

Gender Differences in Cognitive Abilities of Children Attending School and Not Attending School in Migrant Labour Families

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ABSTRACT The present study is on the gender 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 revealed that school- going females were superior in verbal, quantitative and general cognitive index whereas males possessed higher measures in perceptual, memory and motor abilities. Non- school going males performed significantly better in all cognitive domains as compared to non- school going females except for verbal ability.

INTRODUCTION

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. 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). Machines replacing men in Punjab seems to have become a reality both in agriculture and industrial sector with the state facing a shortage of labour (Sharma 2011). The state of Punjab has been demanding labour for various agricultural and industrial activities from other neighbouring states, thus resulting into an increase in rate of migration particularly from states like Uttar Pradesh and Bihar. The labourers from Bihar used to migrate to Punjab in search of work that too in agriculture as these labourers are well versed with paddy cultivation, scope of employment in rural Bihar and Uttar Pradesh was very limited as a result migration for work took place (Chatteerjee 2012). A better income and employment opportunity in Punjab was the major factors responsible for migration (Kaur et al. 2011). Migration from one place to another

place involves lot of adjustment on the part of the migrant families. Moreover Smita (2008) also investigates the relationship between seasonal distress migration and educational access in India where agricultural labourers migrate for short periods, often several times per year, while migrants to industrial and agro-industrial employment follow a single cycle beginning after the Monsoon, and lasting for six to eight months until April or June and also identifies a number of ways seasonal distress migration prevents access to education, particularly in the primary age group. In many low-income families, children are expected to become economically productive at an early age. Majority of the women in the economically weaker, migrant families work to help their families to make both ends meet, leaving their small children behind. Sociologists have emphasized the importance of parental transmission of cognitive ability and academic expectations for the educational and occupational achievements of children (Duncan et al. 1972; Sewell and Houser 1980). Parental inputs are relatively more effective in raising non-cognitive skills like motivation, trustworthiness, tenacity and perseverance than cognitive skills, and that critical stages for the development of non-cognitive skills occur until late into childhood, in contrast to critical stages for cognitive skill development which are located in early childhood (Cunha 2008). Early childhood education attendance is positively associated with a substantial improvement in children's Cognitive development (Woldehamma 2011). Some research suggests that net of low socio-economic status and maternal employment negatively affects student's achievement (Myers et

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al. 1980), student discipline and teachers' rating of cognitive abilities of elementary school age children (Stafford 1987).

Early experiences of interaction with insensitive material predicted the persistence of poorer cognitive functioning (Lynne et al. 2006). Cognitive and non cognitive abilities are important determinants of schooling and socioeconomic success. In many countries around the world, schooling gaps across ethnic and income groups have more to do with ability deficits than family finances in the school-going years. A substantial body of research shows that earnings, employment, labor force experience, college attendance, teenage pregnancy, participation in risky activities, compliance with health protocols and participation in crime are strongly affected by cognitive and non cognitive abilities. Non-cognitive abilities means motivation, socio emotional regulation, time preference, personality factors and the ability to work with others (Heckmens 2008).

Allowing preschool 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 preschool education (Pandey and Devdas 1991). Along with the number of studies conducted on the impact of preschool education on cognition, there are studies that present a fair comparison between the difference observed in cognition of school attending and non school attending children.

METHODOLOGY

The study was conducted in rural areas of Ludhiana District in 2010. The study was conducted in six slum localities of Ludhiana city. The sample for the present study comprised of 120 children and their mothers' migrant labour class families. The children were selected in the age group between 6 to 8 years and sample was purposively drawn from urban localities of Ludhiana city. Ludhiana Municipal Corporation has divided the city into four zones. One zone was randomly selected from these zones. Six slum localities were selected from the selected zone 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 mother, thus the total sample 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). Each of these two groups further included equal number of boys and girls that is 30 boys and 30 girls.

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

Children's cognitive abilities were assessed by using McCarthy Scales of Children's Cognitive Abilities MSCA (1970). 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.

Scoring of MSCA was done as per the guidelines given in the manual of MSCA. The scales were scored and the data obtained were subjected to statistical analysis. Mean and SD were calculated separately for both genders. Frequencies and percentages were worked out to know the percent distribution of the sample as per level of cognitive abilities of school going and non school going children of migrant families. The study employed "t" test to study the significance of gender differences in mean scores for time use pattern and cognitive abilities and differences in mean scores of school going and non school going children in these variables. Chi-square test was applied to see the association between variables to know the cognition of school going and non school going males and females.

RESULT AND DISCUSSION

Cognitive Abilities among Children of Migrant Families

Table 1 presents the per cent distribution of the sample as per level of cognitive abilities of

Table 1: Per cent distribution of the sample as per level of cognitive abilities of school going and non school going children of migrant labour families

Cognitive ability	School- going			Non- school going			Chi-square
	Low f(%)	Average f(%)	High f(%)	Low f(%)	Average f(%)	High f(%)	
Verbal	36(60.00)	24(40.00)	0 (0.00)	4880.00	12(20.00)	0 (0.00)	5.71*
Perceptual	39(65.00)	21(35.00)	0 (0.00)	5998.33	1 (1.67)	0 (0.00)	20.09*
Quantitative	3 (5.00)	22(36.67)	35(58.33)	2745.00	30(50.00)	3 (5.00)	37.01*
Memory	15(25.00)	42(70.00)	3 (5.00)	3355.00	27(45.00)	0 (0.00)	11.25*
Motor	11(18.33)	37(61.67)	12(20.00)	3050.00	23(38.33)	7(11.67)	13.39*
General	10(16.67)	50(83.33)	0 (0.00)	5998.33	1 (1.67)	0 (0.00)	78.57*

school- going and non- school going children of migrant families and depict that majority of school going children had average level of memory, motor and general cognitive index where as major proportion or nearly half of the non school going children had low level of these cognitive abilities. Significant differences were observed in the cognitive abilities of school going and non school going children in verbal (Chi-square=5.71, $p<0.05$), perceptual (Chi-square= 20.09, $p<0.05$), quantitative (Chi-square=37.01, $p<0.05$), memory (Chi-square=11.25, $p<0.05$), motor (Chi-square=13.39, $p<0.05$) and general cognitive index (Chi-square=78.57, $p<0.05$). The results were supported by the findings of EFA Global Monitoring Report that the differences in education quality can affect human behaviour and developmental goals of cognition in ways that facilitate the achievement of a wide range of human goals.

Gender Differences as per Level of Cognitive Abilities of Children of Migrant Families

Table 2 depicts the gender wise distribution as per level of cognitive abilities of children of migrant families. It revealed that 80% males and 60% females had low verbal cognitive ability

whereas, 20% males and 40% females held average level of verbal ability. Thus it can be concluded that females had better verbal ability as compared to males and thus a significant gender differences were observed in verbal ability (Chi-square=5.71, $p<0.05$). Similar results were concluded by Wallentin (2009) that women tend to be better than men in rapidly identifying matching items, a skill called perceptual speed. Common linguistic skills, in which females have been found to be superior, are verbal fluency, speech articulation, grammatical skills, and use of more complex and longer sentences.

Majority of the male children had average quantitative ability (58.33%) memory (76.67%) motor skills (66.67%) where as 28.33 % of children had high quantitative ability and very few (5%) held high memory ability.

Majority of the females held low verbal (60%), perceptual (85%) memory (61.67%) motor (63.33%) and general cognitive index (58.33%) followed by 35% girls who possessed high quantitative ability and 38.33% who held average memory, 33.33% held average motor abilities and 41.67% possessed average general cognition. Gender differences in distribution of the sample as per three level of cognitive abilities were significant in quantitative (Chi-square= 13.18, $p<0.05$) and memory ability (Chi-square= 23.47, $p<0.05$).

Table 2: Gender wise distribution as per level of cognitive abilities of children of migrant labour families

Cognitive ability	Male			Female			Chi-square
	Low f(%)	Average f(%)	High f(%)	Low f(%)	Average f(%)	High f(%)	
Verbal	48(80.00)	12(20.00)	0 (0.00)	3660.00	24(40.00)	0 (0.00)	5.71*
Perceptual	47(78.33)	13(21.67)	0 (0.00)	5185.00	9(15.00)	0 (0.00)	0.89
Quantitative	8(13.33)	35(58.33)	17(28.33)	2338.33	17(28.33)	21(35.00)	13.18*
Memory	11(18.33)	46(76.67)	3 (5.00)	3761.67	23(38.33)	0 (0.00)	23.47*
Motor	3 (5.00)	40(66.67)	17(28.33)	3863.33	20(33.33)	2 (3.33)	0.95
General	34(56.67)	26(43.33)	0 (0.00)	3558.33	25(41.67)	0 (0.00)	0.03

Gender Differences in Cognitive Abilities (Mean Score) among Children of Migrant Families

Table 3 presents gender differences in mean scores of cognitive abilities among children of migrant families. It shows that school going females possessed better verbal, quantitative and general cognitive index, whereas school going males possessed higher measures in perceptual, memory, motor abilities and differences were significant in motor ability ($t=5.66$, $p<0.05$). Hart and O'Shanick (1993) also reported that girls have superior performance in verbal abilities as compared to boys. It may be due to the fact that boys spend more time in play activities. Though the differences were not significant yet school going females possessed better verbal, quantitative and general cognitive index where as school going males were having better perceptual and motor ability as well. The data on non school going children of migrant families shows that girls scored significantly higher mean scores in verbal ability as compared to males ($t=4.10$, $p<0.05$) where as boys were significantly better in perceptual ($t=2.27$, $p<0.05$), quantitative ($t=3.74$, $p<0.05$), memory ($t=14.10$, $p<0.05$) and motor skills ($t=18.18$, $p<0.05$). Downing et al. (2008) also observed that males outperform females on tests of visual-spatial ability, and mathematical reasoning whereas females do better on tests involving memory and language use. This paper examines relationships between gender. Similar results were available for the overall sample as well but the gender differences were significant in memory and motor abilities.

Gender Differences in Mean Score of Cognitive Abilities among School- going and Non- school Going Children

Table 4 shows the differences in mean score of cognitive abilities among school going and non school going children of migrant families. It shows that the school going males scored higher in all cognitive abilities as compared to non- school going males except motor abilities in which non school going males possessed better motor ability ($MS=46.59$) as compared to school- going boys ($MS=45.53$) and thus the differences were significant in verbal ($t=10.71$, $p<0.05$) perceptual ($t=8.01$, $p<0.05$), quantita-

Table 3: Gender differences in cognitive abilities (mean score) among children of migrant families

Cognitive ability	School- going				Non- school going				Total				t-value
	Male		Female		Male		Female		Male		Female		
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Verbal	35.13	9.21	38.66	11.59	14.37	5.28	21.00	7.10	24.75	12.84	29.68	13.01	1.48
Perceptual	38.10	12.76	35.40	10.39	17.80	5.46	14.80	4.75	27.78	14.08	25.10	13.12	0.76
Quantitative	31.69	13.83	33.23	10.10	20.60	7.17	14.27	5.88	26.05	12.22	23.75	12.59	0.72
Memory	36.93	13.46	33.73	10.17	38.30	8.10	14.83	4.19	37.63	10.99	24.28	12.26	4.44*
Motor	46.59	10.17	32.20	9.45	45.53	8.10	14.73	4.53	46.05	9.11	23.47	11.47	8.44*
General cognitive index	104.86	20.76	107.23	19.52	52.77	10.03	50.07	11.42	78.58	29.81	78.53	34.05	0.01

tive ($t=3.90$, $p<0.05$) and general cognitive index ($t=12.38$, $p<0.05$).

Table 4 further reflects the differences in school- going and non- school going females and reveals that in all the cognitive abilities all school going females possessed better skills as compared to non school going females and thus significant differences were observed in verbal ($t=1.72$, $p<0.05$), perceptual ($t=9.88$, $p<0.05$) quantitative ($t=8.89$, $p<0.05$) memory ($t=9.41$, $p<0.05$), motor ($t=9.13$, $p<0.05$) and general cognitive index ($t=13.84$, $p<0.05$). The results were supported with the findings given by Verma and Chadha (1980) and Pandey and Devdas (1991) who reported the effect of literacy in the attainment of various cognitive abilities of six year old children with or without preschool education. Children with preschool education have higher scores as compared to those without education at the cognitive level and in school achievement too. Mishra (1997) also reported that most of the children who do not attend school come from a low socio-economic background which seems to be significantly linked with low cognitive performance of children due to its association with a restricted range of experiences available to children malnutrition and other similar factors.

Similarly, significant differences were observed between overall sample of non school going and school going children in memory ability ($t=3.90$, $p<0.05$) as school going children scored significantly better in memory. Significant differences were obtained as school going children scored better perceptual ($t=9.88$, $p<0.05$), quantitative ($t=9.41$, $p<0.05$) and general cognitive index ($t=13.84$, $p<0.05$).

CONCLUSION

It is quite obvious that the situation as indicated by the study is alarming and the data given here clearly indicates a difference in the cognitive abilities of school -going and non- school going children. School- going males scored higher in all cognitive abilities as compared to non- school going males except motor abilities in which non- school going males possessed better motor ability as compared to school going boys. Females had better verbal ability as compared to males and thus significant differences were observed in verbal ability as compared to males. Although the differences were non- significant yet school going females possessed bet-

Table 4: Gender differences in mean scores of cognitive ability among school -going and non- school going children of migrant labour families

Cognitive ability	Male			Female			Total		
	School-going		t-value	Non-school going		t-value	School-going		t-value
	Mean	SD		Mean	SD		Mean	SD	
Verbal	35.13	9.21	14.37	17.80	12.76	10.71*	36.89	10.40	8.89*
Perceptual	38.10	12.76	17.80	20.60	13.83	8.01*	36.75	11.57	9.88*
Quantitative	31.69	13.83	20.60	38.30	13.46	3.90*	32.46	11.96	9.49*
Memory	36.93	13.46	38.30	46.59	10.17	0.48	35.33	11.82	3.90*
Motor	45.53	10.17	46.59	52.77	20.76	0.45	39.39	9.81	0.48
General cognitive Index	104.86	20.76	52.77	107.23	19.52	12.38*	106.05	2.14	13.84*

*Significant at 5% level

Note: Figures in parenthesis indicates percentages.

ter verbal, quantitative and general cognitive index where as school going males were having better perceptual and motor ability as well. School-going females possessed better verbal, quantitative and general cognitive index, whereas school-going males possessed higher measures in perceptual, memory, motor abilities and differences were significant in motor ability.

RECOMMENDATIONS

- 1 The policies like 'Education for all' and *Sarva Shiksha Abhiyan* should be strictly implemented so as to ensure presence of all the children in the school.
- 2 Parents should be motivated to send their children especially daughters to the school.
- 3 Book banks and sports clubs should be established for these children so as to constructively channelize their energy.
4. Parent education programmes should be organised to make the parents aware of the importance of early experiences of children for their development and the ill effects of excessive television viewing.

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