		53	23	2	15		0	0	0	0		0	0	0	0
24		9	23	2	5		0	0	0	0		0	0	0	0
25		9	24	2	30		0	0	0	0		0	0	0	0
26		53	23	1	2		0	0	0	0		0	0	0	0
27		49	26	1	10		0	0	0	0		0	0	0	0
28		0	0	0	0		0	0	0	0		0	0	0	0
29		0	0	0	0		0	0	0	0		0	0	0	0
30		0	0	0	0		0	0	0	0		0	0	0	0
31		0	0	0	0		0	0	0	0		0	0	0	0
32		0	0	0	0		0	0	0	0		0	0	0	0
33		0	0	0	0		0	0	0	0		0	0	0	0
34		0	0	0	0		0	0	0	0		0	0	0	0
35		0	0	0	0		0	0	0	0		0	0	0	0
36		0	0	0	0		0	0	0	0		0	0	0	0
37		0	0	0	0		0	0	0	0		0	0	0	0
38		0	0	0	0		0	0	0	0		0	0	0	0
39		0	0	0	0		0	0	0	0		0	0	0	0
40		0	0	0	0		0	0	0	0		0	0	0	0



*Observational Study...*

*Appendices*

41	0	0	0	0	0	0	0	0	0	0	0	0	0
42	0	0	0	0	0	0	0	0	0	0	0	0	0
43	0	0	0	0	0	0	0	0	0	0	0	0	0
44	0	0	0	0	0	0	0	0	0	0	0	0	0
45	0	0	0	0	0	0	0	0	0	0	0	0	0
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49	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	0	0
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53	0	0	0	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0	0	0	0
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58	0	0	0	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0	0	0	0
61	0	0	0	0	0	0	0	0	0	0	0	0	0

<b>Episode</b>	<b>Obs. 4</b>	<b>T</b>	<b>A</b>	<b>I</b>	<b>D</b>	<b>Obs. 5</b>	<b>T</b>	<b>A</b>	<b>I</b>	<b>D</b>	<b>Obs. 6</b>	<b>T</b>	<b>A</b>	<b>I</b>	<b>D</b>
1	53	22	1	4	50	23	1	7	0	0	0	0	0		
2	48	23	1	2	23	23	1	8	0	0	0	0	0		
3	48	25	1	14	23	33	1	14	0	0	0	0	0		
4	48	23	1	11	23	25	1	84	0	0	0	0	0		
5	48	25	1	13	50	22	1	5	0	0	0	0	0		
6	50	23	1	2	23	23	1	5	0	0	0	0	0		
7	13	23	1	9	50	22	1	27	0	0	0	0	0		
8	50	23	1	9	23	23	1	8	0	0	0	0	0		
9	17	23	1	5	49	23	1	25	0	0	0	0	0		
10	48	23	1	8	50	22	1	8	0	0	0	0	0		
11	17	24	1	10	48	23	1	10	0	0	0	0	0		
12	17	23	1	3	50	23	1	15	0	0	0	0	0		
13	17	22	1	5	48	26	1	4	0	0	0	0	0		
14	17	26	1	29	48	23	1	17	0	0	0	0	0		
15	49	22	1	6	48	26	1	38	0	0	0	0	0		
16	49	31	1	4	48	23	1	2	0	0	0	0	0		
17	17	23	2	3	49	31	1	13	0	0	0	0	0		
18	17	26	1	4	48	26	1	30	0	0	0	0	0		
19	17	23	1	23	48	23	1	18	0	0	0	0	0		
20	19	23	1	12	48	26	1	28	0	0	0	0	0		
21	48	23	1	3	48	23	1	42	0	0	0	0	0		
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*Observational Study...*

*Appendices*

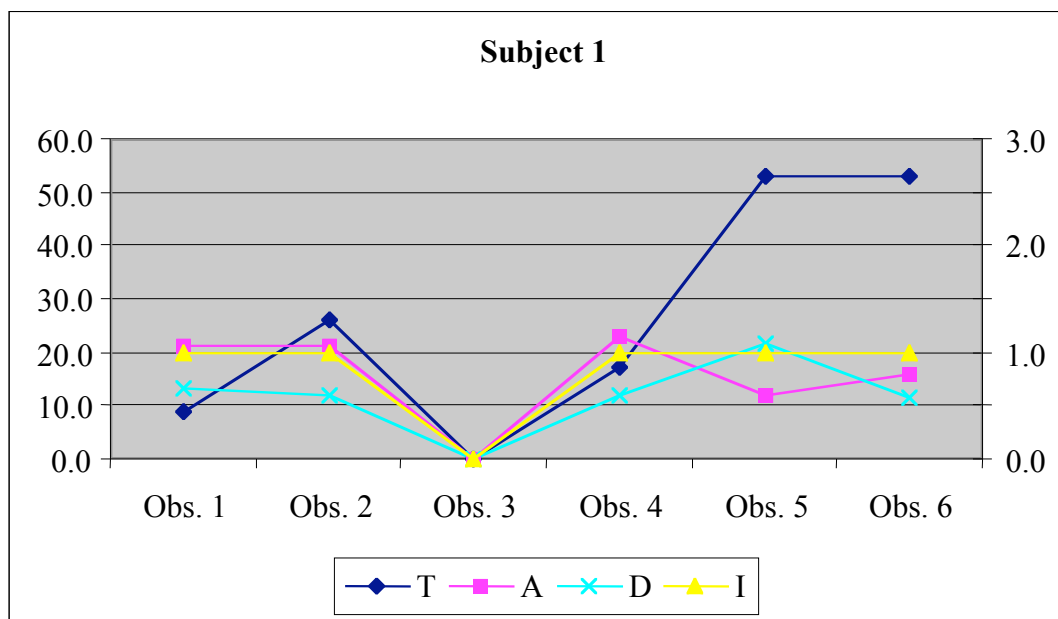
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32	17	23	1	10	0	0	0	0	0	0	0	0
33	50	23	1	4	0	0	0	0	0	0	0	0
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35	17	23	1	4	0	0	0	0	0	0	0	0
36	17	23	2	3	0	0	0	0	0	0	0	0
37	17	23	1	2	0	0	0	0	0	0	0	0
38	17	26	1	28	0	0	0	0	0	0	0	0
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42	0	0	0	0	0	0	0	0	0	0	0	0
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44	0	0	0	0	0	0	0	0	0	0	0	0
45	0	0	0	0	0	0	0	0	0	0	0	0
46	0	0	0	0	0	0	0	0	0	0	0	0
47	0	0	0	0	0	0	0	0	0	0	0	0
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55	0	0	0	0	0	0	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	0	0	0	0
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59	0	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0	0	0
61	0	0	0	0	0	0	0	0	0	0	0	0

**Summary Information:**

**Modes (T, A, I) and Mean (D) per observation**

	T	A	I	D
Obs. 1	9.0	21.0	1.0	13.3
Obs. 2	26.0	21.0	1.0	11.8
Obs. 3	0.0	0.0	0.0	0.0
Obs. 4	17.0	23.0	1.0	11.8
Obs. 5	53.0	12.0	1.0	21.5
Obs. 6	53.0	16.0	1.0	11.5

**Modes (T, A, I) and Mean (D) in basic graphical format**



**Overall Modes:**

Toy – 53 *Self, no toys or other person*

Action – 23 *Simple tactile exploration*

Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 11.65 seconds

## **6. Summary of data for each child**

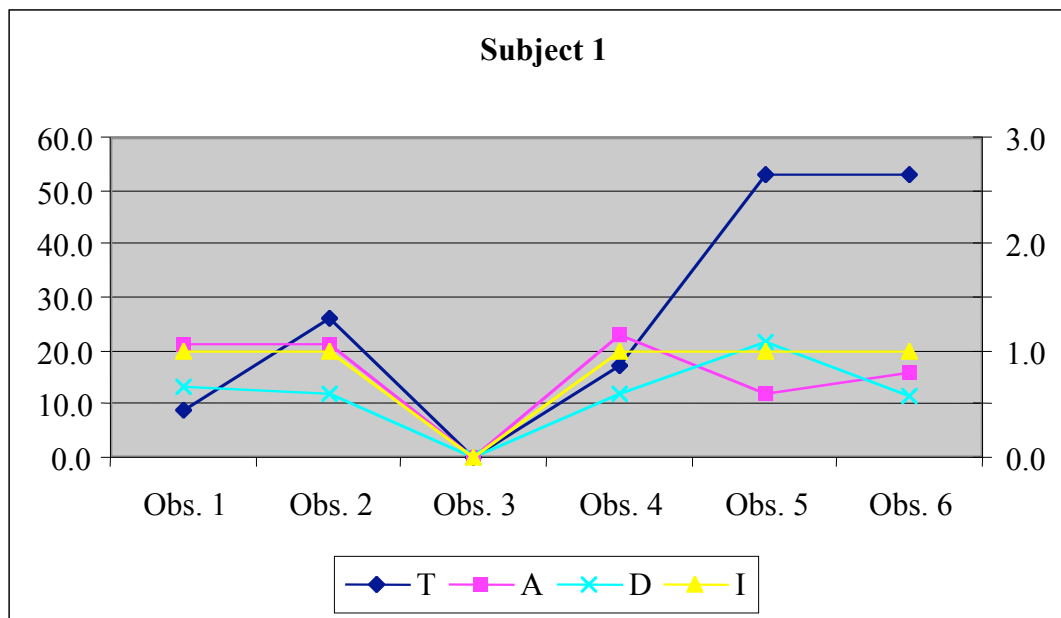
In the first table for each subject, the mode of each toy (T), play action (A) and interaction level (I) per observation is given along with the mean duration (D) of play episode.

In the graphical representations, the left hand vertical axis relates to approximate numerical values relating to the codings for modes of Toy, Action and Duration and the right hand vertical axis for Interaction level.

Finally, the overall mode for toys (T), play actions (A) and interaction level (I) and mean for duration (D) of play episodes across all 6 observations is given.

**SUBJECT 1**

	T	A	I	D
Obs. 1	9.0	21.0	1.0	13.3
Obs. 2	26.0	21.0	1.0	11.8
Obs. 3	0.0	0.0	0.0	0.0
Obs. 4	17.0	23.0	1.0	11.8
Obs. 5	53.0	12.0	1.0	21.5
Obs. 6	53.0	16.0	1.0	11.5



**Overall Modes:**

Toy – 53 *Self, no toys or other person*

Action – 23 *Simple tactile exploration*

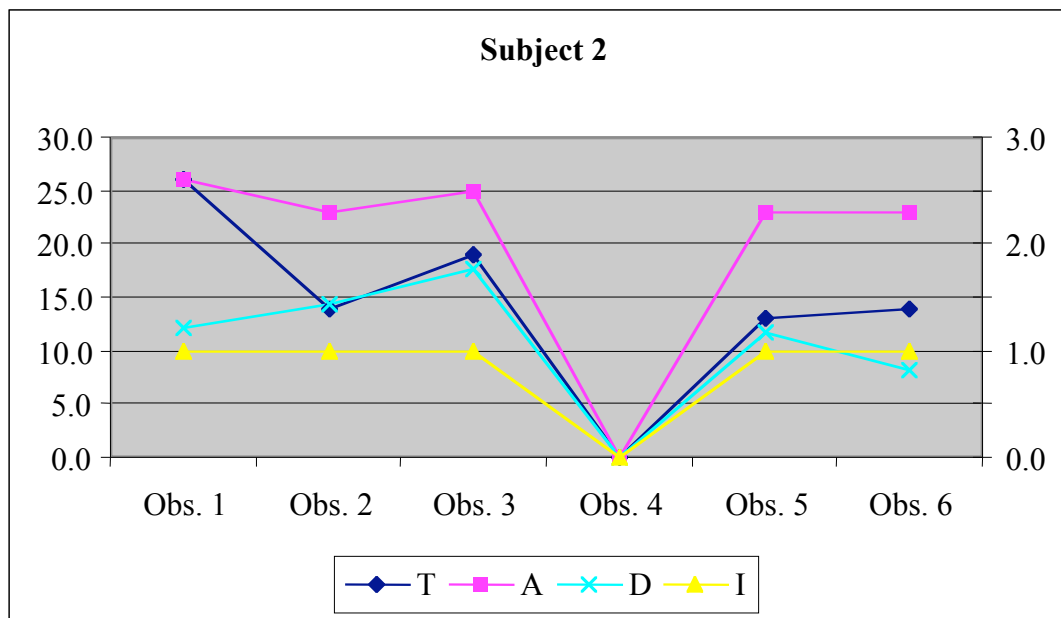
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 11.65 seconds

**SUBJECT 2**

	T	A	I	D
Obs. 1	26.0	26.0	1.0	12.2
Obs. 2	14.0	23.0	1.0	14.3
Obs. 3	19.0	25.0	1.0	17.6
Obs. 4	0.0	0.0	0.0	0.0
Obs. 5	13.0	23.0	1.0	11.6
Obs. 6	14.0	23.0	1.0	8.2



**Overall Modes:**

Toy – 53 *Self, no toys or other person*

Action – 23 *Simple tactile exploration*

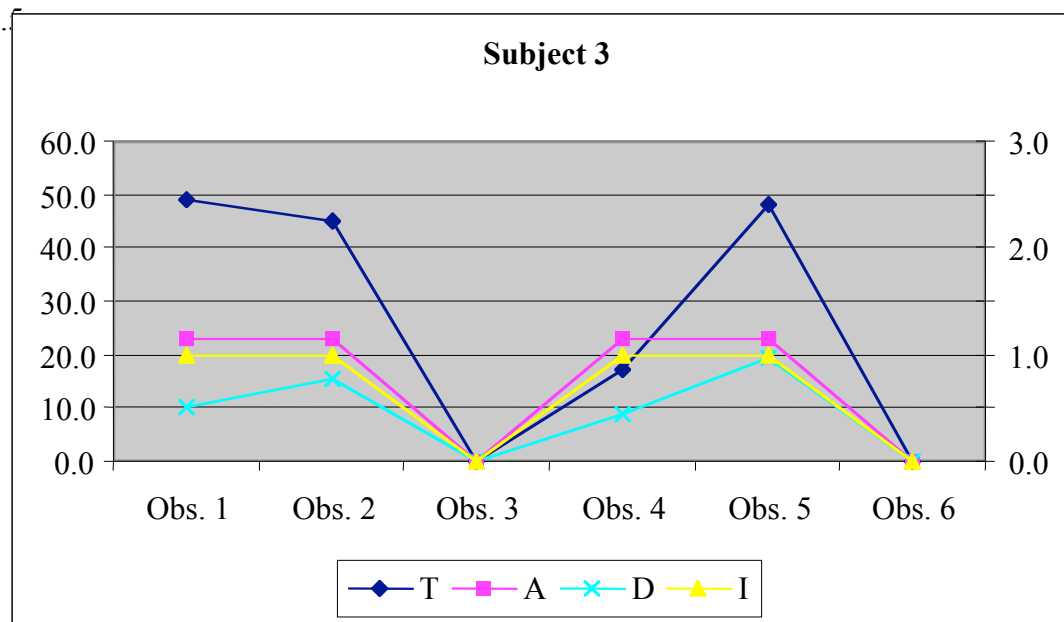
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 10.65 seconds

**SUBJECT 3**

	T	A	I	D
Obs. 1	49.0	23.0	1.0	10.0
Obs. 2	45.0	23.0	1.0	15.4
Obs. 3	0.0	0.0	0.0	0.0
Obs. 4	17.0	23.0	1.0	8.9
Obs. 5	48.0	23.0	1.0	19.4
Obs. 6	0.0	0.0	0.0	0.0



**Overall Modes:**

Toy – 48 *Pull along dog*

Action – 23 *Simple tactile exploration*

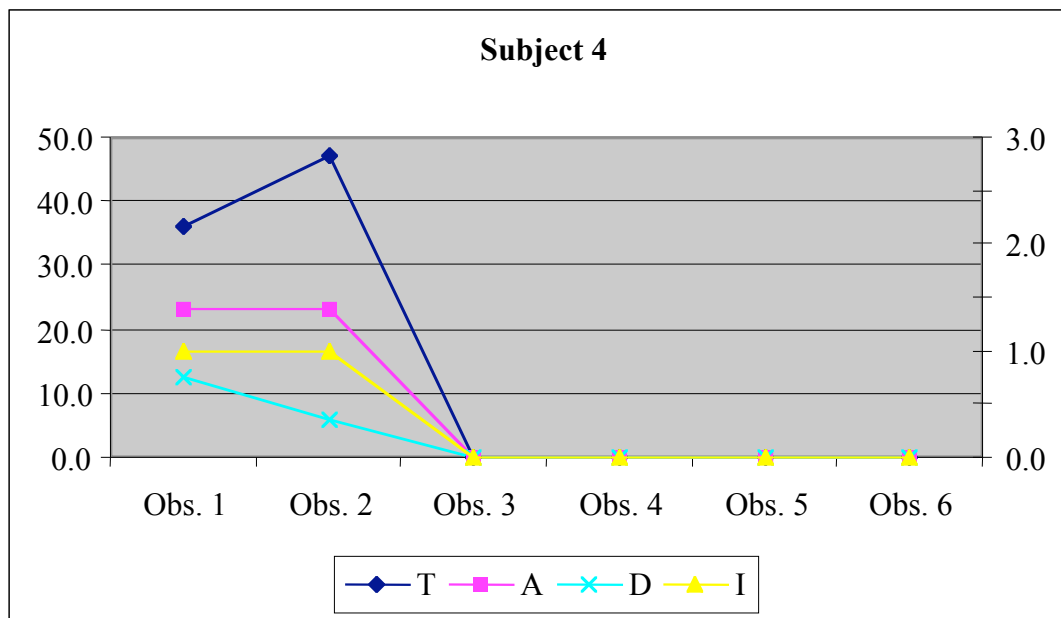
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 13.43 seconds

**SUBJECT 4**

	T	A	I	D
Obs. 1	36.0	23.0	1.0	12.5
Obs. 2	47.0	23.0	1.0	5.8
Obs. 3	0.0	0.0	0.0	0.0
Obs. 4	0.0	0.0	0.0	0.0
Obs. 5	0.0	0.0	0.0	0.0
Obs. 6	0.0	0.0	0.0	0.0



**Overall Modes:**

Toy – 36 *Six toy cars*

Action – 23 *Simple tactile exploration*

Interaction – 1 *Solitary*

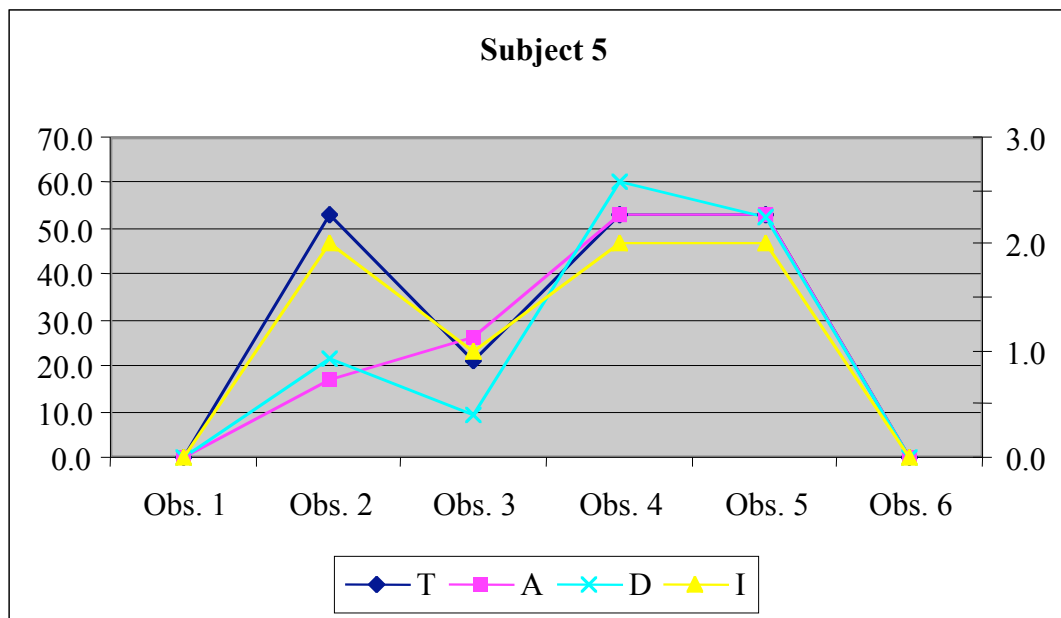
**Overall Mean:**

Duration – 9.15 seconds



**SUBJECT 5**

	T	A	I	D
Obs. 1	0.0	0.0	0.0	0.0
Obs. 2	53.0	17.0	2.0	21.7
Obs. 3	21.0	26.0	1.0	9.2
Obs. 4	53.0	53.0	2.0	60.0
Obs. 5	53.0	53.0	2.0	52.5
Obs. 6	0.0	0.0	0.0	0.0



**Overall Modes:**

Toy – 53 *Self, no toys or other person*

Action – 53 *Responses to communications from others*

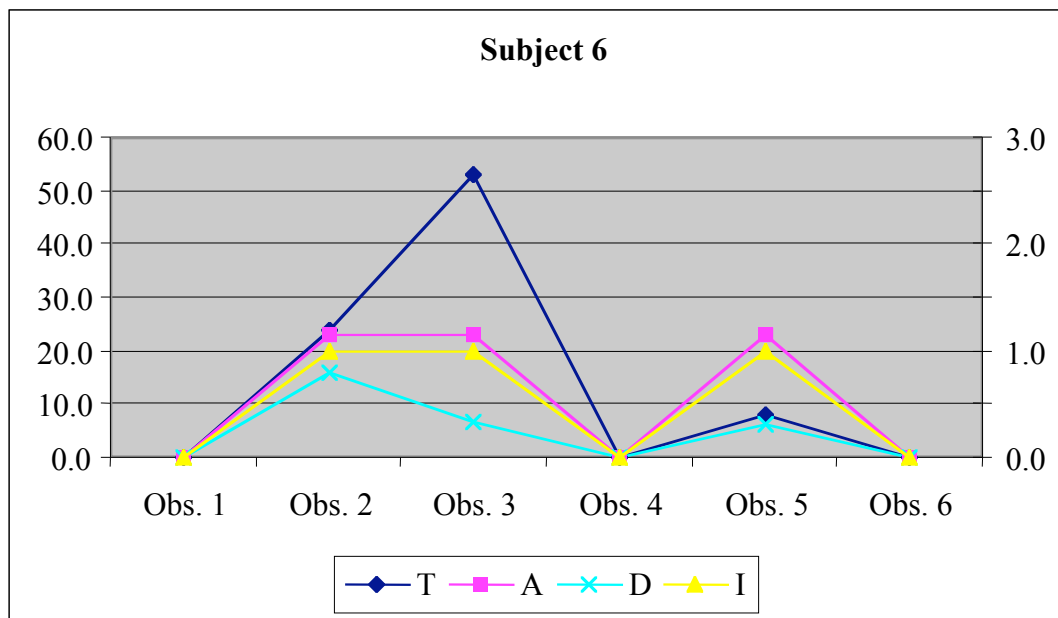
Interaction – 2 *Parallel*

**Overall Mean:**

Duration – 35.85 seconds

**SUBJECT 6**

	T	A	I	D
Obs. 1	0.0	0.0	0.0	0.0
Obs. 2	24.0	23.0	1.0	15.8
Obs. 3	53.0	23.0	1.0	6.8
Obs. 4	0.0	0.0	0.0	0.0
Obs. 5	8.0	23.0	1.0	6.3
Obs. 6	0.0	0.0	0.0	0.0



**Overall Modes:**

Toy – 8 *Spoons, forks, knives*

Action – 23 *Simple tactile exploration*

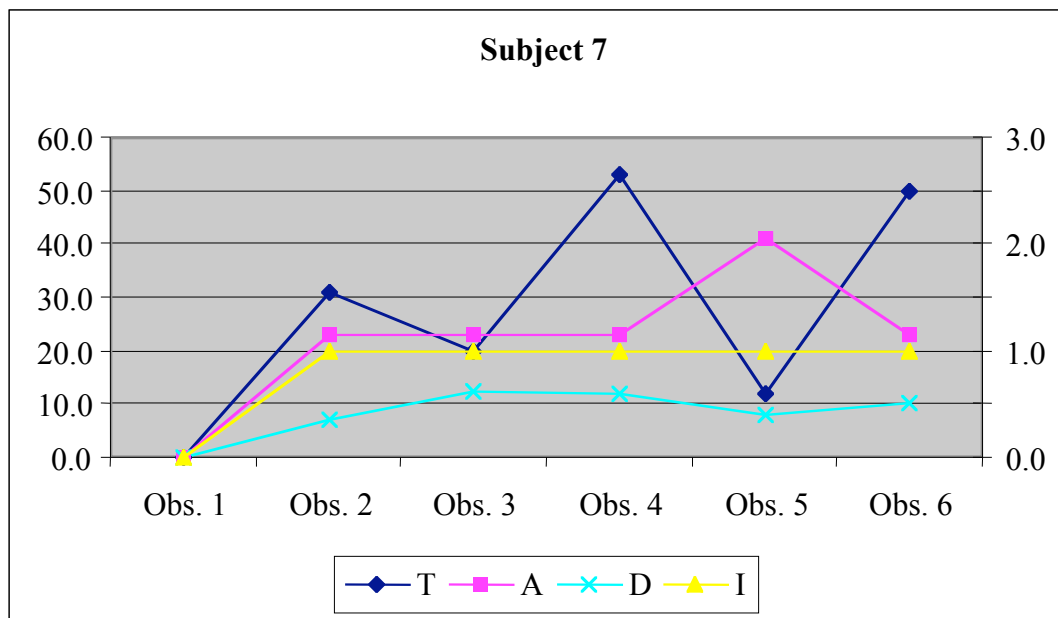
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 9.63 seconds

**SUBJECT 7**

	T	A	I	D
Obs. 1	0.0	0.0	0.0	0.0
Obs. 2	31.0	23.0	1.0	7.1
Obs. 3	20.0	23.0	1.0	12.5
Obs. 4	53.0	23.0	1.0	12.1
Obs. 5	12.0	41.0	1.0	8.1
Obs. 6	50.0	23.0	1.0	10.3



**Overall Modes:**

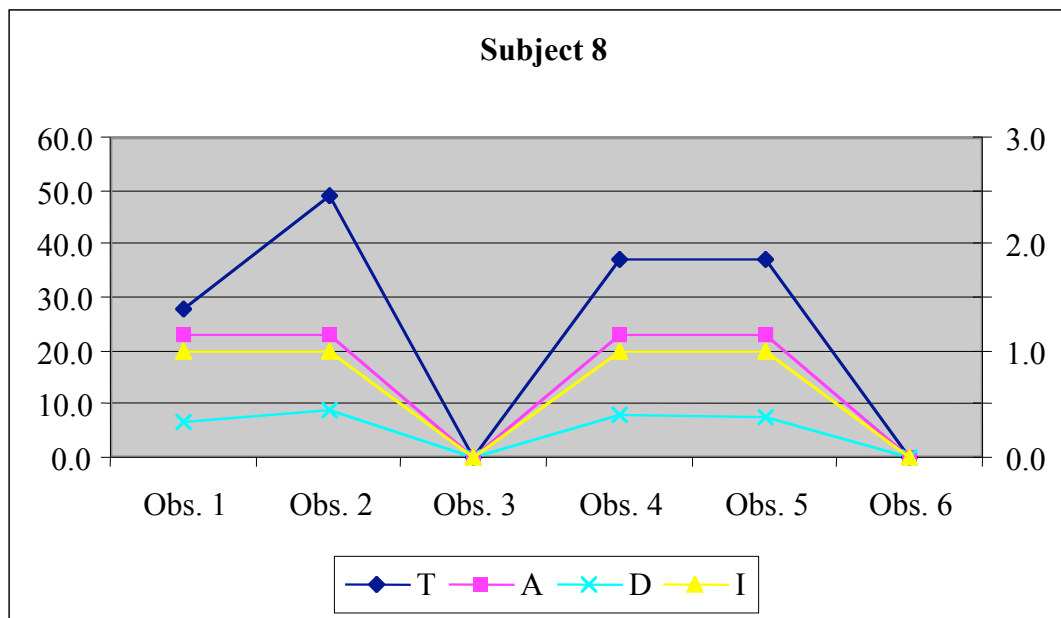
Toy – 12 *Brush, comb, mirror*  
 Action – 23 *Simple tactile exploration*  
 Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 10.04 seconds

**SUBJECT 8**

	T	A	I	D
Obs. 1	28.0	23.0	1.0	6.6
Obs. 2	49.0	23.0	1.0	9.0
Obs. 3	0.0	0.0	0.0	0.0
Obs. 4	37.0	23.0	1.0	8.1
Obs. 5	37.0	23.0	1.0	7.4
Obs. 6	0.0	0.0	0.0	0.0



**Overall Modes:**

Toy – 37 *Large pull top bag*

Action – 23 *Simple tactile exploration*

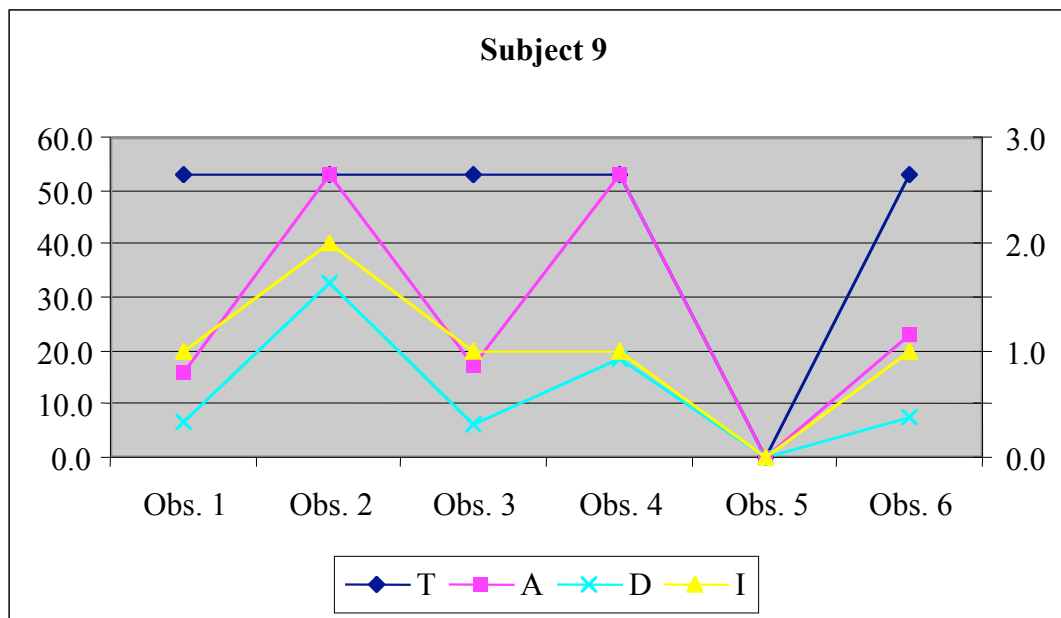
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 7.75 seconds

**SUBJECT 9**

	T	A	I	D
Obs. 1	53.0	16.0	1.0	6.6
Obs. 2	53.0	53.0	2.0	32.8
Obs. 3	53.0	17.0	1.0	6.2
Obs. 4	53.0	53.0	1.0	18.6
Obs. 5	0.0	0.0	0.0	0.0
Obs. 6	53.0	23.0	1.0	7.5



**Overall Modes:**

Toy – 53 *Self, no toys or other person*

Action – 53 *Responses to communications from others*

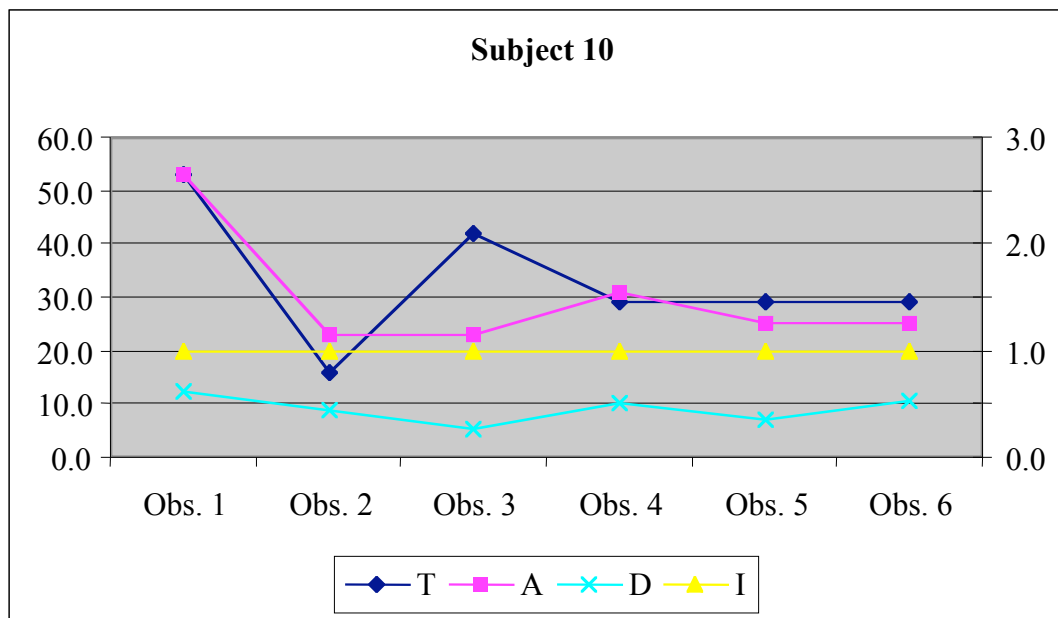
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 14.32 seconds

**SUBJECT 10**

	T	A	I	D
Obs. 1	53.0	53.0	1.0	12.3
Obs. 2	16.0	23.0	1.0	8.9
Obs. 3	42.0	23.0	1.0	5.2
Obs. 4	29.0	31.0	1.0	10.2
Obs. 5	29.0	25.0	1.0	7.0
Obs. 6	29.0	25.0	1.0	10.6



**Overall Modes:**

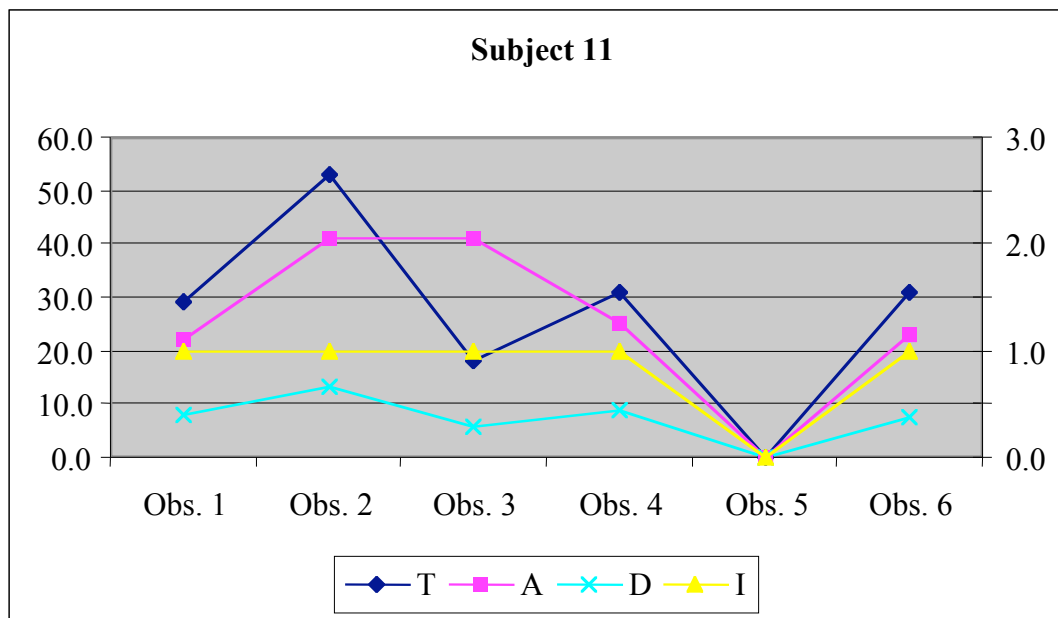
Toy – 29 *Large beads and string*  
 Action – 23 *Simple tactile exploration*  
 Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 9.05 seconds

**SUBJECT 11**

	T	A	I	D
Obs. 1	29.0	22.0	1.0	7.8
Obs. 2	53.0	41.0	1.0	13.2
Obs. 3	18.0	41.0	1.0	5.8
Obs. 4	31.0	25.0	1.0	8.6
Obs. 5	0.0	0.0	0.0	0.0
Obs. 6	31.0	23.0	1.0	7.4



**Overall Modes:**

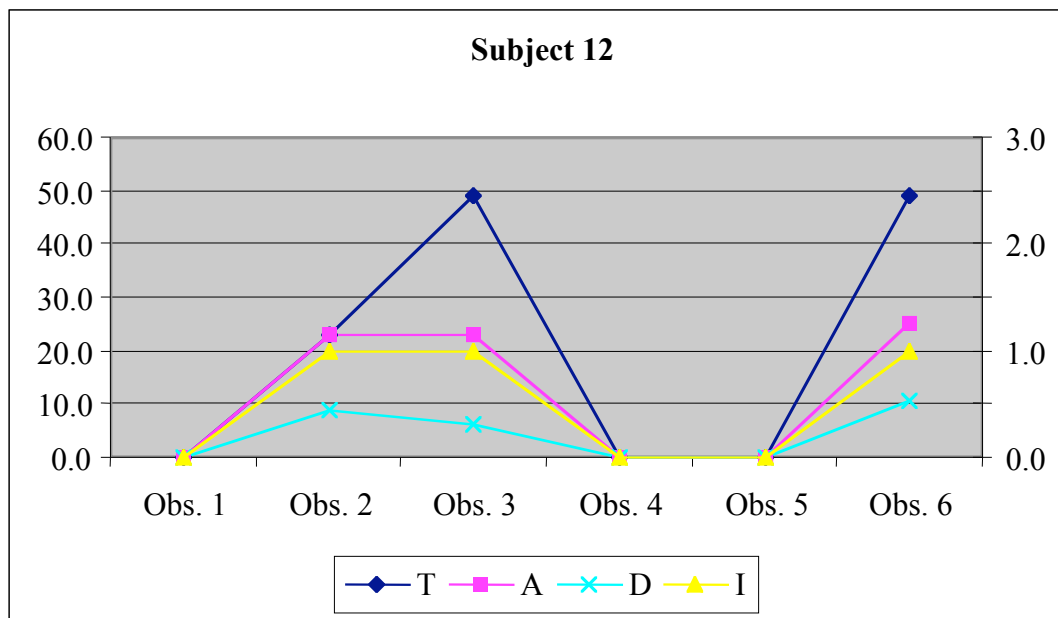
Toy – 29 *Large beads and string*  
 Action – 23 *Simple tactile exploration*  
 Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 8.56 seconds

**SUBJECT 12**

	T	A	I	D
Obs. 1	0.0	0.0	0.0	0.0
Obs. 2	23.0	23.0	1.0	8.9
Obs. 3	49.0	23.0	1.0	6.3
Obs. 4	0.0	0.0	0.0	0.0
Obs. 5	0.0	0.0	0.0	0.0
Obs. 6	49.0	25.0	1.0	10.7



**Overall Modes:**

Toy – 49 *Two toys together*

Action – 23 *Simple tactile exploration*

Interaction – 1 *Solitary*

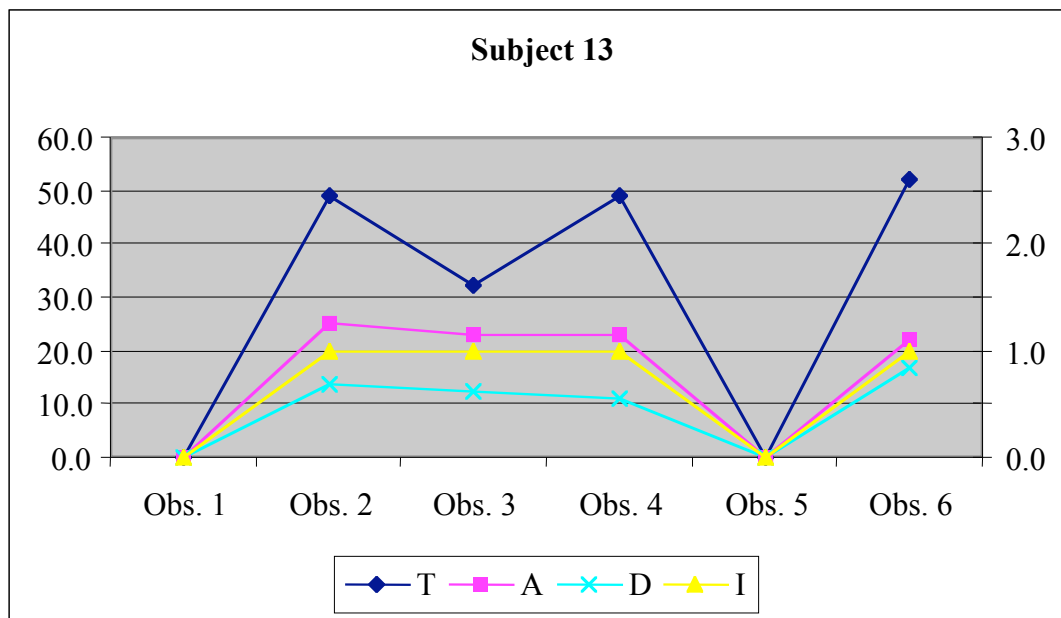
**Overall Mean:**

Duration – 8.63 seconds



**SUBJECT 13**

	T	A	I	D
Obs. 1	0.0	0.0	0.0	0.0
Obs. 2	49.0	25.0	1.0	13.9
Obs. 3	32.0	23.0	1.0	12.3
Obs. 4	49.0	23.0	1.0	10.9
Obs. 5	0.0	0.0	0.0	0.0
Obs. 6	52.0	22.0	1.0	16.7



**Overall Modes:**

Toy – 49 *Two toys together*

Action – 23 *Simple tactile exploration*

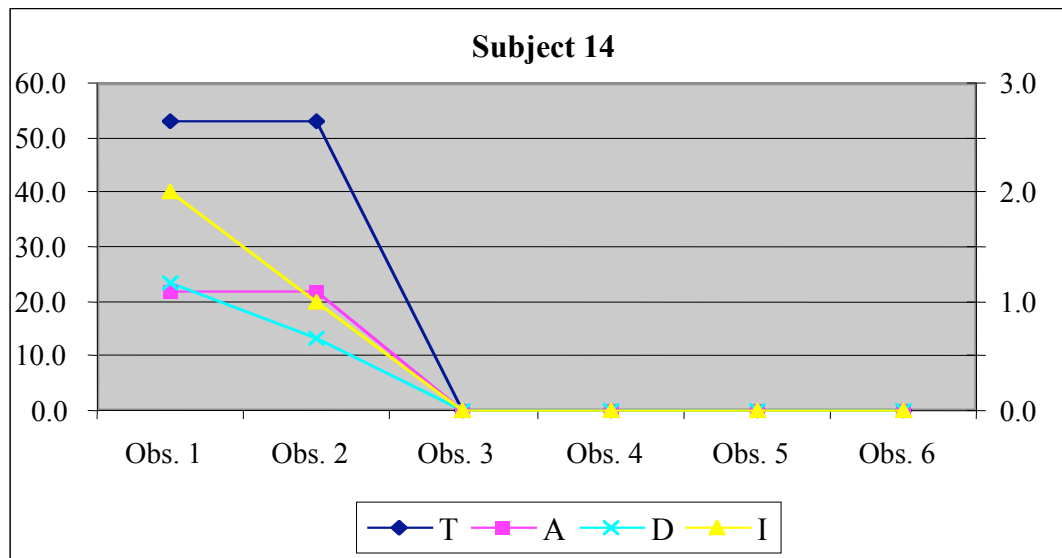
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 17.93 seconds

**SUBJECT 14**

	T	A	I	D
Obs. 1	53.0	22.0	2.0	23.5
Obs. 2	53.0	22.0	1.0	13.3
Obs. 3	0.0	0.0	0.0	0.0
Obs. 4	0.0	0.0	0.0	0.0
Obs. 5	0.0	0.0	0.0	0.0
Obs. 6	0.0	0.0	0.0	0.0



**Overall Modes:**

Toy – 53 *Self, no toys or other person*

Action – 23 *Simple tactile exploration*

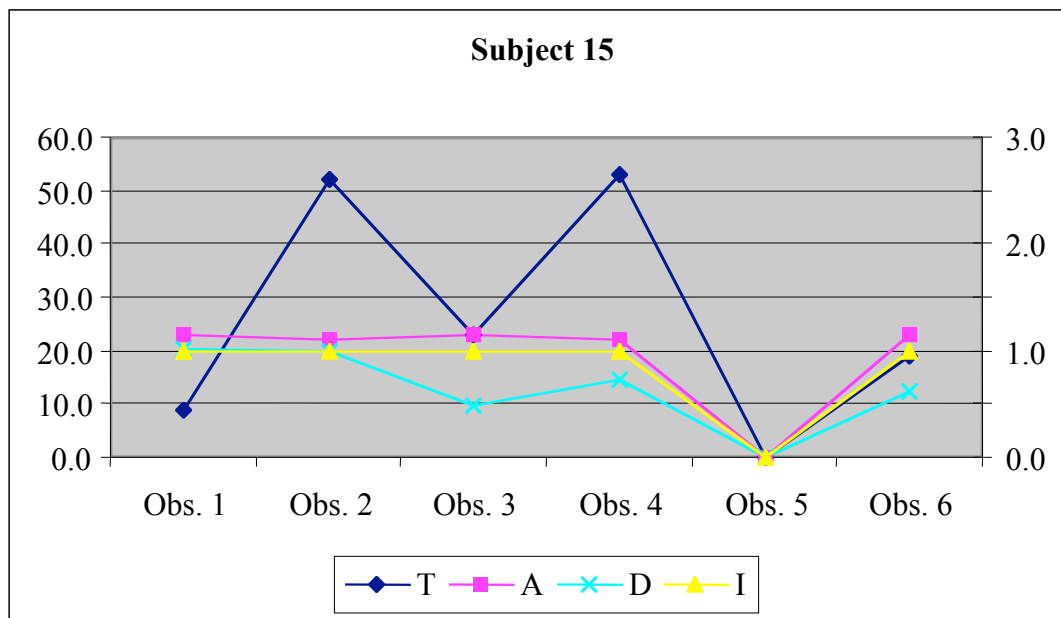
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 18.4 seconds

**SUBJECT 15**

	T	A	I	D
Obs. 1	9.0	23.0	1.0	20.1
Obs. 2	52.0	22.0	1.0	20.0
Obs. 3	23.0	23.0	1.0	9.9
Obs. 4	53.0	22.0	1.0	14.4
Obs. 5	0.0	0.0	0.0	0.0
Obs. 6	19.0	23.0	1.0	12.4



**Overall Modes:**

Toy – 53 *Self, no toys or other person*

Action – 23 *Simple tactile exploration*

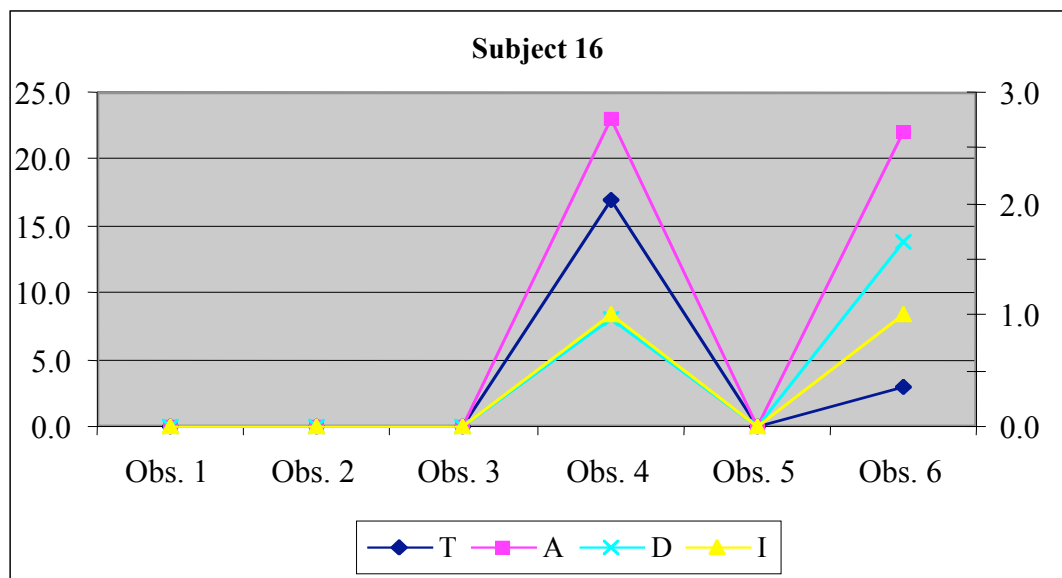
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 12.8 seconds

**SUBJECT 16**

	T	A	I	D
Obs. 1	0.0	0.0	0.0	0.0
Obs. 2	0.0	0.0	0.0	0.0
Obs. 3	0.0	0.0	0.0	0.0
Obs. 4	17.0	23.0	1.0	8.1
Obs. 5	0.0	0.0	0.0	0.0
Obs. 6	3.0	22.0	1.0	13.8



**Overall Modes:**

Toy – 49 *Two toys together*

Action – 23 *Simple tactile exploration*

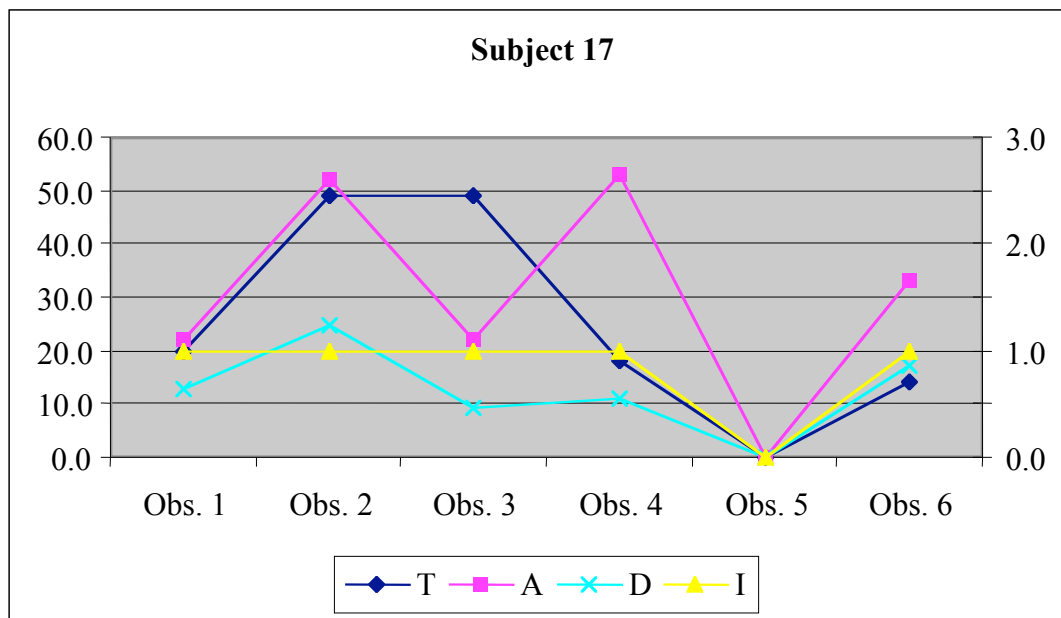
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 10.95 seconds

**SUBJECT 17**

	T	A	I	D
Obs. 1	20.0	22.0	1.0	12.9
Obs. 2	49.0	52.0	1.0	24.7
Obs. 3	49.0	22.0	1.0	9.2
Obs. 4	18.0	53.0	1.0	10.8
Obs. 5	0.0	0.0	0.0	0.0
Obs. 6	14.0	33.0	1.0	17.0



**Overall Modes:**

Toy – 49 *Two toys together*

Action – 22 *Visual exploration*

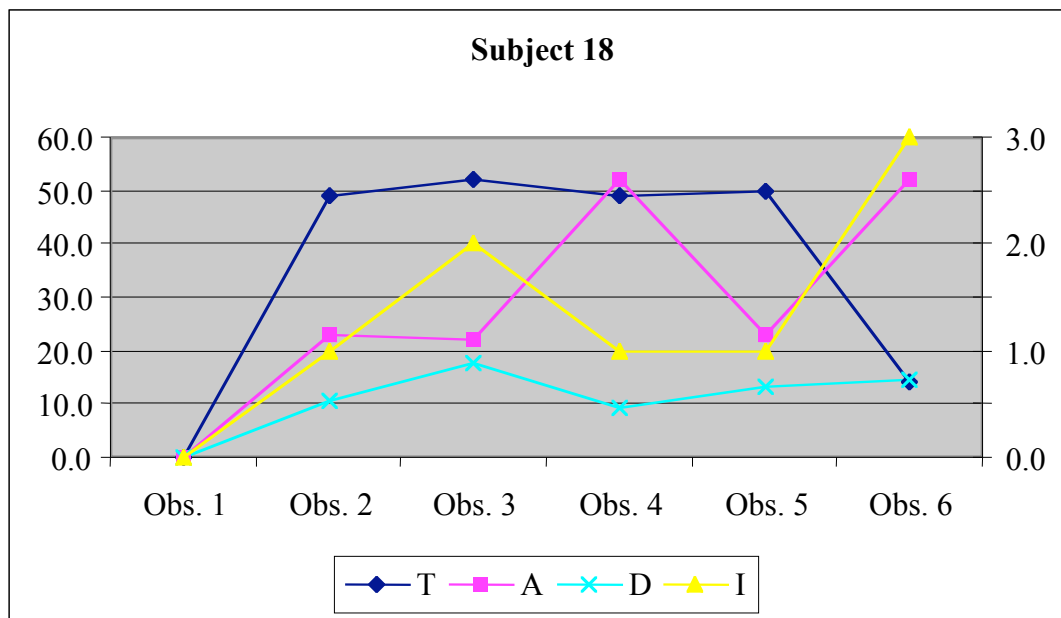
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 14.94 seconds

**SUBJECT 18**

	T	A	I	D
Obs. 1	0.0	0.0	0.0	0.0
Obs. 2	49.0	23.0	1.0	10.5
Obs. 3	52.0	22.0	2.0	17.6
Obs. 4	49.0	52.0	1.0	9.1
Obs. 5	50.0	23.0	1.0	13.3
Obs. 6	14.0	52.0	3.0	14.6



**Overall Modes:**

Toy – 49 *Two toys together*

Action – 23 *Simple tactile exploration*

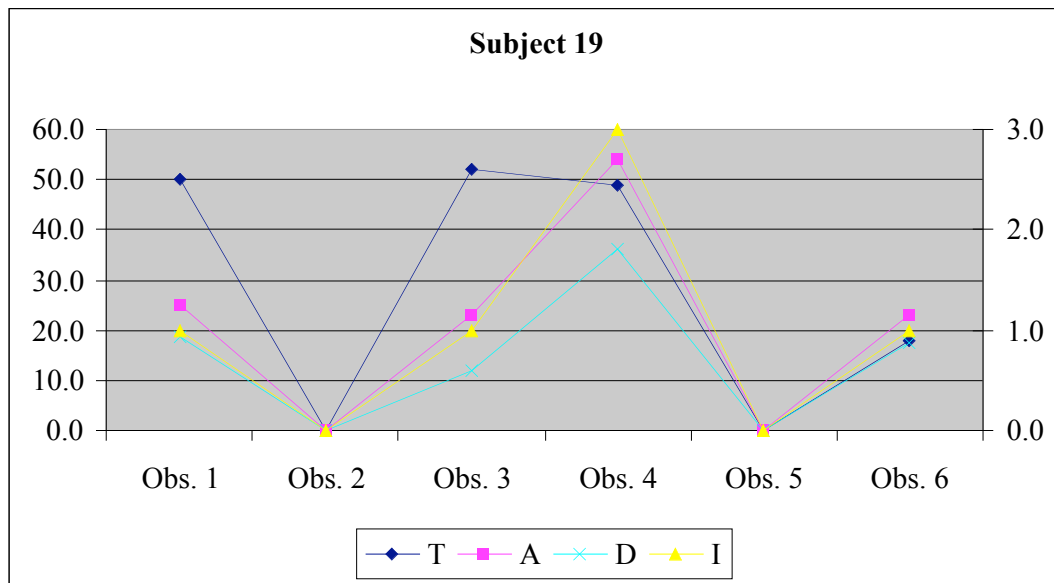
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 13.02 seconds

**SUBJECT 19**

	T	A	I	D
Obs. 1	50.0	25.0	1.0	18.6
Obs. 2	0.0	0.0	0.0	0.0
Obs. 3	52.0	23.0	1.0	12.1
Obs. 4	49.0	54.0	3.0	36.2
Obs. 5	0.0	0.0	0.0	0.0
Obs. 6	18.0	23.0	1.0	17.3



**Overall Modes:**

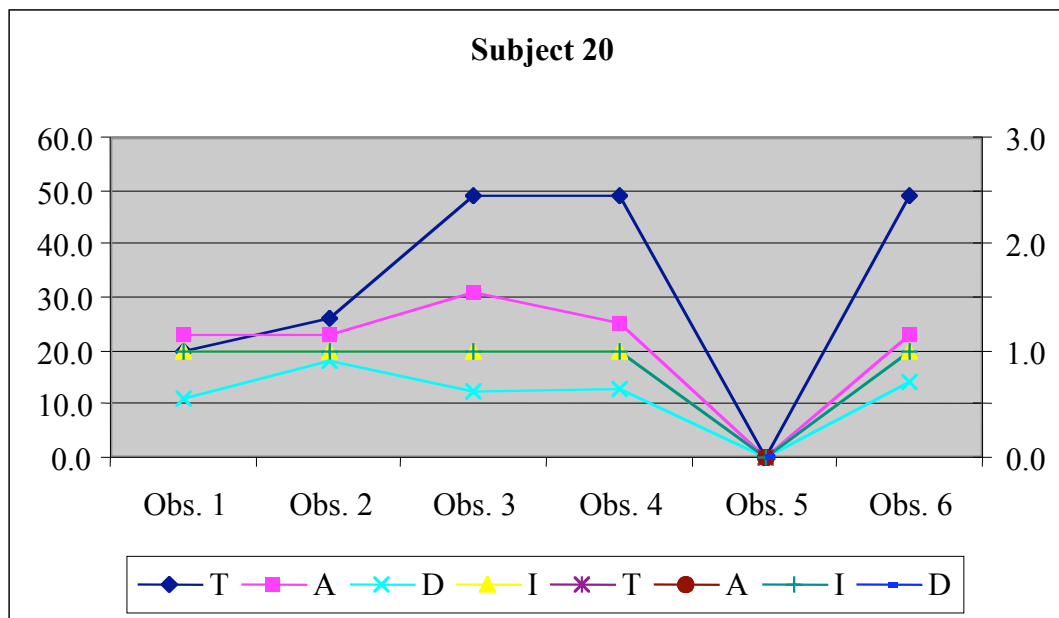
Toy – 49 *Two toys together*  
 Action – 23 *Simple tactile exploration*  
 Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 21.05 seconds

**SUBJECT 20**

	T	A	I	D
Obs. 1	20.0	23.0	1.0	11.2
Obs. 2	26.0	23.0	1.0	18.1
Obs. 3	49.0	31.0	1.0	12.4
Obs. 4	49.0	25.0	1.0	12.8
Obs. 5	0.0	0.0	0.0	0.0
Obs. 6	49.0	23.0	1.0	14.0



**Overall Modes:**

Toy – 49 *Two toys together*

Action – 23 *Simple tactile exploration*

Interaction – 1 *Solitary*

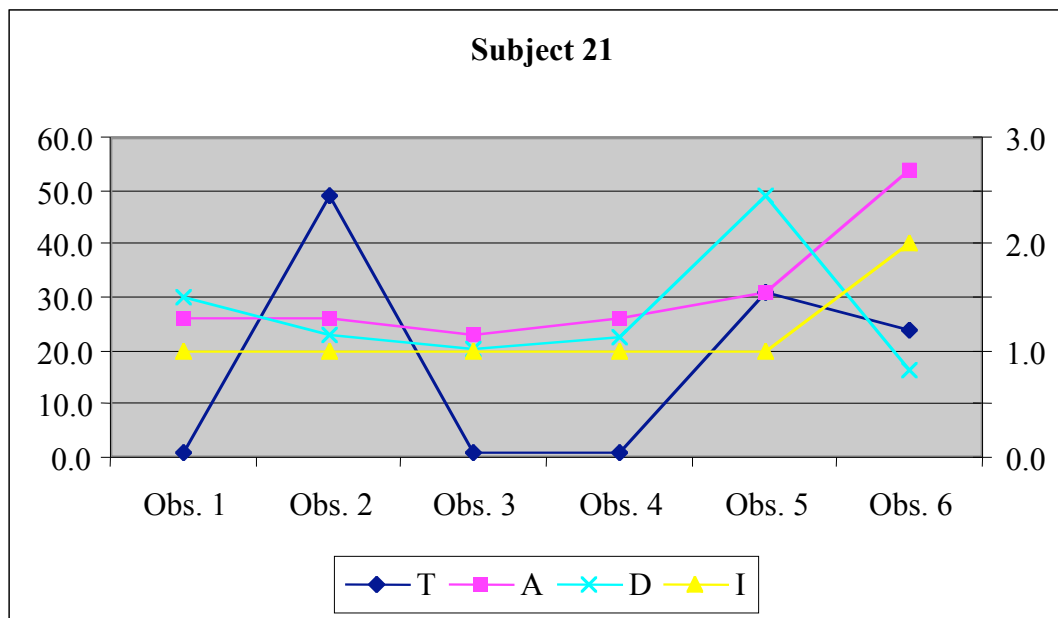
**Overall Mean:**

Duration – 13.7 seconds



**SUBJECT 21**

	T	A	I	D
Obs. 1	1.0	26.0	1.0	30.0
Obs. 2	49.0	26.0	1.0	23.1
Obs. 3	1.0	23.0	1.0	20.4
Obs. 4	1.0	26.0	1.0	22.5
Obs. 5	31.0	31.0	1.0	49.0
Obs. 6	24.0	54.0	2.0	16.4



**Overall Modes:**

Toy – 1 *Large ball*

Action – 26 *Use of toy for exploration*

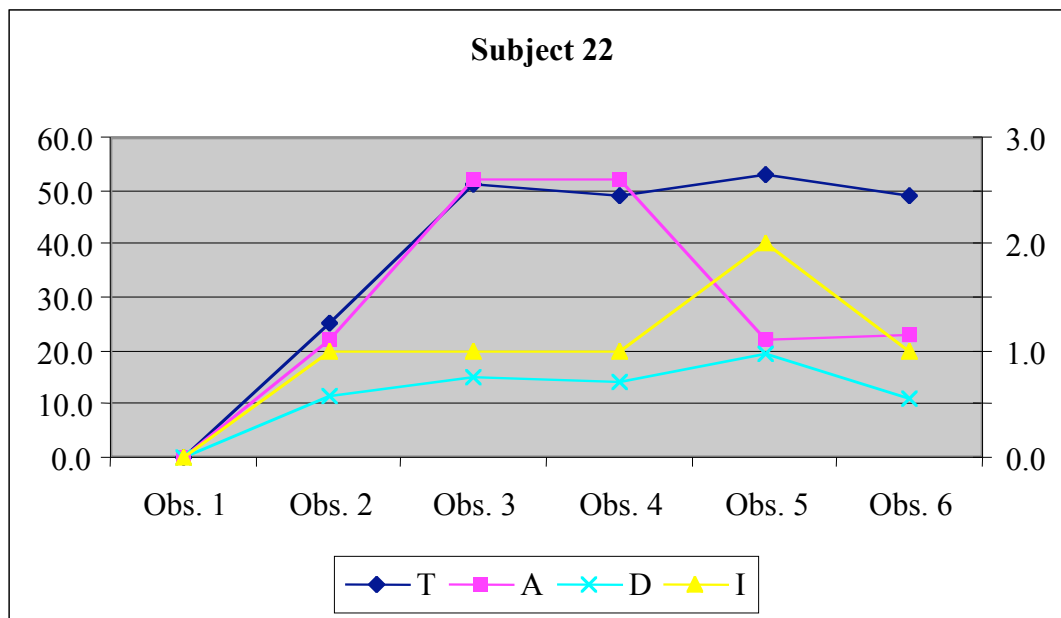
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 26.9 seconds

**SUBJECT 22**

	T	A	I	D
Obs. 1	0.0	0.0	0.0	0.0
Obs. 2	25.0	22.0	1.0	11.6
Obs. 3	51.0	52.0	1.0	15.2
Obs. 4	49.0	52.0	1.0	14.2
Obs. 5	53.0	22.0	2.0	19.5
Obs. 6	49.0	23.0	1.0	11.2



**Overall Modes:**

Toy – 49 *Two toys together*

Action – 23 *Simple tactile exploration*

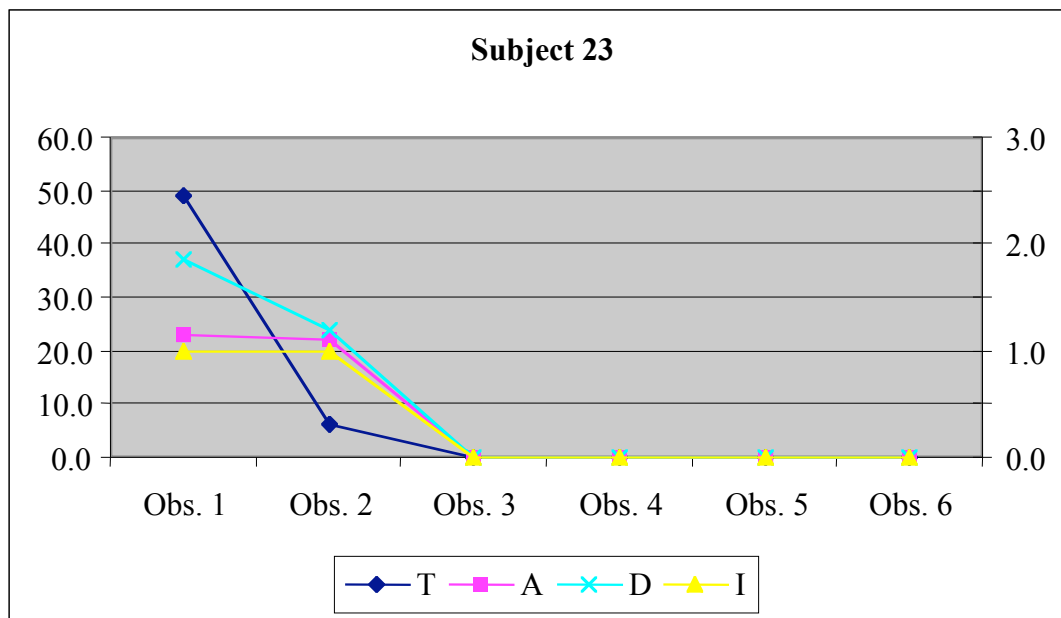
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 14.34 seconds

**SUBJECT 23**

	T	A	I	D
Obs. 1	49.0	23.0	1.0	37.0
Obs. 2	6.0	22.0	1.0	23.8
Obs. 3	0.0	0.0	0.0	0.0
Obs. 4	0.0	0.0	0.0	0.0
Obs. 5	0.0	0.0	0.0	0.0
Obs. 6	0.0	0.0	0.0	0.0



**Overall Modes:**

Toy – 6 *Elephant soft toy*

Action – 23 *Simple tactile exploration*

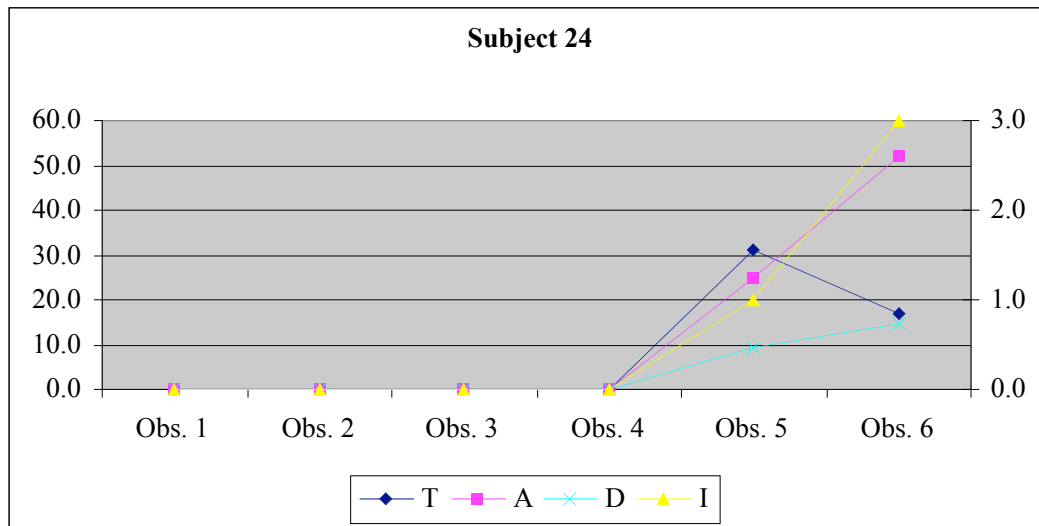
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 30.4 seconds

**SUBJECT 24**

	T	A	I	D
Obs. 1	0.0	0.0	0.0	0.0
Obs. 2	0.0	0.0	0.0	0.0
Obs. 3	0.0	0.0	0.0	0.0
Obs. 4	0.0	0.0	0.0	0.0
Obs. 5	31.0	25.0	1.0	9.1
Obs. 6	17.0	52.0	3.0	14.5



**Overall Modes:**

Toy – 31 *Magnetic numbers and letters*

Action – 52 *Directed communication/vocalisations*

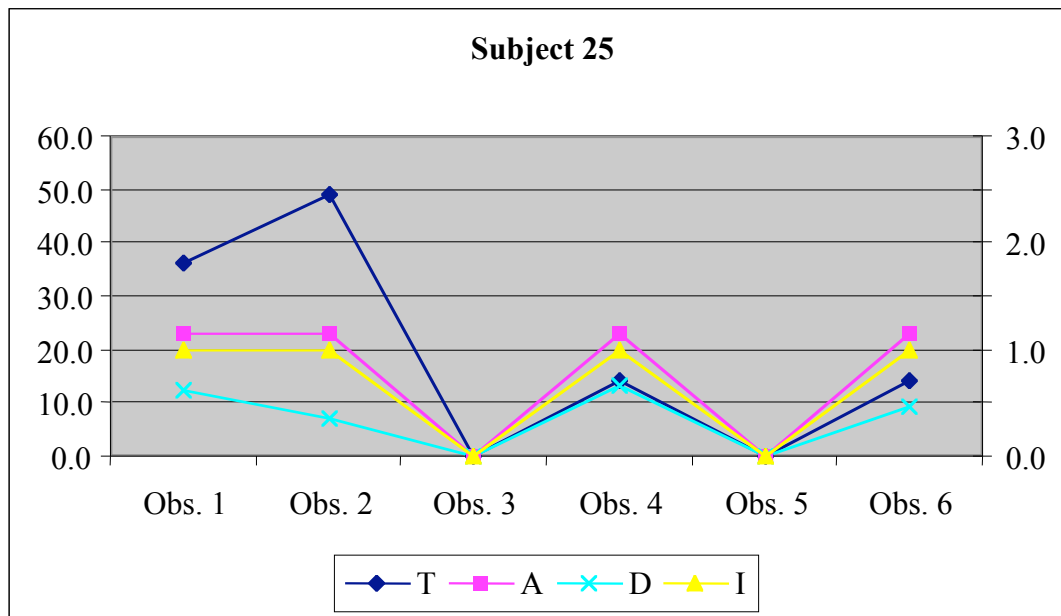
Interaction – 3 *Co-operative*

**Overall Mean:**

Duration – 11.85 seconds

**SUBJECT 25**

	T	A	I	D
Obs. 1	36.0	23.0	1.0	12.4
Obs. 2	49.0	23.0	1.0	7.2
Obs. 3	0.0	0.0	0.0	0.0
Obs. 4	14.0	23.0	1.0	13.0
Obs. 5	0.0	0.0	0.0	0.0
Obs. 6	14.0	23.0	1.0	9.1



**Overall Modes:**

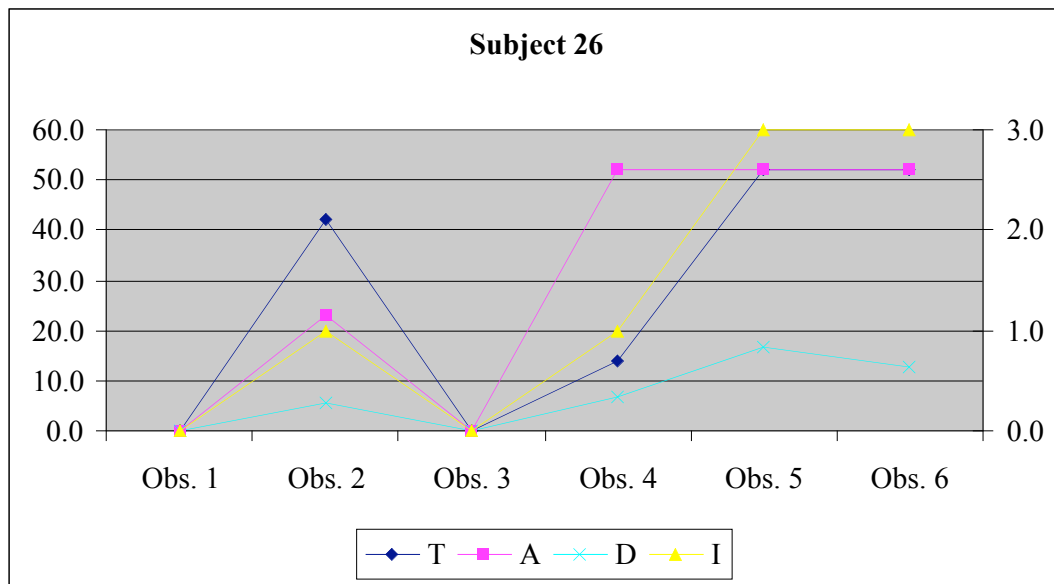
Toy – 14 *Large Domino game*  
 Action – 23 *Simple tactile exploration*  
 Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 10.48 seconds

**SUBJECT 26**

	T	A	I	D
Obs. 1	0.0	0.0	0.0	0.0
Obs. 2	42.0	23.0	1.0	5.7
Obs. 3	0.0	0.0	0.0	0.0
Obs. 4	14.0	52.0	1.0	6.9
Obs. 5	52.0	52.0	3.0	16.6
Obs. 6	52.0	52.0	3.0	12.8



**Overall Modes:**

Toy – 52 *Other person*

Action – 52 *Directed communication/vocalisation*

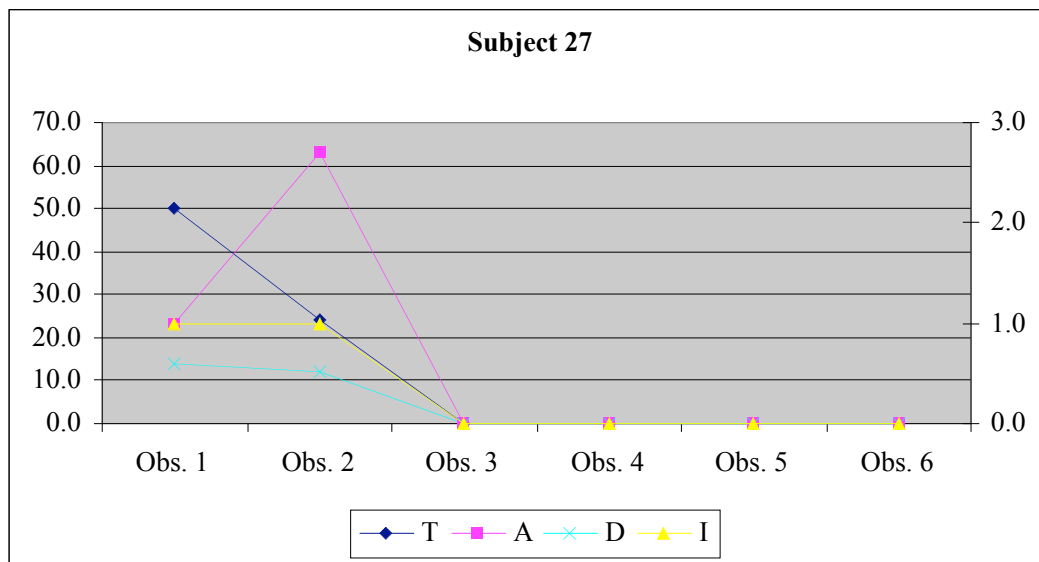
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 10.5 seconds

**SUBJECT 27**

	T	A	I	D
Obs. 1	50.0	23.0	1.0	13.9
Obs. 2	24.0	63.0	1.0	12.1
Obs. 3	0.0	0.0	0.0	0.0
Obs. 4	0.0	0.0	0.0	0.0
Obs. 5	0.0	0.0	0.0	0.0
Obs. 6	0.0	0.0	0.0	0.0



**Overall Modes:**

Toy – 52 *Other person*

Action – 22 *Visual exploration*

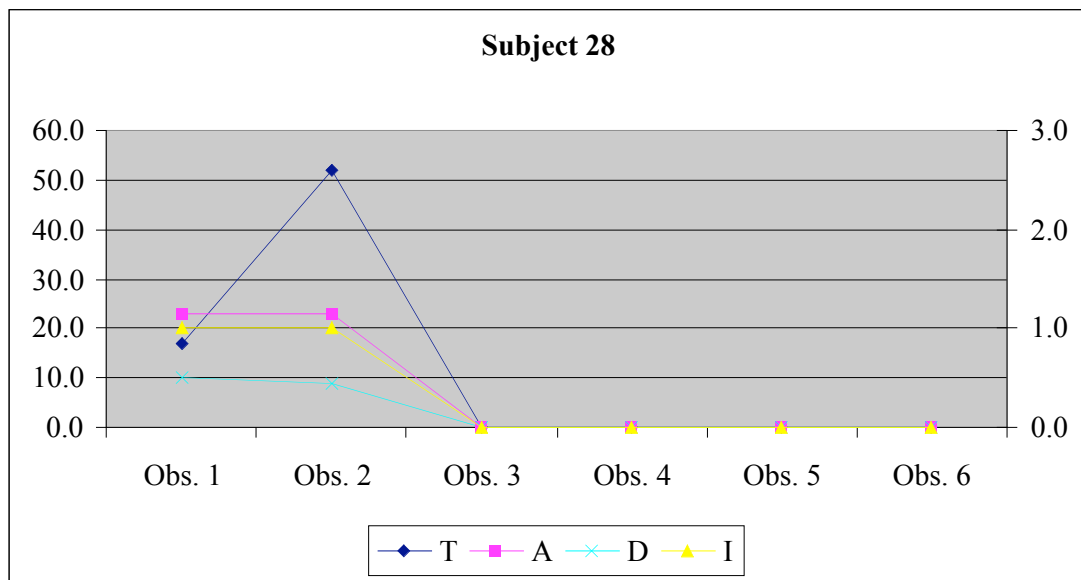
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 13 seconds

**SUBJECT 28**

	T	A	I	D
Obs. 1	17.0	23.0	1.0	10.2
Obs. 2	52.0	23.0	1.0	8.8
Obs. 3	0.0	0.0	0.0	0.0
Obs. 4	0.0	0.0	0.0	0.0
Obs. 5	0.0	0.0	0.0	0.0
Obs. 6	0.0	0.0	0.0	0.0



**Overall Modes:**

Toy – 52 *Other person*

Action – 23 *Simple tactile exploration*

Interaction – 1 *Solitary*

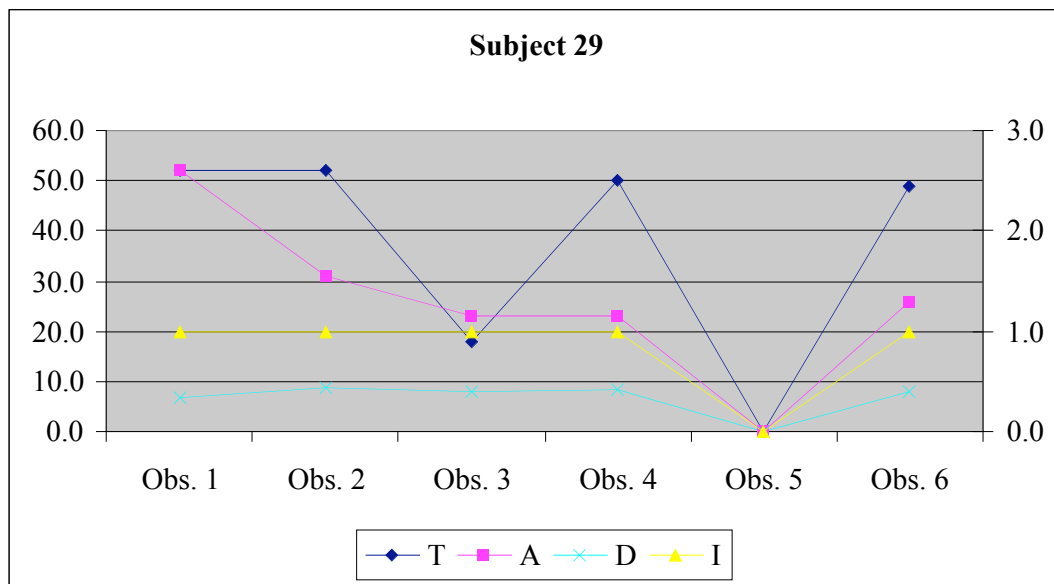
**Overall Mean:**

Duration – 9.5 seconds



**SUBJECT 29**

	T	A	I	D
Obs. 1	52.0	52.0	1.0	6.8
Obs. 2	52.0	31.0	1.0	8.6
Obs. 3	18.0	23.0	1.0	7.9
Obs. 4	50.0	23.0	1.0	8.4
Obs. 5	0.0	0.0	0.0	0.0
Obs. 6	49.0	26.0	1.0	8.0



**Overall Modes:**

Toy – 52 *Other person*

Action – 23 *Simple tactile exploration*

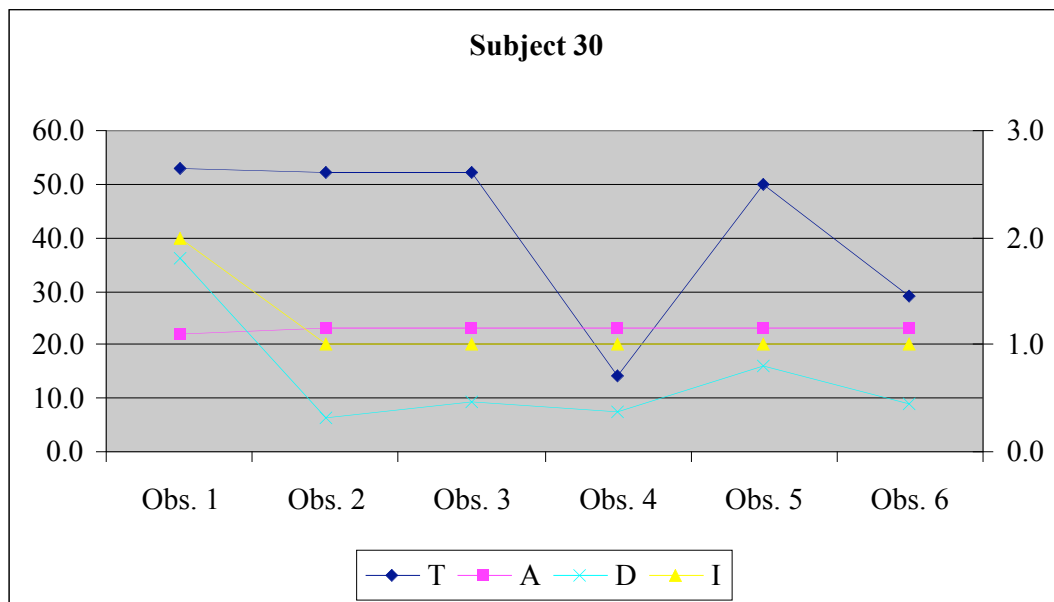
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 7.92 seconds

**SUBJECT 30**

	T	A	I	D
Obs. 1	53.0	22.0	2.0	36.0
Obs. 2	52.0	23.0	1.0	6.4
Obs. 3	52.0	23.0	1.0	9.3
Obs. 4	14.0	23.0	1.0	7.5
Obs. 5	50.0	23.0	1.0	16.0
Obs. 6	29.0	23.0	1.0	8.9



**Overall Modes:**

Toy – 52 *Other person*

Action – 23 *Simple tactile exploration*

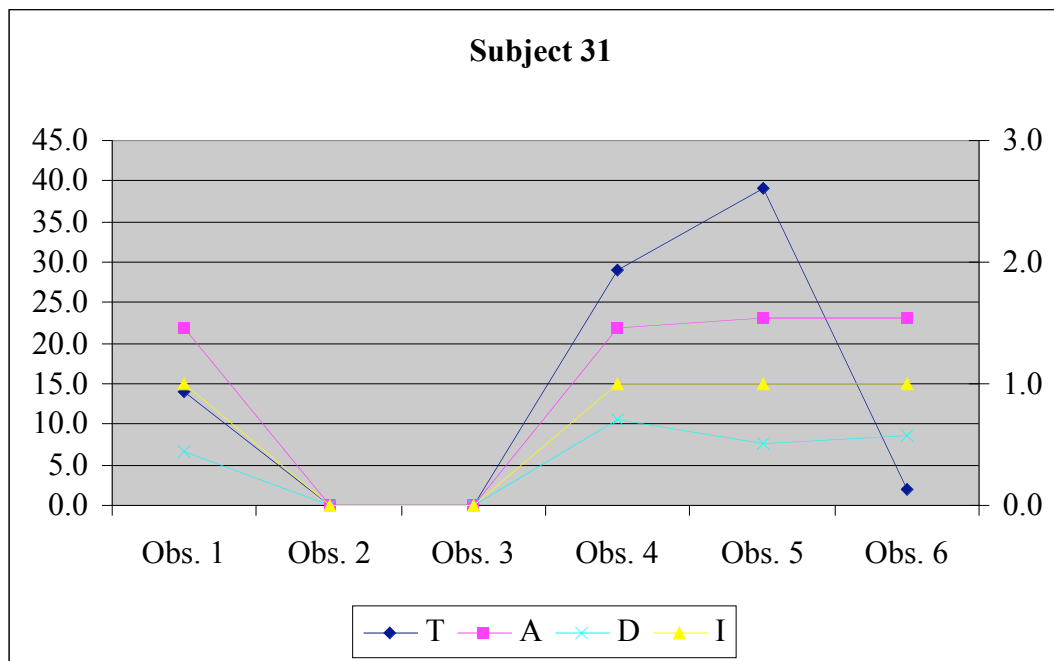
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 14.03 seconds

**SUBJECT 31**

	T	A	I	D
Obs. 1	14.0	22.0	1.0	6.6
Obs. 2	0.0	0.0	0.0	0.0
Obs. 3	0.0	0.0	0.0	0.0
Obs. 4	29.0	22.0	1.0	10.7
Obs. 5	39.0	23.0	1.0	7.7
Obs. 6	2.0	23.0	1.0	8.5



**Overall Modes:**

Toy – 49 *Two toys together*

Action – 22 *Visual exploration*

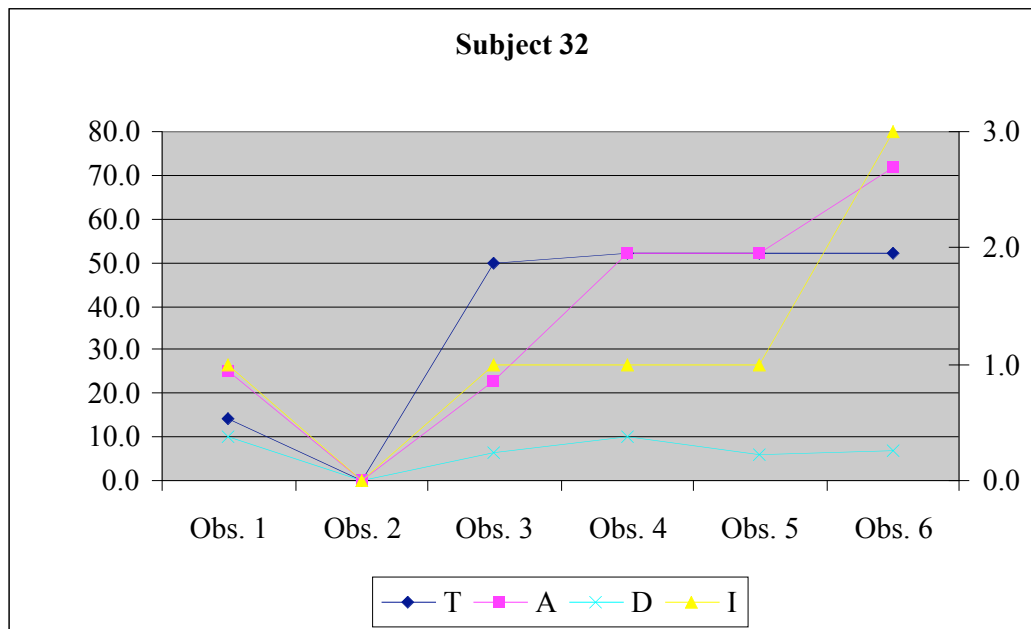
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 8.38 seconds

**SUBJECT 32**

	T	A	I	D
Obs. 1	14.0	25.0	1.0	10.0
Obs. 2	0.0	0.0	0.0	0.0
Obs. 3	50.0	23.0	1.0	6.2
Obs. 4	52.0	52.0	1.0	10.0
Obs. 5	52.0	52.0	1.0	5.9
Obs. 6	52.0	72.0	3.0	6.9



**Overall Modes:**

Toy – 52 *Other person*

Action – 52 *Directed communication/vocalisation*

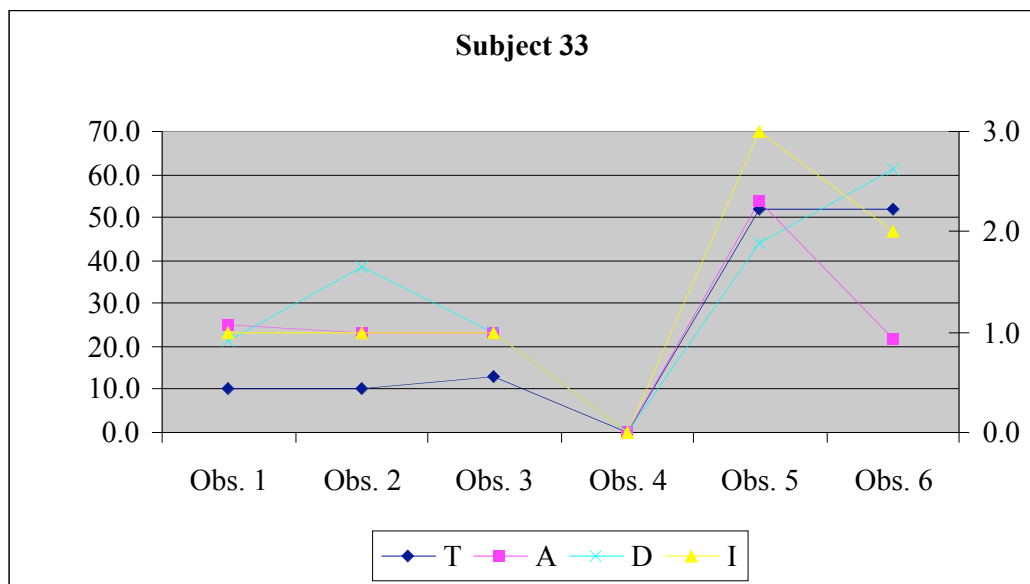
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 7.78 seconds

**SUBJECT 33**

	T	A	I	D
Obs. 1	10.0	25.0	1.0	21.3
Obs. 2	10.0	23.0	1.0	38.5
Obs. 3	13.0	23.0	1.0	23.2
Obs. 4	0.0	0.0	0.0	0.0
Obs. 5	52.0	54.0	3.0	43.9
Obs. 6	52.0	22.0	2.0	61.4



**Overall Modes:**

Toy – 52 *Other person*

Action – 23 *Simple tactile exploration*

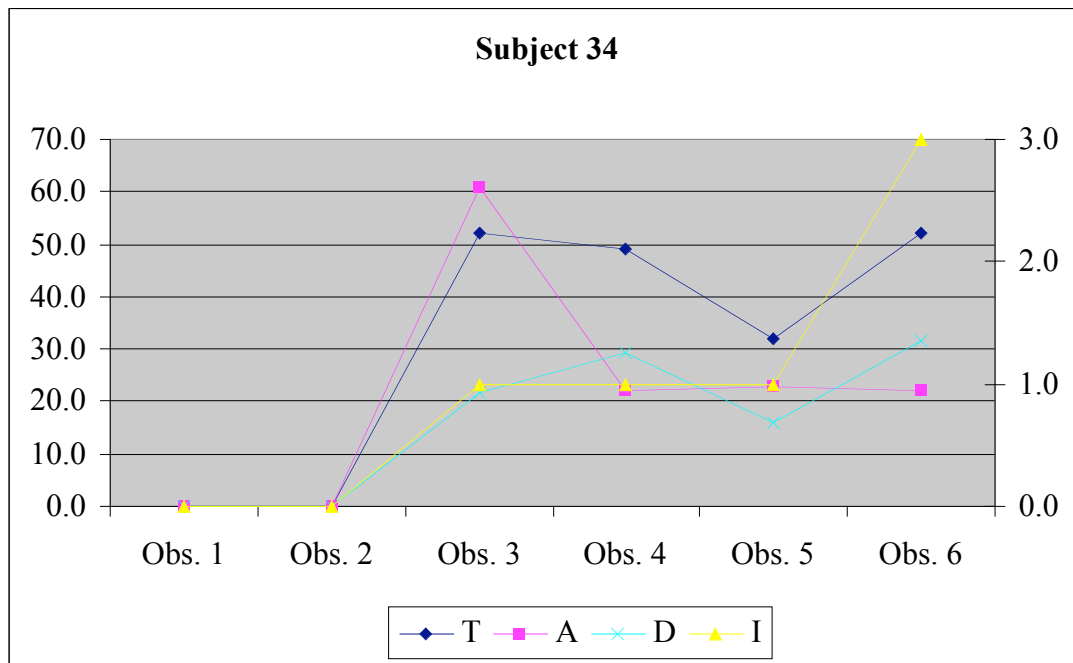
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 37.66 seconds

**SUBJECT 34**

	T	A	I	D
Obs. 1	0.0	0.0	0.0	0.0
Obs. 2	0.0	0.0	0.0	0.0
Obs. 3	52.0	61.0	1.0	21.9
Obs. 4	49.0	22.0	1.0	29.1
Obs. 5	32.0	23.0	1.0	15.9
Obs. 6	52.0	22.0	3.0	31.4



**Overall Modes:**

Toy – 49 *Two toys together*

Action – 22 *Visual exploration*

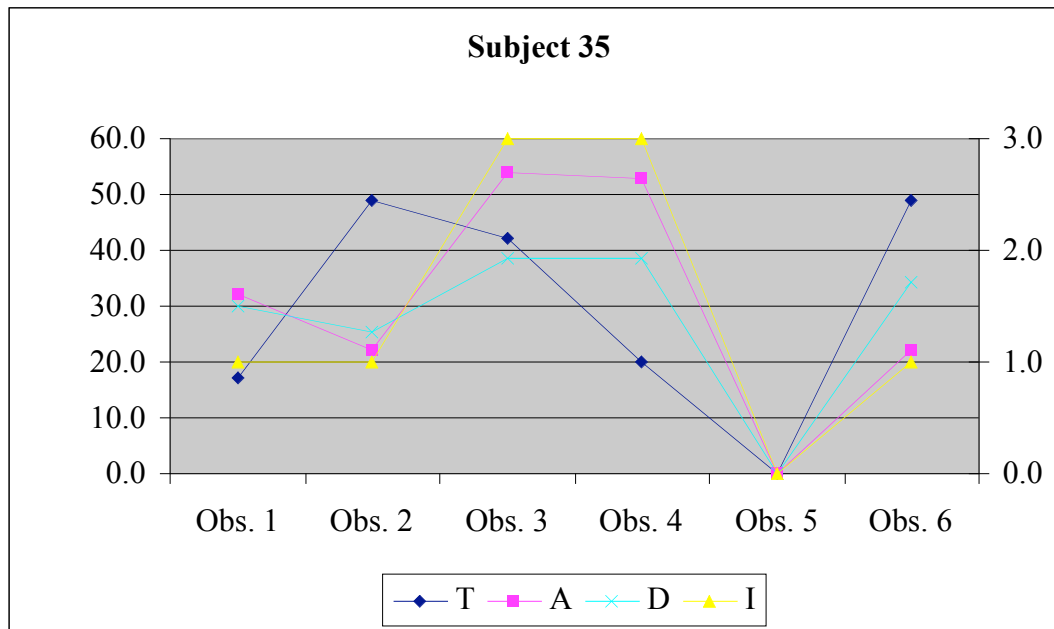
Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 24.58 seconds

**SUBJECT 35**

	T	A	I	D
Obs. 1	17.0	32.0	1.0	30.2
Obs. 2	49.0	22.0	1.0	25.3
Obs. 3	42.0	54.0	3.0	38.6
Obs. 4	20.0	53.0	3.0	38.6
Obs. 5	0.0	0.0	0.0	0.0
Obs. 6	49.0	22.0	1.0	34.4



**Overall Modes:**

Toy – 49 *Two toys together*

Action – 22 *Visual exploration*

Interaction – 1 *Solitary*

**Overall Mean:**

Duration – 27.85 seconds

## 7. Observational study data linked to questions

### 1. Which individual subjects made the most progress in terms of:

#### *a – increased duration of play time?*

Subject	Mean%	MeanAbs	Subject	Mean%	Subject	MeanAbs
1	6.0	-0.5	4	-53.4	23	-13.2
2	-5.8	-1.0	14	-43.3	14	-10.2
3	43.3	3.2	23	-35.8	4	-6.7
4	-53.4	-6.7	6	-31.8	6	-4.7
5	161.4	10.3	28	-13.7	15	-1.9
6	-31.8	-4.7	27	-12.7	27	-1.8
7	16.6	0.8	2	-5.8	21	-1.7
8	6.1	0.3	15	-4.9	28	-1.4
9	112.9	0.2	32	-0.2	25	-1.1
10	9.3	-0.3	25	3.2	2	-1.0
11	11.8	-0.1	22	4.8	32	-0.8
12	20.1	0.9	29	4.9	1	-0.5
13	10.0	0.9	1	6.0	18	-0.4
14	-43.3	-10.2	8	6.1	19	-0.4
15	-4.9	-1.9	35	6.4	10	-0.3
16	70.2	5.7	10	9.3	11	-0.1
17	25.9	1.0	13	10.0	22	-0.1
18	37.5	-0.4	20	10.7	<b>mean</b>	<b>0.0</b>
19	37.5	-0.4	11	11.8	9	0.2
20	10.7	0.7	21	12.5	8	0.3
21	12.5	-1.7	31	14.9	29	0.3
22	4.8	-0.1	7	16.6	30	0.6
23	-35.8	-13.2	<b>mean</b>	<b>17.8</b>	31	0.6
24	58.9	5.4	12	20.1	20	0.7
25	3.2	-1.1	30	23.5	7	0.8
26	46.0	2.3	17	25.9	12	0.9
27	-12.7	-1.8	34	28.3	13	0.9
28	-13.7	-1.4	18	37.5	17	1.0
29	4.9	0.3	19	37.5	35	1.1
30	23.5	0.6	33	42.4	26	2.3
31	14.9	0.6	3	43.3	3	3.2
32	-0.2	-0.8	26	46.0	34	3.2
33	42.4	10.0	24	58.9	24	5.4
34	28.3	3.2	16	70.2	16	5.7
35	6.4	1.1	9	112.9	33	10.0
			5	161.4	5	10.3



*b - a change in interaction levels from solitary to parallel or co-operative?*

Subject	Progress	Subject	Progress
1	0.0	14	-1.0
2	0.0	30	-1.0
3	0.0	1	0.0
4	0.0	2	0.0
5	0.0	3	0.0
6	0.0	4	0.0
7	0.0	5	0.0
8	0.0	6	0.0
9	0.0	7	0.0
10	0.0	8	0.0
11	0.0	9	0.0
12	0.0	10	0.0
13	0.0	11	0.0
14	-1.0	12	0.0
15	0.0	13	0.0
16	0.0	15	0.0
17	0.0	16	0.0
18	0.0	17	0.0
19	0.0	18	0.0
20	0.0	19	0.0
21	1.0	20	0.0
22	0.0	22	0.0
23	0.0	23	0.0
24	2.0	25	0.0
25	0.0	27	0.0
26	2.0	28	0.0
27	0.0	29	0.0
28	0.0	31	0.0
29	0.0	35	0.0
30	-1.0	21	1.0
31	0.0	33	1.0
32	2.0	24	2.0
33	1.0	26	2.0
34	2.0	32	2.0
35	0.0	34	2.0

*c - more complex play action?*

Subject	Progress	Subject	Progress
1	-1.3	34	-13.0
2	-0.8	29	-6.5
3	0.0	10	-5.6
4	0.0	35	-2.5
5	12.0	1	-1.3
6	0.0	13	-1.0
7	0.0	16	-1.0
8	0.0	23	-1.0
9	1.8	2	-0.8
10	-5.6	33	-0.8
11	0.3	19	-0.7
12	1.0	3	0.0
13	-1.0	4	0.0
14	0.0	6	0.0
15	0.0	7	0.0
16	-1.0	8	0.0
17	2.8	14	0.0
18	7.3	15	0.0
19	-0.7	20	0.0
20	0.0	25	0.0
21	5.6	28	0.0
22	0.3	30	0.0
23	-1.0	11	0.3
24	27.0	22	0.3
25	0.0	31	0.3
26	9.7	12	1.0
27	40.0	9	1.8
28	0.0	<b>Mean</b>	<b>2.4</b>
29	-6.5	17	2.8
30	0.0	21	5.6
31	0.3	18	7.3
32	11.8	26	9.7
33	-0.8	32	11.8
34	-13.0	5	12.0
35	-2.5	24	27.0
		27	40.0

**2. Which of the five age groups made most progress made in terms of:**

*a – increased duration of play time*

	Subject	%		
Group 5			mean progress	25.4
	1	6.0		
	3	43.3		
	21	12.5		
	24	58.9		
	35	6.4		
Group 4			mean progress	-0.1
	14	-43.3		
	22	4.8		
	23	-35.8		
	25	3.2		
	32	-0.2		
	33	42.4		
	34	28.3		
Group 3			mean progress	19.5
	2	-5.8		
	18	37.5		
	19	37.5		
	29	4.9		
	30	23.5		
Group 2			mean progress	16.3
	15	-4.9		
	16	70.2		
	17	25.9		
	26	46.0		
	27	-12.7		
	28	-13.7		
	29	4.9		
	31	14.9		
Group 1			mean progress	26.3
	4	-53.4		
	5	161.4		
	6	-31.8		
	7	16.6		
	8	6.1		
	9	112.9		
	10	9.3		
	11	11.8		
	12	20.1		
	13	10.0		

*b - a change in interaction levels*

	Subject	Progress		
Group 5			mean progress:	0.6
	1	0.0		
	3	0.0		
	21	1.0		
	24	2.0		
	35	0.0		
Group 4			mean progress:	0.6
	14	-1.0		
	22	0.0		
	23	0.0		
	25	0.0		
	32	2.0		
	33	1.0		
	34	2.0		
Group 3			mean progress:	-0.2
	2	0.0		
	18	0.0		
	19	0.0		
	29	0.0		
	30	-1.0		
Group 2			mean progress:	0.3
	15	0.0		
	16	0.0		
	17	0.0		
	26	2.0		
	27	0.0		
	28	0.0		
	29	0.0		
	31	0.0		
Group 1			mean progress:	0
	4	0.0		
	5	0.0		
	6	0.0		
	7	0.0		
	8	0.0		
	9	0.0		
	10	0.0		
	11	0.0		
	12	0.0		
	13	0.0		

*c - more complex play action*

	Subject	Progress		
Group 5			mean progress:	5.8
	1	-1.3		
	3	0.0		
	21	5.6		
	24	27.0		
	35	-2.5		
Group 4			mean progress:	-0.4
	14	0.0		
	22	0.3		
	23	-1.0		
	25	0.0		
	32	11.8		
	33	-0.8		
	34	-13.0		
Group 3			mean progress:	-0.1
	2	-0.8		
	18	7.3		
	19	-0.7		
	29	-6.5		
	30	0.0		
Group 2			mean progress:	5.7
	15	0.0		
	16	-1.0		
	17	2.8		
	26	9.7		
	27	40.0		
	28	0.0		
	29	-6.5		
	31	0.3		
Group 1			mean progress:	0.8
	4	0.0		
	5	12.0		
	6	0.0		
	7	0.0		
	8	0.0		
	9	1.8		
	10	-5.6		
	11	0.3		
	12	1.0		
	13	-1.0		

**3. Which of the three communication level group made most progress in terms of:**

*a – increased duration of play time*

	Subject	%		
Group 1			mean progress	24.7
	1	6.0		
	2	-5.8		
	3	43.3		
	4	-53.4		
	5	161.4		
	6	-31.8		
	7	16.6		
	8	6.1		
	9	112.9		
	10	9.3		
	11	11.8		
12	20.1			
Group 2			mean progress	11.4
	13	10.0		
	14	-43.3		
	15	-4.9		
	16	70.2		
	17	25.9		
	18	37.5		
	19	37.5		
	20	10.7		
	21	12.5		
	22	4.8		
23	-35.8			
Group 3			mean progress	16.8
	24	58.9		
	25	3.2		
	26	46.0		
	27	-12.7		
	28	-13.7		
	29	4.9		
	30	23.5		
	31	14.9		
	32	-0.2		
	33	42.4		
	34	28.3		
	35	6.4		

*b - a change in interaction levels*

Subject	Progress		
<b>Group 1</b>		mean progress	0.0
1	0.0		
2	0.0		
3	0.0		
4	0.0		
5	0.0		
6	0.0		
7	0.0		
8	0.0		
9	0.0		
10	0.0		
11	0.0		
12	0.0		
<b>Group 2</b>		mean progress	0.0
13	0.0		
14	-1.0		
15	0.0		
16	0.0		
17	0.0		
18	0.0		
19	0.0		
20	0.0		
21	1.0		
22	0.0		
23	0.0		
<b>Group 3</b>		mean progress	0.7
24	2.0		
25	0.0		
26	2.0		
27	0.0		
28	0.0		
29	0.0		
30	-1.0		
31	0.0		
32	2.0		
33	1.0		
34	2.0		
35	0.0		

*c - more complex play action*

	Subject	Progress	
Group 1		mean progress	0.6
	1	-1.3	
	2	-0.8	
	3	0.0	
	4	0.0	
	5	12.0	
	6	0.0	
	7	0.0	
	8	0.0	
	9	1.8	
	10	-5.6	
	11	0.3	
	12	1.0	
Group 2		mean progress	0.5
	13	-1.0	
	14	0.0	
	15	0.0	
	16	-1.0	
	17	2.8	
	18	6.8	
	19	0.0	
	20	0.0	
	21	5.6	
	22	-7.3	
23	0.0		
Group 3		mean progress	5.5
	24	27.0	
	25	0.0	
	26	9.7	
	27	40.0	
	28	0.0	
	29	-6.5	
	30	0.0	
	31	0.3	
	32	11.8	
	33	-0.8	
	34	-13.0	
35	-2.5		



**4. Which of the three aetiology impediment groups made most progress in terms of:**

*a – increased duration of play time*

	Subject	%		
<b>Group 3</b>			Mean Progress	57.9
	1	6.0		
	5	161.4		
	35	6.4		
<b>Group 2</b>			Mean Progress	16.5
	2	-5.8		
	3	43.3		
	4	-53.4		
	8	6.1		
	10	9.3		
	11	11.8		
	12	20.1		
	16	70.2		
	17	25.9		
	18	37.5		
	29	4.9		
	34	28.3		
<b>Group 1</b>			Mean Progress	12.6
	6	-31.8		
	7	16.6		
	9	112.9		
	13	10.0		
	14	-43.3		
	15	-4.9		
	19	37.5		
	20	10.7		
	21	12.5		
	22	4.8		
	23	-35.8		
	24	58.9		
	25	3.2		
	26	46.0		
	27	-12.7		
	28	-13.7		
	30	23.5		
	31	14.9		
	32	-0.2		
	33	42.4		

When absolute values of means are used:

	Subject	Abs Av		
Group 3			Mean Progress	3.6
	1	-0.5		
	5	10.3		
	35	1.1		
Group 2			Mean Progress	0.5
	2	-1.0		
	3	3.2		
	4	-6.7		
	8	0.3		
	10	-0.3		
	11	-0.1		
	12	0.9		
	16	5.7		
	17	1.0		
	18	-0.4		
	29	0.3		
	34	3.2		
	Group 1			Mean Progress
6		-4.7		
7		0.8		
9		0.2		
13		0.9		
14		-10.2		
15		-1.9		
19		-0.4		
20		0.7		
21		-1.7		
22		-0.1		
23		-13.2		
24		5.4		
25		-1.1		
26		2.3		
27		-1.8		
28		-1.4		
30		0.6		
31		0.6		
32	-0.8			
33	10.0			

*b - a change in interaction levels*

	Subject	Progress		
Group 3			Mean Progress	0.0
	1	0.0		
	5	0.0		
	35	0.0		
Group 2			Mean Progress	0.2
	2	0.0		
	3	0.0		
	4	0.0		
	8	0.0		
	10	0.0		
	11	0.0		
	12	0.0		
	16	0.0		
	17	0.0		
	18	0.0		
	29	0.0		
	34	2.0		
Group 1			Mean Progress	0.3
	6	0.0		
	7	0.0		
	9	0.0		
	13	0.0		
	14	-1.0		
	15	0.0		
	19	0.0		
	20	0.0		
	21	1.0		
	22	0.0		
	23	0.0		
	24	2.0		
	25	0.0		
	26	2.0		
	27	0.0		
	28	0.0		
	30	-1.0		
	31	0.0		
	32	2.0		
	33	1.0		

*c - more complex play action*

	Subject	Progress		
Group 3			Mean Progress	2.8
	1	-1.3		
	5	12.0		
	35	-2.5		
Group 2			Mean Progress	-1.3
	2	-0.8		
	3	0.0		
	4	0.0		
	8	0.0		
	10	-5.6		
	11	0.3		
	12	1.0		
	16	-1.0		
	17	2.8		
	18	6.8		
	29	-6.5		
	34	-13.0		
Group 1			Mean Progress	4.4
	6	0.0		
	7	0.0		
	9	1.8		
	13	-1.0		
	14	0.0		
	15	0.0		
	19	0.0		
	20	0.0		
	21	5.6		
	22	-7.3		
	23	0.0		
	24	27.0		
	25	0.0		
	26	9.7		
	27	40.0		
	28	0.0		
	30	0.0		
	31	0.3		
	32	11.8		
	33	-0.8		

**5. Which of the five predictive progress groups COMMUNICATION LEVEL and AGE made most progress in terms of:**

*a – increased duration of play time*

	Subject	%		
Group 5			Mean progress	30.2
	1	6.0		
	3	43.3		
	21	12.5		
	24	58.9		
Group 4			Mean progress	-14.7
	2	-5.8		
	14	-43.3		
	22	4.8		
	23	-35.8		
	35	6.4		
Group 3			Mean progress	22.8
	18	37.5		
	19	37.5		
	20	10.7		
	25	3.2		
	32	-0.2		
	33	42.4		
	34	28.3		
Group 2			Mean progress	10.2
	4	-53.4		
	8	6.1		
	15	-4.9		
	16	70.2		
	17	25.9		
	26	46.0		
	27	-12.7		
	28	-13.7		
	30	23.5		
	31	14.9		
Group 1			Mean progress	35.0
	5	161.4		
	6	-31.8		
	7	16.6		
	9	112.9		
	10	9.3		
	11	11.8		
	12	20.1		
	13	10.0		
	29	4.9		

*b - a change in interaction levels*

	Subject	Progress		
Group 5			Mean progress	0.8
	1	0.0		
	3	0.0		
	21	1.0		
	24	2.0		
Group 4			Mean progress	-0.2
	2	0.0		
	14	-1.0		
	22	0.0		
	23	0.0		
Group 3			Mean progress	0.7
	18	0.0		
	19	0.0		
	20	0.0		
	25	0.0		
	32	2.0		
	33	1.0		
Group 2			Mean progress	0.1
	4	0.0		
	8	0.0		
	15	0.0		
	16	0.0		
	17	0.0		
	26	2.0		
	27	0.0		
	28	0.0		
	30	-1.0		
Group 1			Mean progress	0.0
	5	0.0		
	6	0.0		
	7	0.0		
	9	0.0		
	10	0.0		
	11	0.0		
	12	0.0		
	13	0.0		
29	0.0			

*c - more complex play action*

	Subject	Progress		
Group 5			Mean progress	7.8
	1	-1.3		
	3	0.0		
	21	5.6		
	24	27.0		
Group 4			Mean progress	-2.1
	2	-0.8		
	14	0.0		
	22	-7.3		
	23	0.0		
Group 3			Mean progress	0.7
	18	6.8		
	19	0.0		
	20	0.0		
	25	0.0		
	32	11.8		
	33	-0.8		
Group 2			Mean progress	5.2
	4	0.0		
	8	0.0		
	15	0.0		
	16	-1.0		
	17	2.8		
	26	9.7		
	27	40.0		
	28	0.0		
	30	0.0		
	31	0.3		
Group 1			Mean progress	0.2
	5	12.0		
	6	0.0		
	7	0.0		
	9	1.8		
	10	-5.6		
	11	0.3		
	12	1.0		
	13	-1.0		
29	-6.5			

**6. Which of the five predictive progress groups AETIOLOGY and AGE made most progress in terms of:**

*a – increased duration of play time*

	Subject	Progress		
<b>Group 5</b>			Mean progress	25.4
	1	6.0		
	3	43.3		
	21	12.5		
	24	58.9		
	35	6.4		
<b>Group 4</b>			Mean progress	0.4
	2	-5.8		
	14	-43.3		
	18	37.5		
	22	4.8		
	23	-35.8		
	25	3.2		
	32	-0.2		
	33	42.4		
<b>Group 3</b>			Mean progress	33.6
	16	70.2		
	17	25.9		
	19	37.5		
	20	10.7		
	30	23.5		
<b>Group 2</b>			Mean progress	16.5
	4	-53.4		
	5	161.4		
	8	6.1		
	15	-4.9		
	26	46.0		
	27	-12.7		
	28	-13.7		
	29	4.9		
	31	14.9		
<b>Group 1</b>			Mean progress	21.3
	6	-31.8		
	7	16.6		
	9	112.9		
	10	9.3		
	11	11.8		
	12	20.1		
	13	10.0		



*b - a change in interaction levels*

	Subject	Progress		
Group 5			Mean progress	0.6
	1	0.0		
	3	0.0		
	21	1.0		
	24	2.0		
	35	0.0		
Group 4			Mean progress	0.3
	2	0.0		
	14	-1.0		
	18	0.0		
	22	0.0		
	23	0.0		
	25	0.0		
	32	2.0		
33	1.0			
Group 3			Mean progress	-0.2
	16	0.0		
	17	0.0		
	19	0.0		
	20	0.0		
	30	-1.0		
Group 2			Mean progress	0.2
	4	0.0		
	5	0.0		
	8	0.0		
	15	0.0		
	26	2.0		
	27	0.0		
	28	0.0		
29	0.0			
31	0.0			
Group 1			Mean progress	0.0
	6	0.0		
	7	0.0		
	9	0.0		
	10	0.0		
	11	0.0		
	12	0.0		
	13	0.0		

*c - more complex play action*

	Subject	Progress		
Group 5			Mean progress	5.8
	1	-1.3		
	3	0.0		
	21	5.6		
	24	27.0		
	35	-2.5		
Group 4			Mean progress	1.2
	2	-0.8		
	14	0.0		
	18	6.8		
	22	-7.3		
	23	0.0		
	25	0.0		
	32	11.8		
	33	-0.8		
Group 3			Mean progress	0.4
	16	-1.0		
	17	2.8		
	19	0.0		
	20	0.0		
Group 2			Mean progress	6.2
	4	0.0		
	5	12.0		
	8	0.0		
	15	0.0		
	26	9.7		
	27	40.0		
	28	0.0		
	29	-6.5		
31	0.3			
Group 1			Mean progress	-0.5
	6	0.0		
	7	0.0		
	9	1.8		
	10	-5.6		
	11	0.3		
	12	1.0		
13	-1.0			

**7. Which of the five predictive progress groups AGE, COMMUNICATION LEVEL and AETIOLOGY made most progress in terms of:**

*a – increased duration of play time*

	Subject	Progress		
<b>Group 5</b>			Mean progress	20.2
	1	6.0		
	2	-5.8		
	3	43.3		
	21	12.5		
	24	58.9		
	35	6.4		
<b>Group 4</b>			Mean progress	-1.7
	14	-43.3		
	18	37.5		
	22	4.8		
	23	-35.8		
	34	28.3		
<b>Group 3</b>			Mean progress	28.7
	4	-53.4		
	5	161.4		
	8	6.1		
	15	-4.9		
	16	70.2		
	17	25.9		
	19	37.5		
	20	3.2		
	25	23.5		
	30	-0.2		
	32	42.4		
	33	33.0		
<b>Group 2</b>			Mean progress	10.1
	10	9.3		
	11	11.8		
	12	20.1		
	26	46.0		
	27	-12.7		
	28	-13.7		
	29	4.9		
	31	14.9		
<b>Group 1</b>			Mean progress	26.9
	6	-31.8		
	7	16.6		
	9	112.9		
	13	10.0		

*b - a change in interaction levels*

	Subject	Progress		
Group 5			Mean progress	0.5
	1	0.0		
	2	0.0		
	3	0.0		
	21	1.0		
	24	2.0		
	35	0.0		
Group 4			Mean progress	0.2
	14	-1.0		
	18	0.0		
	22	0.0		
	23	0.0		
	34	2.0		
Group 3			Mean progress	0.3
	4	0.		
	5	0.0		
	8	0.0		
	15	0.0		
	16	0.0		
	17	0.0		
	19	0.0		
	20	0.0		
	25	-1.0		
	30	2.0		
	32	1.0		
	33	1		
Group 2			Mean progress	0.3
	10	0.0		
	11	0.0		
	12	0.0		
	26	2.0		
	27	0.0		
	28	0.0		
	29	0.0		
	31	0.0		
Group 1			Mean progress	0.0
	6	0.0		
	7	0.0		
	9	0.0		
	13	0.0		

*c - more complex play action*

	Subject	Progress		
<b>Group 5</b>			Mean progress	4.7
	1	-1.3		
	2	-0.8		
	3	0.0		
	21	5.6		
	24	27.0		
	35	-2.5		
<b>Group 4</b>			Mean progress	-2.7
	14	0.0		
	18	6.8		
	22	-7.3		
	23	0.0		
	34	-13.0		
<b>Group 3</b>			Mean progress	2.0
		0.0		
	5	12.0		
	8	0.0		
	15	0.0		
	16	-1.0		
	17	2.8		
	19	0.0		
	20	0.0		
	25	0.0		
	30	11.8		
	32	-0.8		
	33	-0.75		
<b>Group 2</b>			Mean progress	4.9
	10	-5.6		
	11	0.3		
	12	1.0		
	26	9.7		
	27	40.0		
	28	0.0		
	29	-6.5		
	31	0.3		
<b>Group 1</b>			Mean progress	0.2
	6	0.0		
	7	0.0		
	9	1.8		
	13	-1.0		

**8. What was the most popular toy for each subject?**

Subject	Toy
1	53
2	53
3	48
4	36
5	53
6	8
7	12
8	37
9	53
10	29
11	29
12	49
13	49
14	53
15	53
16	49
17	49
18	49
19	49
20	49
21	1
22	49
23	6
24	31
25	14
26	52
27	52
28	52
29	52
30	52
31	49
32	52
33	52
34	49
35	49

**9. What were the most popular toy for subjects put into the following groups:**

**- age groupings**

1	53	Group 5 mode N/A
3	48	
21	1	
24	31	
35	49	

14	53	Group 4 mode	49
22	49		
23	6		
25	14		
32	52		
33	52		
34	49		
2	53	Group 3 mode	49
18	49		
19	49		
29	52		
30	52		
15	53	Group 2 mode	52
16	49		
17	49		
26	52		
27	52		
28	52		
29	52		
31	49		
4	36	Group 1 mode	53
5	53		
6	8		
7	12		
8	37		
9	53		
10	29		
11	29		
12	49		
13	49		

*- communication level groupings*

1	53	Group 1 mode	53
2	53		
3	48		
4	36		
5	53		
6	8		
7	12		
8	37		
9	53		
10	29		
11	29		
12	49		
13	49	Group 2 mode	49
14	53		

15	53		
16	49		
17	49		
18	49		
19	49		
20	49		
21	1		
22	49		
23	6		
24	31	Group 3 mode	52
25	14		
26	52		
27	52		
28	52		
29	52		
30	52		
31	49		
32	52		
33	52		
34	49		
35	49		

**- aetiology groupings**

1	53	Group 3 mode	53
5	53		
35	49		
2	53	Group 2 mode	49
3	48		
4	36		
8	37		
10	29		
11	29		
12	49		
16	49		
17	49		
18	49		
29	52		
34	49		
6	8	Group 1 mode	52
7	12		
9	53		
13	49		
14	53		
15	53		
19	49		
20	49		



21	1
22	49
23	6
24	31
25	14
26	52
27	52
28	52
30	52
31	52
32	49
33	52

**- five predictive progress groups COMMUNICATION LEVEL and AGE**

1	53	Group 5 mode	N/A
3	48		
21	1		
24	31		
2	53	Group 4 mode	53
14	53		
22	49		
23	6		
35	49		
18	49	Group 3 mode	49
19	49		
20	49		
25	14		
32	52		
33	52		
34	49		
4	36	Group 2 mode	52
8	37		
15	53		
16	49		
17	49		
26	52		
27	52		
28	52		
30	52		
31	49		
5	53		
6	8		
7	12		
9	53		
10	29		
11	29		

12	49
13	49
29	52

- five predictive progress groups **AETIOLOGY and AGE**

1	53	Group 5 mode	49
3	48		
21	1		
24	31		
34	49		
35	49		
2	53	Group 4 mode	53
14	53		
18	49		
22	49		
23	6		
25	14		
32	52		
33	52		
16	49	Group 3 mode	49
17	49		
19	49		
20	49		
30	52		
4	36	Group 2 mode	52
5	53		
8	37		
15	53		
26	52		
27	52		
28	52		
29	52		
31	49		
6	8	Group 1 mode	29
7	12		
9	53		
10	29		
11	29		
12	49		
13	49		

**- five predictive progress groups AGE, COMMUNICATION LEVEL and AETIOLOGY**

1	53	Group 5 mode	53
2	53		
3	48		
21	1		
24	31		
35	49	Group 4 mode	49
14	53		
18	49		
22	49		
23	6	Group 3 mode	49
34	49		
4	36		
5	53		
8	37		
15	53		
16	49		
17	49		
19	49		
20	49		
25	14		
30	52		
32	52		
33	52		
10	29	Group 2 mode	52
11	29		
12	49		
26	52		
27	52		
28	52		
29	52		
31	49		
6	8	Group 1 mode	#N/A
7	12		
9	53		
13	49		

**10. Within the data there is a record of the observational order of each subject.**

**Did position of observation appear to influence time spent on play episodes?**

**Observation 1**

SUB	Position	No.	Mean D	
5	0	0	0.0	
6	0	0	0.0	
7	0	0	0.0	
12	0	0	0.0	
13	0	0	0.0	
16	0	0	0.0	
18	0	0	0.0	
22	0	0	0.0	
24	0	0	0.0	
26	0	0	0.0	
34	0	0	0.0	
8	1	1	6.6	15.4 Position group mean
20	1	1	11.2	
25	1	1	12.4	
27	1	1	13.9	
14	1	2	23.5	
21	1	2	30.0	
9	1	3	6.6	
33	1	3	21.3	
1	1	4	13.3	
15	2	2	20.1	
23	2	2	37.0	
11	2	3	7.8	
19	2	3	18.6	
32	2	3	10.0	
2	2	4	12.2	
30	2	4	36.0	
10	3	3	12.3	13.7 Position group mean
17	3	3	12.9	
35	3	3	30.2	
3	3	4	10.0	
28	3	4	10.2	
29	3	4	6.8	
4	4	4	12.5	9.5 Position group mean
31	4	4	6.6	

**Observation 2**

SUB	Position	No.	Mean D		
16	0	0	0.0		
19	0	0	0.0		
24	0	0	0.0		
31	0	0	0.0		
32	0	0	0.0		
34	0	0	0.0		
13	1	3	13.9	12.6	Position group mean
18	1	3	10.5		
22	1	3	11.6		
26	1	3	5.7		
30	1	3	6.4		
35	1	3	25.3		
3	1	4	15.4		
6	1	4	15.8		
12	1	4	8.9		
14	2	3	13.3	13.8	Position group mean
15	2	3	20.0		
17	2	3	24.7		
23	2	3	23.8		
27	2	3	12.1		
28	2	3	8.8		
4	2	4	5.8		
7	2	4	7.1		
10	2	4	8.9		
20	3	3	18.1	20.5	Position group mean
21	3	3	23.1		
25	3	3	7.2		
29	3	3	8.6		
33	3	3	38.5		
2	3	4	14.3		
5	3	4	21.7		
9	3	4	32.8		
1	4	4	11.8	11.3	Position group mean
8	4	4	9.0		
11	4	4	13.2		

**Observation 3**

SUB	Position	No.	Mean D	
1	0	0	0.0	
3	0	0	0.0	
4	0	0	0.0	
8	0	0	0.0	
14	0	0	0.0	
16	0	0	0.0	
23	0	0	0.0	
24	0	0	0.0	
25	0	0	0.0	
26	0	0	0.0	
27	0	0	0.0	
28	0	0	0.0	
31	0	0	0.0	
2	1	1	17.6	14.4 Position group mean
20	1	1	12.4	
34	1	1	21.9	
13	1	2	12.3	
21	1	2	20.4	
30	1	2	9.3	
5	1	3	9.2	
19	1	3	12.1	
9	1	4	6.2	
33	1	4	23.2	
15	2	2	9.9	8.7 Position group mean
22	2	2	15.2	
29	2	2	7.9	
6	2	3	6.8	
17	2	3	9.2	
32	2	3	6.2	
11	2	4	5.8	
7	3	3	12.5	12.1 Position group mean
18	3	3	17.6	
12	3	4	6.3	
10	4	4	5.2	21.9 Position group mean
35	4	4	38.6	

**Observation 4**

SUB	Position	No.	Mean D	
2	0	0	0.0	
4	0	0	0.0	
6	0	0	0.0	
12	0	0	0.0	
14	0	0	0.0	
23	0	0	0.0	
24	0	0	0.0	
27	0	0	0.0	
28	0	0	0.0	
33	0	0	0.0	
3	1	1	8.9	13.3 Position group mean
7	1	1	12.1	
8	1	1	8.1	
15	1	1	14.4	
19	1	1	36.2	
13	1	2	10.9	
21	1	2	22.5	
26	1	2	6.9	
11	1	3	8.6	
18	1	3	9.1	
29	1	3	8.4	
5	2	1	60.0	16.4 Position group mean
1	2	2	11.8	
16	2	2	8.1	
22	2	2	14.2	
25	2	2	13.0	
10	2	3	10.2	
20	2	3	12.8	
30	2	3	7.5	
32	2	4	10.0	
9	3	3	18.6	21.6 Position group mean
17	3	3	10.8	
31	3	3	10.7	
34	3	4	29.1	
35	3	4	38.6	

**Observation 5**

SUB	Position	No.	Mean D		
4	0	0	0.0		
9	0	0	0.0		
11	0	0	0.0		
12	0	0	0.0		
13	0	0	0.0		
14	0	0	0.0		
15	0	0	0.0		
16	0	0	0.0		
17	0	0	0.0		
19	0	0	0.0		
20	0	0	0.0		
23	0	0	0.0		
25	0	0	0.0		
27	0	0	0.0		
28	0	0	0.0		
29	0	0	0.0		
35	0	0	0.0		
3	1	1	19.4	15.4	Position group mean
10	1	1	7.0		
18	1	1	13.3		
2	1	2	11.6		
21	1	2	49.0		
24	1	3	9.1		
30	1	3	16.0		
8	1	4	7.4		
32	1	4	5.9		
1	2	2	21.5	22.3	Position group mean
22	2	2	19.5		
26	2	3	16.6		
31	2	3	7.7		
5	2	4	52.5		
34	2	4	15.9		
6	3	2	6.3	6.3	Position group mean
7	4	4	8.1	26.0	Position group mean
33	4	4	43.9		



**Observation 6**

SUB	Position	No.	Mean D	
3	0	0	0.0	
4	0	0	0.0	
5	0	0	0.0	
6	0	0	0.0	
8	0	0	0.0	
14	0	0	0.0	
23	0	0	0.0	
27	0	0	0.0	
28	0	0	0.0	
7	1	1	10.3	11.2 Position group mean
15	1	1	12.4	
1	1	2	11.5	
13	1	2	16.7	
22	1	2	11.2	
26	1	3	12.8	
31	1	3	8.5	
11	1	4	7.4	
20	1	4	14.0	
32	1	4	6.9	
2	2	2	8.2	17.8 Position group mean
16	2	2	13.8	
21	2	2	16.4	
25	2	3	9.1	
30	2	3	8.9	
9	2	4	7.5	
19	2	4	17.3	
33	2	4	61.4	
24	3	3	14.5	16.5 Position group mean
29	3	3	8.0	
12	3	4	10.7	
18	3	4	14.6	
35	3	4	34.4	
10	4	4	10.6	19.7 Position group mean
17	4	4	17.0	
34	4	4	31.4	

### 11. Were there any apparent gender biases for chosen?

Code 1 = female; 2 = male

Subject	Most popular	
	toy	Gender
1	53	2
2	53	1
3	48	1
4	36	2
5	53	1
6	8	2
7	12	1
8	37	1
9	53	1
10	29	2
11	29	2
12	49	2
13	49	1
14	53	2
15	53	2
16	49	2
17	49	1
18	49	1
19	49	2
20	49	2
21	1	2
22	49	1
23	6	2
24	31	1
25	14	1
26	52	1
27	52	2
28	52	2
29	52	2
30	52	1
31	49	1
32	52	1
33	52	2
34	49	2
35	49	2

**12. Were there any apparent gender biases for play actions?**

Subject	Progress	Gender
1	-1.3	2
2	-0.8	1
3	0.0	1
4	0.0	2
5	12.0	1
6	0.0	2
7	0.0	1
8	0.0	1
9	1.8	1
10	-5.6	2
11	0.3	2
12	1.0	2
13	-1.0	1
14	0.0	2
15	0.0	2
16	-1.0	2
17	2.8	1
18	7.3	1
19	-0.7	2
20	0.0	2
21	5.6	2
22	0.3	1
23	-1.0	2
24	27.0	1
25	0.0	1
26	9.7	1
27	40.0	2
28	0.0	2
29	-6.5	2
30	0.0	1
31	0.3	1
32	11.8	1
33	-0.8	2
34	-13.0	2
35	-2.5	2