

## ACTIVITY LOG OF PRESCHOOL CHILDREN WITH DEVELOPMENTAL DISABILITIES AND AUTISM SPECTRUM DISORDERS

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### ABSTRACT

*The present study was undertaken on a sample of 140 preschool children diagnosed as cases with one of the "developmental disabilities", including "autism spectrum disorders". A semi structured "Interview Schedule" and another "Daily Activity Log Schedule", specially designed for the purpose of this study, was used to elicit information on hour-wise engagements of each child from the caregivers/parents of these children. The reported engagements of each child was classified in terms of their time spent on "sleeping", "ablution", "watching television", "playing alone", "playing with peers", "feeding", "attending school" (if any), "home teaching" and "others". The results show, that the greatest part of a day's schedule is spent by this sample of children on "sleeping" (43.24 %), followed by time spent at "school" (for school going kids only) (14.41 %), on "feeding" activities (10.34 %) and "watching television" (9.61 %) respectively. The amount of time per day spent on needed-constructive activities like "home teaching" (4.32 %) or "playing with peers" (4.12 %) are meagre.*

*A sub-sample analysis of children with autism spectrum disorders alone, reveals that, those who are not exposed to any school experience a double disadvantage. They spend thrice the time on sedentary or exclusion activities like "watching television" (21.23 %), or "playing alone" (14.62 %) than they would have done, if they had been at school. Additionally, they also lose out time in their typical day's schedule for "playing with peers" (1.74 %) and "home teaching" (0.32 %). These differences invite attention to the need for revamping the daily activities of children with developmental disabilities, especially autism spectrum disorders, in favor of group-oriented or inclusive-play activities with same aged peers in preschools, kindergartens, crèche, playpens, Montessori schools, and so on.*

### INTRODUCTION

Developmental disabilities refer to a mixed group of children designated as, "at risk" and/or those with permanently handicapping conditions especially during their preschool years of life. The "at risk" child may have no existing/current handicaps, but, only a strong disposition for developing one or the other disability in due course of time. Among the common

developmental disabilities reported during preschool years are sensory, locomotor, mental and learning handicaps, specific speech delays, multiple handicaps, autistic disorders, attention deficit and over activity disorders, etc.

Autism Spectrum Disorders (ASDs) is an umbrella-term to refer any or all the Pervasive Developmental Disorders (PDDs) (1,2). Although clinical patterns in individual cases vary according to their severity, all children with ASDs demonstrate some degree of qualitative impairment in reciprocal social interaction and communication. They also show restricted, repetitive and stereotypic patterns of behaviours, interests and activities (3,4). The onset of these symptoms for most children with autism, occurs during late infancy. It is well recognised that some children demonstrate regression in speech and social skills, withdraw and become indifferent to their surroundings during the second year of life, after a period of relatively typical development (5,6).

There is no single pathognomonic developmental characteristic or behaviour that has been featured in all children with ASDs. For example, most of these children have been reported to have early deficits in “joint attention” and “pretend play” (7) with demonstrated difficulties in “proto-imperative pointing” and “proto-declarative pointing” skills even before two years of age. Children with ASD have been known to make poor or no eye contact, seeming totally aloof, imitative of songs, rhymes, television advertisements and jingles without any communicative intent, stereotyped behaviors like hand flapping, finger flicking or compulsive sniffing, etc. They are declared to be deficient in ordinary preschool social skills, such as, group participation in play, waiting/turn-taking during games, comprehension of rules in kindergarten play, empathy-sympathy, imitation, sharing, recognition of body language, expression, etc. (8,9,10).

Even though ASD is generally believed to be a biologically based neuro-developmental disability with a strong genetic basis, the exact cause is still unknown. Before the 1970's, it was incorrectly believed that ASD resulted from a cold, unloving parenting style (the “refrigerator mother theory”)(11,12). While autism seems to be mainly genetic in origin, a number of environmental effects also appear to play a role in modulating the autism phenotype, indicating a multi-factorial mode of inheritance in some cases.

Among the environmental circumstances, early mothering patterns, parent-child interactions, family environment, available levels of infant/child stimulation, daily activity levels, sharing of activities, etc., appear to be contributory, if not, causative variables for the onset of ASD in young children. Under these circumstances, it was considered appropriate to outline a log of daily activities in children with developmental disabilities and ASD, in order to determine whether any anomalies existed in the patterns of their early childhood experiences of rearing or sharing. Such information could be even made part of preventive environmental engineering

programmes for preschool aged children in general and/or children “at risk”, those with DDs, ASDs, etc.

### **AIMS OF THE STUDY**

The aims of this study were:

- (i) to prepare an activity log of daily behaviours as reported by parents/caregivers in a group children with developmental disabilities and autism spectrum disorders.
- (ii) to explore any trends in the profile of daily activity log of children with developmental disabilities and autism spectrum disorders, in relation to associated variables like type of disability, age, sex, type of family, family size, school exposure, etc.

### **METHOD**

The study was conducted by drawing information from a sample of 140 preschool aged children diagnosed as one of the “developmental disabilities” (N: 89) or any of the “autism spectrum disorders” (N: 51). All cases were drawn from the “Psycho-diagnostic and Therapeutic Services”, at All India Institute of Speech & Hearing, Mysore. The chronological age range of the sample is between 18 to 126 months (Mean Age: 65.20 months; SD: 43.13), including males (Mean Age: 68.97 months; SD: 33.39) and females (Mean Age: 63.79 months; SD: 46.46).

The procedure of data collection involved a semi-structured “Interview Schedule” on demographic details followed by a simple “Daily Activity Log Schedule” (DALs) for each index case. The DALs was designed to elicit information about each child and his/her nearest caregivers/family members, on their hourly engagement during a typical day. For every hour in the 24-hour log schedule, data were elicited on the child’s and/or others’ activities in terms of time spent on sleeping, ablution, watching television (or playing computer and video games), playing alone, playing with peers, feeding, attending school (if any), home teaching and others. The total time spent by a given child and/or the significant family members under these activity headings were totalled and rounded off, to the nearest hour. Wherever, informants reported the child’s simultaneous involvement in two or more of the above mentioned categories of activities (such as, feeding while watching television or playing alone while the television is on) within the same hour, they were recorded as such. Thus, there could be more than the 24-hour schedule for some children, when totaling the reported activities for a given day. Data were collected, compiled and computed for descriptive and interpretative statistical inferences by using SPSS/PC version 3.0 (13,14).

## RESULTS AND DISCUSSION

The results of this study show that the greatest part of a typical day's schedule of a child with one of the developmental disabilities, is spent on "sleeping" (Mean: 9.74 hours; SD: 1.25; 43.24 %). This is followed by time spent at "school" (for school going children only) (Mean: 4.68 hours; SD: 1.60; 14.41 %), on "feeding" activities (Mean: 3.04 hours; SD: 0.29; 10.34 %) and "watching television" (Mean: 2.16 hours; SD: 2.48; 9.61 %) respectively. The amount of time per day, spent on needed and constructive activities like "home teaching" (Mean: 0.94 hours; SD: 1.09; 4.32 %) or "playing with peers" (Mean: 0.93 hours; SD: 1.01; 4.12 %) is meagre in this sample of children with DDs and ASDs (Table One).

**Table 1. Mean and total time reported on various activities for overall sample (N:140)**

Activity	TT	M	SD	%
Sleep	1363	9.74	1.25	43.24
School	454	4.68	1.60	14.41
Feeding	326	3.04	0.29	10.34
TV Time	303	2.16	2.48	9.61
Play Alone	249	1.78	1.66	7.90
Ablution	142	1.08	0.19	4.50
Home Teaching	136	0.94	1.09	4.32
Play Peers	130	0.93	1.01	4.12
Others	49	0.33	1.59	1.56
Total Hours	3152			

In terms of school variable, the trend and preference of involvement time in daily activities are different for children going to school and those staying back at home (Table 2). The children, who are not attending school in this sample, are on an average spending more time "sleeping" (Mean: 10.27 hours; SD: 1.12; 43.84 %), "watching television" (Mean: 4.28 hours; SD: 2.76; 18.29 %) and "playing alone" (Mean: 2.77 hours; SD: 2.22; 11.83%) than their peers going to school ( $p < 0.001$ ). Further, these children are also reported to be spending less time on "playing with peers" (Mean: 0.63 hours; SD: 1.07; 2.68%) and on "home teaching" (Mean: 0.35 hours; SD: 1.13; 1.49 %) as compared to their matched companions attending school. These differences suggest that attendance at a school is a critical and statistically significant variable in influencing the daily schedule of activities in children with DDs ( $p < 0.05$ ).

**Table 2. Mean and total time reported on various activities in terms of school variable**

Activity	School (N:97)				No School (N:43)				T Values
	TT	M	SD	%	TT	M	SD	%	
Sleep*	922	9.50	1.23	42.96	441	10.27	1.12	43.84	3.64
TV Time*	119	1.22	1.62	5.55	184	4.28	2.76	18.29	6.77
Feeding	196	3.05	0.27	9.13	130	3.03	0.35	12.92	0.33
Play Alone*	130	1.34	1.09	6.06	119	2.77	2.22	11.83	4.02
School	454	4.68	1.60	21.16	-	-	-	-	-
Ablution*	99	1.11	0.22	4.61	43	1.00	0.00	4.27	4.92
Play Peers*	103	1.06	0.96	4.80	27	0.63	1.07	2.68	2.26
Home Teaching*	121	1.20	1.21	5.64	15	0.35	1.13	1.49	4.02
Others*	2	0.02	0.21	0.09	47	1.06	2.72	4.68	2.50
Total Hours	2146				1006				

(\*) Indicates variables that are statistically significant @  $p < 0.05$  level

The data analysed in terms of the two major diagnostic conditions, show statistically significant differences in the patterns of their daily engagements for children with DDs (N: 89) and those with ASDs (N: 51) ( $p < 0.05$ ). The children with ASDs appear to spend almost double the average time "watching television" (Mean: 3.51 hours; SD: 2.90; 14.47 %) or "playing alone" (Mean: 2.47 hours; SD: 2.08; 10.43 %) compared to children with DDs. They also seem to spend only half the time on "home teaching" (Mean: 0.63 hours; SD: 0.98; 2.59 %) as measured against children with DDs (Table 3).

A similar analysis of data in terms of allied variables like sex (Males: 102 cases; Females: 51 cases), single (N: 85)/multiple (N: 55) diagnostic conditions of children or whether they were receiving (N: 88)/not receiving (N: 52) home training programmes did not reveal any statistically significant differences in the patterns/preoccupations with the daily log of activities. In view of the initial finding that the diagnostic condition of the child is a critical variable, an intense analysis on the routine of activities of children with ASDs was carried out exclusively, in order to explore any particular trends in the daily routines of this sub-sample of children (N: 51).

**Table 3. Mean and total time reported on various activities in terms of diagnostic variable**

Activity	DD Cases (No: 89)				ASD Cases (N:51)				T Values
	TT	M	SD	%	TT	M	SD	%	
Sleep*	856	9.62	1.18	44.70	507	9.94	1.30	40.99	1.45
TV Time*	124	1.39	1.77	6.48	179	3.51	2.90	14.47	4.74
Feeding	169	3.02	0.30	8.82	157	3.08	0.27	12.69	1.21
Play Alone*	120	1.35	1.17	6.27	129	2.47	2.08	10.43	3.53
School*	333	3.74	2.32	17.39	121	2.45	2.74	9.78	2.83
Ablution	90	1.01	0.11	4.70	52	1.02	1.14	4.20	0.06
Play Peers	89	1.00	0.97	4.65	41	0.80	1.06	3.31	1.11
Home Teaching*	104	1.17	1.58	5.44	32	0.63	0.98	2.59	2.49
Others	30	0.34	1.82	1.57	19	0.37	0.96	1.54	0.13
Total Hours	1915				1237				

(\*) Indicates variables that are statistically significant

The sub-sample analysis of children with ASDs revealed that those who are exposed to school apparently spend less time "sleeping" (Mean: 9.40 hours; SD: 1.32; 39.70 %), "watching television" (Mean: 1.76 hours; SD: 2.28; 7.43 %) and "playing alone" (Mean: 1.44 hours; SD: 1.26; 6.08 %) as compared to children with similar diagnostic condition attending school (Table 4). In other words, the children with ASDs who do not attend school, seem to face a double disadvantage. They spend thrice the time on daily activities like "watching television" (Mean: 5.19 hours; SD: 2.42; 21.23 %) or "playing alone" (Mean: 3.58 hours; SD: 2.14; 14.62 %) than they would have done if they were at school ( $p < 0.05$ ). Additionally, they also seem to lose out time in a typical day's schedule for "playing with peers" (Mean: 0.42 hours; SD: 0.76; 1.74 %) and "home teaching" (Mean: 0.08 hours; SD: 0.27; 0.32 %). These differences indicate the need for exposing these children to group activities, preschools, play schools, kindergartens, crèche, etc.

The analysis of sub-sample of children with ASDs in terms of their chronological age, further brings into focus, that children below 36 months old are twice over-exposed to "watching television" (Mean: 5.29 hours; SD: 2.66; 21.35 %), "playing alone" (Mean: 3.21 hours; SD: 1.91; 12.94 %) and/or having "no school exposure" (Mean: 1.00 hours; SD: 1.62; 4.03 %) than their older similar diagnosed peers (Table 5). However, when this sub-sample analysis is extended to other variables like sex of the child, present or absent sibling, family size, etc., it was found that there were no statistically significant differences or trends, in the pattern of time utilisation across the different reported activities. Likewise, the other sub-sample analysis

of children with DDs (N: 89) in terms of variables like sex, single/multiple diagnostic conditions, chronological age, etc., did not elicit any differential patterns of time engagements over the typical day's cycle, as seen in the children with ASDs ( $p>0.05$ ).

**Table 4. Mean and total time reported on various activities in terms of school variable for childrens with ASD**

Activity	Scool (N:25)				No School (N:26)				T Values
	TT	M	SD	%	TT	M	SD	%	
Sleep*	235	9.40	1.32	39.70	272	10.46	1.07	42.76	3.14
TV Time*	44	1.76	2.28	7.43	135	5.19	2.42	21.23	5.21
Feeding	77	3.08	0.28	13.01	80	3.08	0.27	12.58	0.00
Play Alone*	36	1.44	1.26	6.08	93	3.58	2.14	14.62	4.37
School*	121	4.84	1.60	20.44	00	0.00	0.00	0.00	15.13
Ablution*	26	1.40	0.20	4.39	26	1.00	0.00	4.11	9.99
Play Peers*	30	1.22	1.119	5.07	11	0.42	0.76	1.74	2.85
Home Teaching*	30	1.20	1.12	5.07	2	0.08	0.27	0.32	4.87
Others	2	0.08	0.40	0.34	17	0.60	1.23	2.67	2.05
Total Hours	592				636				

**Table 5. Mean and total time reported on various activities in terms of age variable for childrens with ASD**

Activity	0-36 Months (N:24)				36+Months (N:27)				T Values
	TT	M	SD	%	TT	M	SD	%	
Sleep	246	10.25	1.19	41.35	261	9.67	1.36	41.23	1.62
TV Time*	127	5.29	2.66	21.35	52	1.93	2.09	8.21	4.97
Feeding*	72	3.00	0.00	12.10	85	3.15	0.36	13.43	2.17
Play Alone*	77	3.21	1.91	12.94	52	1.93	2.01	8.21	2.33
School*	24	1.00	1.62	4.03	97	3.59	2.87	15.32	4.02
Ablution	25	1.04	0.20	4.20	27	1.00	0.00	4.27	0.98
Play Peers	14	0.58	1.06	2.35	27	1.00	1.04	4.27	1.43
Home Teaching*	4	0.17	0.48	0.67	28	1.04	1.13	4.42	3.65
Others	15	0.63	1.24	2.52	4	0.15	0.53	0.63	1.76
Total Hours	595				633		2.14		

## CONCLUSION

The results of this study highlight the need and importance of activity scheduling for children with developmental disabilities in general, and those with autism spectrum disorders in particular. The findings indicate that a substantial part of the typical 24-hour schedule of such children is spent on "not-so-productive"/"self-absorbing" activities like "watching television" and/or "playing alone". The negative effect of watching television has been repeatedly emphasised even in "normal" or "non-autistic" children (15,16). Excess television watching has been known to foster solitude (17,18), diminish communicative intent (19), curtail pro-social behaviours (20), aggravate aggression (21,22,23) and curb human/social contacts (24). Therefore, given the content of daily routines as reported in this sample, there is every likelihood that it may become an intervening (though not a causative) variable in the maintenance of some of the behaviors in these children. The parents, caregivers and individual case managers of such children need to give utmost priority to rearranging the every day timetable log of activities, for children with developmental disabilities and autism spectrum disorders.

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