

Difference between memory, motor and general cognitive index of children of migrant labour families as per time spent in various activities

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ABSTRACT

This paper studied the differences in cognitive abilities (mean scores) among school going and non-school going children of migrant families. Six slum localities were selected from the selected zone and a sample of 120 mother-child dyads including children between 6-8 years of age and mothers working as domestic servants, were purposively selected from each chosen locality through snowball technique. Children were approached to assess their cognitive abilities. Results depicted that school going children of migrant families were superior in all the three cognitive abilities than their non-school counterparts. School children's extended involvement in play activities enhanced their motor skills, but declined memory and general cognitive ability. Results also revealed that long involvement of non-school going children in play significantly increased motor and general cognitive ability. School going females were superior in general cognitive index whereas males possessed higher measures in memory and motor abilities.

INTRODUCTION

Cognitive development is the child's ability to learn and solve problems and also construction of thought processes, including remembering, problem solving and decision-making, from childhood through adolescence to adulthood. Cognition is, therefore, a very broad term that covers a complicated mental process involving such functions as perception, learning, memory, and problem solving. For example, this includes a two-month-old baby learning to explore the environment with hands or eyes or a five-year-old learning how to do simple math problems. Developmental advances in cognition are also related to learning experiences and this is particularly the case for higher-level abilities like abstraction, which depend to a considerable extent on formal education. The richness of

human's development is determined by the way an individual spends his time and the variety and structural complexity of the activities in which he takes part. How young people spend their waking hours defines the fund of developmental experiences in each culture they circumscribe. The absorption of all of child's waking hours in dull and undesirable activity schedule represents severe impoverishment of experience.

Time use pattern of children may have significant consequences for their cognitive development thus affecting their educational achievement and social and experiences, with more quality time leading to greater absorption of the cognitive skills and knowledge. Much of our language refers to children's behaviour in terms of time- whether they spend too little time in study, reading or helping around the house or too much time watching television and hanging out with friends. Watching a

lot of television has been linked to lower cognitive test scores (Timmer *et al.*, 1985). Besides motor skills in free play, children develop a sense of initiative, self regulation and social skills (Larson and Verma, 1999). Recent researches have pointed out both the importance of free play as well as structured activities to child's development (Hofferth and Sandberg, 2001). Children's time use is likely to be affected first and foremost by their socio-economic status, and age, whereas, gender differences in activities begin to appear in elementary school. Work responsibilities increase as the child matures. Additionally the types of work activities children perform differ by gender, with boys performing more market oriented work and girls were performing more domestic labour. Family activities including household work, household conversations and mealtime provide important opportunities for children to participate in household routines. Girls, specifically, appear to assume more of the extra work than boys in dual-earner families (Benin and Edwards, 1990). Research has found that children in large families spend more time in household work than do children in smaller families (Bianchi and Robinson, 1997).

Migration is a complex process that can produce profound changes for individuals, families and societies. It is a physical movement by humans from one area to another, sometimes over long distances or in large groups. Migration occurs because individuals search for food, sex and security outside their usual habitation. To produce food, security and human reproduction of its species, human beings must, out of necessity, move out of their usual habitation and enter into indispensable social relationships that are co-operative or antagonistic. Migration which is a pragmatic and universal phenomenon has two major forms *vis.-a-vis.* international and intra-national (Kalin and Berry, 1980). People who migrate are called migrants; migrant workers are the backbone of both industry and agriculture in Punjab. Under the changing economic, social and political conditions of today's world, migration has reached at all time high. The state of Punjab has been demanding labour for various agricultural and industrial activities from other neighboring states, thus resulting into an increase in rate of migration particularly from states like Uttar Pradesh and Bihar. Ratio of migrant labour against local labour is approximately 80:20 in case of industrial sector and 70:30 in respect of agricultural sector (Gill, 2002). Early experiences of interaction with insensitive material predicted the persistence of poorer cognitive functioning (Lynne *et al.*, 2006). Allowing pre-school aged children to discover and explore freely is the foundation for developmental learning and there is an ample amount of evidence of the positive impact which preschool or school education has in the development of cognition. The cognitive development was superior in those children who enrolled in pre-school education (Pandey and Devdas, 1991). Bee and Boyd (2004) suggested that school experiences are indeed causally linked to cognitive skills and links are both

direct and indirect which is likely to affect a child's cognitive development.

MATERIAL AND METHODS

The present study comprises of two groups in which one group included 60 school going children and other included 60 non-school going children. The sample comprised of 120 children and their mothers of migrant labour class families. The children were selected in the age group between 6 to 8 years and sample was drawn from urban localities of Ludhiana city. Ludhiana Municipal Co-operation has divided the city into four zones. One zone was randomly selected from these zones. Six slum localities were selected from the selected zones and 120 children with age range of 6 to 8 years and mothers working as domestic servants, were purposively selected from each chosen locality through Snowball technique.

The respondents in this study were children and their mothers, thus the total sample was comprised of 120 mother-child dyads. In the total sample, children were composed of two groups on the basis of their school attendance. One group of children, who were attending school (n=60) and another group was composed of those children who were not attending school (n=60).

The children were selected keeping in view the following criteria:

- Child should be belonging to the family migrated from Uttar Pradesh,
- Child in the age range of 6-8 years,
- Mother working as domestic servant.

Tool :

McCarthy scales of children's cognitive abilities :

Children's cognitive abilities were assessed by using McCarthy Scales of children's Cognitive Abilities (MSCA) (McCarthy, 1972). These scales are useful to record the cognitive outcomes of children between 2.5 to 8.5 years of age. The content of the tasks are designed to be suitable for both the sexes as well as for children from various ethnic, regional and socio-economic groups. Mean reliability of McCarthy Scale of Children's Cognitive Abilities (MSCA) ranges from 0.79 to 0.88. The scale systematically measures a variety of cognitive and motor behaviour on six sub scales :

- Verbal
- Perceptual
- Quantitative
- Memory
- Motor
- General cognitive

The test further consisted of 18 sub tests: each of these sub scales is composed of different sets of tests. Time for completion of test on one subject ranges from 30-45 minutes.

The scores of three abilities *i.e.* verbal, perceptual, and quantitative are summed up to derive general cognitive index.

Scoring :

Scoring of MSCA was done as per the guidelines given in the manual of MSCA.

Procedure :

For the present study, the investigators personally visited the homes of the children to gather information about socio-personal characteristics of the child and his/her family and cognitive abilities of children. The mothers of the subjects were interviewed individually at their respective homes. Spot observation was also done to avoid any deliberate preparation by the subject for the observer's visit. Cognitive performance of the subjects was assessed by using McCarthy Scales of Children's Cognitive Abilities.

OBSERVATIONS AND ANALYSIS

The difference in memory ability of children of migrant families as per time spent in various activities by school going and non-school going children of migrant labour families are elaborated in Table 1.

Table 1 presents the association and its differences between memory ability of school going and non-school going children of migrant families as per time spent in various activities. Results interprets that those school going children who spent less than 2 hours in play activity, possessed highest memory ability (MS=39.36) as compared to those who spent 2-4 hours (MS=33.53) and those spending 4-6 hours (MS=27.00) and the overall differences were non-significant. Children who

were not involved at all in household chores possessed better memory ability (MS=40.43) than their counterparts who spent less than 2 hours in household activities (MS=35.40) where as those school going children who spent 2-4 hours in household activities scored lowest in memory (MS= 33.61) and the overall association resulted to be non-significant. The data revealed non-significant differences among children spending different amount of hours in personal care. However, those who spent less than 2 hours in personal care activities were showing better memory ability (MS=36.17) than those who spent 2-4 hours in personal care activities and possessed lower memory ability (MS=32.85). When the data were interpreted as per time spent in academic activities, it was revealed that those children who spent 2-4 hours in academic activities were having higher memory ability mean scores (44.83) as compared to those who spent less than 2 hours in academic work (MS= 34.41) and hence the difference was significant ($t=2.27$, $p<0.05$).

The results further revealed significant differences (F-ratio=18.67, $p<0.01$) between the memory of children spending different categories of time in play activities, as those who spent 4-6 hours in play scored better memory ability (MS=41.00) followed by those children who were involved for 2-4 hours in play activity (MS=33.86) where as those who spent less than 2 hours were having lowest memory ability (MS=18.03). Table 1 further depicts significant (F-ratio=16.41, $p<0.01$) association between time spent in market work and their memory ability as those children who spent 2-4 hours in market work, possessed better memory ability (MS=38.36) as compared to those who spent less than 2 hours and having lower memory ability mean scores (26.39) where as those who were not involved at all in market work were having lowest memory ability with mean score

Table 1 : Differences in memory ability (mean scores) of children of migrant labour families as per time spent in various activities

Activities	Not involved		<2 hours		2-4 hours		4-6 hours		Test value	Test
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
	School going									
Play	-	-	39.36	14.54	33.53	9.62	27.00	2.83	1.88	F-ratio
Market work	34.87	13.17	33.52	9.87	44.13	12.19	-	-	2.84	F-ratio
Household chores	40.43	9.62	35.40	13.27	33.61	9.47	-	-	0.97	F-ratio
Personal care	-	-	36.17	12.32	32.85	10.02	-	-	0.95	t-value
Academic	-	-	34.41	10.88	44.83	10.88	-	-	2.27**	t-value
TV viewing	-	-	34.17	10.54	37.24	13.52	-	-	0.95	t-value
Family	-	-	34.03	12.31	-	-	-	-	NA	nil
Non-School going										
Play	-	-	18.03	7.84	33.86	13.19	41.00	4.00	18.67***	F-ratio
Market work	14.31	4.40	26.39	12.85	38.36	9.84	-	-	16.41***	F-ratio
Household chores	36.20	7.97	27.91	14.39	21.85	12.37	-	-	4.91**	F-ratio
Personal care	-	-	29.30	14.50	19.06	10.38	-	-	3.10***	t-value
Family	-	-	26.16	13.83	27.27	13.07	-	-	0.31	t-value
TV viewing	-	-	26.33	12.91	26.85	14.33	-	-	0.15	t-value

** and *** indicate significance of values at P=0.05 and 0.01, respectively

as 14.31. Non-school going children who were not involved in household chores had best memory ability (MS=36.20) as compared to those who spent less than 2 hours (MS=27.91) and those who spent 2-4 hours (MS= 21.85) and the overall significance came out to be highly significant (F-ratio=4.91, $p<0.05$) between time spent in household chores and their memory ability.

Association between time spent by children in personal care activities and their memory ability was also found to be significant ($t=3.10$, $p<0.01$) as those children who were spending less than 2 hours in their own care held better memory with higher mean score (29.30) as compared to those who spent 2-4 hours in personal care activities (MS=19.06). Although the data related to time spent with family and their memory ability revealed non-significant difference, yet, those children who spent 2-4 hours scored better in memory ability (MS=27.27) as compared to those who spent less than 2 hours with family (MS= 26.16).

Table 2 interprets the differences in motor ability of children of migrant labour families as per time spent in various activities.

The results presented in Table 2 show that though the difference came out to be non-significant (F-ratio=0.05) between mean scores in motor ability across different categories of time spent by school going children in play, yet, those children who spent 4-6 hours in play had better motor skills (MS=42.00) than those who spent less than 2 hours (MS=39.68) and those who spent 2-4 hours (MS=39.11). Those children who were spending less than 2 hours in household chores acquired highest motor ability (mean score=40.60) as compared to those who were not involved at all in household chores (MS=39.43) followed by those who spent 2-4 hours in household chores

(MS= 37.11) but the association was non-significant between time spent in household chores and their motor ability. A significant difference was observed (t -value=3.10, $p<0.01$) between motor ability of children as per time use pattern of school going children in personal care. Those who were spending less than 2 hours had significantly better developed motor skills (MS=41.66) as compared to their counterparts who were spending 2-4 hours in their own care activities (MS= 31.31). The school going children who spent 2-4 hours in academic activities acquired significantly better motor ability (MS=49.83) as compared to those who spent less than 2 hours (MS=38.30) and a significant (t -value=3.46, $p<0.01$) difference was found between the two groups of children. Again a significant (t -value=3.10, $p<0.01$) association was observed between time spent by school going children in TV viewing and their motor ability as those children who spent less than 2 hours in TV viewing had better motor ability (mean score=43.69) followed by those who spent 2-4 hours with TV as their mean score came out to be 33.44.

When the same association was scrutinized in case of non-school going children, it was revealed that a significant (F-ratio=17.21, $p<0.01$) association was resulted as those children who spent 4-6 hours in play possessed better motor ability with mean score 44.00 as compared to those who spent 2-4 hours in play as their mean score was 39.57 where as those who spent less than 2 hours were having low motor ability as compared to their counterparts (MS=19.59). Those non-school going children who spent 2-4 hours in market work were having better motor ability (mean score=46.36) whereas those who spent less than 2 hours were possessing lower motor ability (MS= 28.97) but it was better as compared to those who were not involved in market related activities (MS=15.62) and hence

Activities	Not involved		<2 hours		2-4 hours		4-6 hours		Test value	Test
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
	School going									
Play	-	-	39.68	12.68	39.11	12.20	42.00	2.83	0.05	F-ratio
Market work	38.13	11.15	38.41	13.64	46.75	4.86	-	-	1.81	F-ratio
Household chores	39.43	15.23	40.60	11.33	37.11	12.63	-	-	0.66	F-ratio
Personal care	-	-	41.66	11.70	31.31	10.10	-	-	3.10***	t-value
Academic	-	-	38.30	11.99	49.83	7.28	-	-	3.46***	t-value
TV viewing	-	-	43.69	10.52	33.44	11.76	-	-	3.10***	t-value
Family	-	-	35.60	12.04	-	-	-	-	NA	nil
Non-School going										
Play	-	-	19.59	11.93	39.57	15.39	44.00	5.00	17.21***	F-ratio
Market work	15.62	5.30	28.97	16.40	46.36	10.06	-	-	17.98***	F-ratio
Household chores	42.10	9.54	32.87	16.76	23.37	16.28	-	-	5.83***	F-ratio
Personal care	-	-	32.82	16.71	24.13	16.18	-	-	1.72	t-value
Family	-	-	29.34	17.10	31.50	16.69	-	-	0.48	t-value
TV viewing	-	-	30.24	17.23	30.00	16.67	-	-	1.72	t-value

** and *** indicate significance of values at $P=0.05$ and $P=0.01$, respectively

a significant (F-ratio=17.98, $p<0.01$) association was observed between time spent in market work and children's motor ability. The non-school going children who were not engaged in household chores acquired better motor ability (MS=42.10) as compared to those who spent less than 2 hours in chores related to household activity (MS=32.87) which was better than those who spent 2-4 hours (MS=23.37) and hence a significant (F-ratio= 5.83, $p<0.01$) association was observed with between time used by non-school going children in household chores and their motor ability mean scores. Though a non-significant difference was observed between time spent in personal care activities and their motor ability yet those children who spent less than 2 hours scored better motor ability (MS=32.82) as compared to their counterparts who were spending 2-4 hours (MS=24.13).

Table 3 throws light on the differences in general cognitive abilities of children of migrant families as per time pattern in different activities. It showed that though difference was non-significant yet those school going children who spent 4-6 hours in play activity acquired better general cognitive index as compared to those who spent less than 2 hours in play activity, with general cognitive ability mean score MS=106.18 and who were spending 2-4 hours possessed lowest mean scores (104.92). Although the difference between general cognitive ability across time use pattern of school going children in market work was non-significant, yet, those children who spent 2-4 hours in market work have better general cognitive index (MS=114.63) while those children who were not involved in market work resulted into better general ability (MS=106.39) as compared to their counterparts who were spending less than 2 hours in market work (MS=103.66). Though again a non-

significant association was observed between time used in household chores and their general cognitive index yet those children who were involved in household tasks for less than 2 hours scored better general cognitive ability with mean score (107.51) as compared to those who were not involved at all in household chores were having general ability mean scores (104.71) whereas those who spent 2-4 hours in tasks related to household activities were having lowest general cognitive ability (MS=104.11).

The relationship again came out to be non-significant, but those children who were spending 2-4 hours in academic activities scored better general cognitive ability mean score (113.67) as compared to those who spent less than 2 hours in academic activities (MS=105.33). When we further scrutinized the table, it showed that those who spent less than 2 hours in TV viewing activities were acquiring better general cognitive ability (MS=110.23) as compared to those who spent 2-4 hours in television watching activity and again a non-significant association was found between time spent in TV watching and their general cognitive ability. Similar results were found out by Heather *et al.* (2008) that exposure to television during the first few years of life may be associated with poorer cognitive development. If we further see the table it throws light on the association between time use pattern of non-school going children in different activities and their general cognitive ability and showed that a significant (F-ratio=8.58***) association was resulted between time spent by children in market work and their general cognitive ability as those who spent 2-4 hours in market work were having better general cognitive ability (MS=58.00) as compared to those who spent less than 2 hours (MS=53.45) which was again better as compared to those who

School going										
Activities	Not involved		<2 hours		2-4 hours		4-6 hours		Test-value	Test
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Play	-	-	106.18	23.72	104.92	15.37	128.50	4.95	1.04	F-ratio
Market work	106.39	15.87	103.66	19.19	114.63	25.49	-	-	0.60	F-ratio
Household chores	104.71	21.34	107.51	18.03	104.11	20.62	-	-	0.54	F-ratio
Personal care	-	-	106.70	17.53	104.23	24.09	-	-	0.53	t-value
Academic	-	-	105.33	17.62	113.67	29.41	-	-	1.24	t-value
TV viewing	-	-	110.23	17.39	100.48	19.89	-	-	0.53	t-value
Family	-	-	104.77	19.56	-	-	-	-	NA	nil
Non-School going										
Play	-	-	47.66	13.80	54.79	15.82	57.00	7.21	2.67	F-ratio
Market work	39.31	12.06	53.45	15.62	58.00	7.92	-	-	8.58***	F-ratio
Household chores	55.80	8.01	53.57	18.01	48.04	13.45	-	-	0.75	F-ratio
Personal care	-	-	54.39	14.24	43.38	13.85	-	-	2.67***	t-value
Family	-	-	52.47	13.32	49.68	17.38	-	-	0.20	t-value
TV viewing	-	-	52.18	15.38	50.56	14.42	-	-	1.00	t-value

** and *** indicate significance of values at $P=0.05$ and $P=0.01$, respectively

were not involved in market work (MS= 39.31). Table 3 further showed a non-significant difference between general cognitive ability and mean scores as per time used by non-school going children in household chores. It showed that though a non-significant difference was found yet those children who were not involved in household chores scored better general cognitive ability (MS=55.80) whereas those who spent less than 2 hours as their general cognitive ability (MS=53.37) while in case of children who spent 2-4 hours in household tasks were having lowest general cognitive ability (MS=48.04). A significant difference (t-value=2.67, $p < 0.01$) was resulted between general cognitive ability of children spending different amount in personal care activities. Those who spent less than 2 hours were having better general cognitive ability (MS=54.39) as compared to those who spent 2-4 hours in their own care activity (MS= 48.04). Those children who spent less than 2 hours with family acquired better general cognitive ability (mean score=52.47) as compared to those who spent 2-4 hours (mean score=49.68) with family and the non-significant association was resulted.

Conclusion :

The paper clearly evaluated and reflects that non-significant differences was observed between memory abilities and their time spent in various activities of school going children and their time spent in various activities as those school going children who spent less than 2 hours in play activities possessed higher memory abilities as compared to those who spent 2-4 hours. A significant association was found between those children who spent 2-4 hours in academic activities having higher memory ability mean scores as compared to those who spent less than 2 hours in academic work. School going females were superior in general cognitive index, whereas males possessed higher measures in memory and motor abilities and differences were significant in motor ability. Significant association was found between time spent by school going children as per their time spent in personal care, academic related activities and watching television and their motor ability. Again while taking consideration of non-school going children, strongly significant association was found between time spent in activities like play, market related work, household chores and their motor abilities. Similarly, a significant association was resulted between time spent by children in market work and their general cognitive index as those spent 2-4 hours in market work were having better general cognitive ability as compared to those who spent less than 2 hours which was again better as compared to those who were not involved in market work.

Majority of the school going children had average level of memory, motor and general cognitive index whereas major proportion or nearly half of the non-school going children had low level of different cognitive abilities.

REFERENCES

- Bee, H. and Boyd, D. (2004). *The developing child*. Academic Press, New York, pp. 390-391.
- Benin, M.H. and Edwards, D.A. (1990). Adolescent chores: The difference between dual-earner and single-earner families. *J. Marriage & Family*, **52** : 361-373.
- Bianchi, S.M. and Robinson, J. (1997). What did you do today? Children's use of time, family composition and the acquisition of social capita. *J. Marriage & Family*, **59** (2) : 345-362.
- Gill, P.P.S. (2002). Migrants vs local labour. *The Tribune*, 3rd September, pp. 12-13.
- Heather, L. Kirkorian, Ellen, A. Wartella and Daniel, R.A. (2008). Media and young children's learning. *The Future of Children*, **18**(1) : 39-60.
- Hofferth, S.L. and Sandberg, J.F. (2001). How American children spend their time? *J. Marriage & Family*, **63** : 295-308.
- Kalin, R. and Berry, J.W. (1980). Geographic mobility and ethnic tolerance. *J. Soc. Psychol.*, **112** : 129-134.
- Kaur, P. and Jaswal, I.J.S. (2009). Time use pattern and academic achievement. In: Jaswal, I.J.S. and Jaswal, S. (edu.) *Contemporary research designs in human development*. pp. 111-117. Child Development Society, Punjab Agricultural University, Ludhiana (PUNJAB) INDIA.
- Larson, R. and Verma, S. (1999). How children and adolescents spend time across the world: work, play and development opportunities? *Psychological Bulletin*, **125** (6) : 701-736.
- Lynne, M., Hipwell, A., Hooper, R., Stein, A. and Cooper, P. (2006). The cognitive development of 5-year-old children of postnatal depressed mothers. *J. Child Psychol. & Psychiatry*, **37** (8) : 927-935.
- McCarthy, D. (1972). *Manual for the McCarthy Scales of children's abilities*. The Psychological Corporation, NEW YORK, U.S.A.
- Pandey, H. and Devdas, R.P. (1991). Impact of pre-school education component in ICDS on cognitive development of children. *Res. Highlights*, **1** : 97-100.
- Timmer, S.G., Eccles, J. and O'brein, K. (1985). How children use time. In : Juster, F.T. and Stafford, F.P. (eds) *Time, goods and well-being* (pp. 353-381). Institute for Social Research, Michigan, U.S.A.

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