

Home Stimulation and Cognitive Abilities of Disadvantaged Children

Kaushal S^{*1} and Singh CK²

^{*1}Department of Home Science, JNRM, Port Blair (A&N),
Email id: skaushal53@gmail.com

²Department of Human Development and Family Studies,
CCS Haryana Agricultural University, Hisar (Haryana)

Abstract: India's growth over the last two decades has contributed phenomenally to global human development. Extreme poverty in India reduced to 21 per cent, infant mortality has more than halved, some 80 per cent of women now deliver in a health facility and two million fewer children are out-of-school. These are significant achievements for a country that is home to nearly a sixth of the world's population. But challenges still remain and India's economic successes have not resulted in improved quality of life for everyone. For an emerging and developing country like India, development of poor children holds the key to the progress of the nation itself. This paper examines home stimulation and cognitive abilities of disadvantaged children. The study was conducted in Haryana state on a sample of 400 children (200 boys and 200 girls) drawn from eight villages of Hisar and Ambala districts (four from each district). Children were assessed for their verbal ability, perception, numeracy, memory, motor ability and general cognition by McCarthy Scales of Children's Abilities. The tests were administered individually to all the respondents. Result revealed that maximum disadvantaged children received low level of stimulation at their home and had low level of verbal ability, perception, memory and general cognition however moderate level of numeracy and motor ability. Significant differences were observed in verbal ability, perception and general cognition of boys and girls. Children from Ambala district were performed slightly better than children of Hisar districts.

Index words: Home environment, Stimulation, Cognitive abilities, Disadvantaged

I. INTRODUCTION

Children in middle childhood learn new skills, make independent decisions and increasingly control their own behaviour and emotions (Advisory Committee on Population Health and Health Security 2004). The grand theorists Freud and

Piaget saw middle childhood as a plateau in development, a time when children consolidate the gains they made during rapid growth of the preschool period and when they prepare for the dramatic changes of adolescence. Erik Erikson proposed the *eight stages of man* and stressed the importance of middle childhood as a time when children move from home into wider social contexts that strongly influence their development (Higgins and Parsons, 1983). Erikson viewed these years as the time when children should develop what he called *sense of industry* and learn to cooperate with their peer and adults. The involvement in formal schooling and organized activities that begin during these years, introduce children to new social roles in which they earn social status by their competence and performance (Eccles *et al.*, 1998). Children who do not master the skills required in these new settings are likely to develop what Erikson called *sense of inferiority*, which in turn can lead to long-lasting intellectual, emotional and interpersonal consequences. Researchers have corroborated Erikson's notion that feelings of competence and personal esteem are of central importance for a child's well-being (Harter, 1998 and Cole, 1991). For instance, children who do not see themselves as competent in academic, social or other domains during their elementary school years report depression, social isolation and aggression more often than their peers (Sameroff and Haith, 1996).

Evidence is growing that childhood years have long-lasting effect and is critical to human development. Children who are healthy, stimulated and well-nurtured during this period tend to do better in school and have a better chance of developing the skills required to contribute to social and economic development (ADB, 2006).

Therefore, it is important to sensitize parents, community and the government regarding the development of disadvantaged children. Society has a great responsibility to raise

children as healthy, responsible and efficient citizens. The main purpose of this study was to assess quality of children’s home environment and cognitive abilities of disadvantaged children. This paper also examine effect of home stimulation on cognitive abilities of these children.

II. METHODOLOGY

The present study was conducted purposively in Haryana state. Ambala and Hisar districts had selected randomly from Nardak and Bagar zone, respectively for collecting data, and eight villages were selected randomly from two zones (four villages from each district), *i.e.*, Shahpur, Ludas, Harikot and Kamri of Hisar district and Sultanpur, Karsan, Pathredi and Akbarpur of Ambala district for the present research. Four hundred children (25 male and 25 female from each village) in the age group of 6-8 years were selected randomly. Home Observation Inventory was used to assess the level of stimulation children received in their homes as developed by Mohite (1989). It could be used with children in grades I to IV, belonging to any socio-economic strata. This inventory consisted of five sub scales *i.e.* Language stimulation, Physical environment, Encouragement of social maturity, Variety of stimulation, Maternal attitude and discipline. McCarthy Scales of Children’s Abilities scale (McCarthy, 1972) reflected real and meaningful performance in domains of cognitive and motor ability of children. This Scale is appropriate for children from 2½ to 8½ years age. The content of tasks was designed to be suitable for children of both sexes as well as for children from various ethnic, regional and socio-economic backgrounds. It was designed to satisfy the need for a single instrument to facilitate such measurement. This battery included 18 subtests organized into 6 scales *i.e.* verbal, perception, quantitative, memory, motor and general cognition.

III. RESULTS

Family members constitute the child’s first environment and are the most significant people during formative years of childhood. Quality of home environment describes environmental stimulation provided by mothers to their children, *i.e.*, language stimulation, physical environment, encouragement of social maturity, variety of stimulation, maternal attitude and discipline. Economically disadvantaged families experience high levels of stress in their everyday environments and such stress may have adverse effect on development of their children.

A. Levels of children’s home environment

Perusal of fig.1 demonstrates level of stimulation children received at home provided by parent (mothers). Results revealed that on the whole, more than half (65%) of the children received low level of stimulation at their home followed by moderate level (34%) of home stimulation. Alarming picture disclosed by

findings that negligible percent of under privileged children received high level of stimulation at their home.

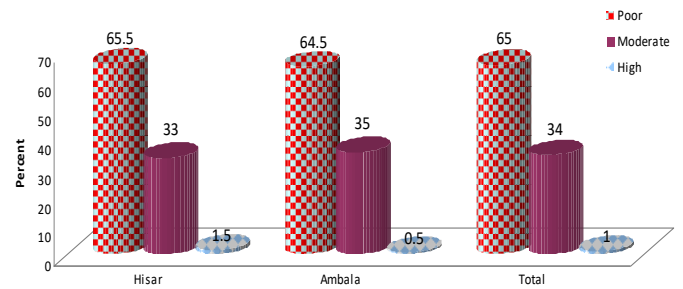


Fig. 1: Levels of home environment of children

Area wise comparison of home environment indicated that percentage of the children from Hisar district was slightly higher who received poor (65.50%) and high (1.50%) level of home environment as compared to children of Ambala district, while percentage of the children from Ambala district was more who received moderate level (35%) of home environment than their counterparts.

Hence, it is concluded that due to poverty and ignorance, majority of rural mothers of Hisar and Ambala districts provided poor stimulation to their children at home.

B. Comparison of children’s home environment against gender

Table 1 illustrates gender wise comparison of children’s home environment. Results disclosed that significant difference subsisted in providing encouragement of social maturity ($z=8.15$, $p<0.05$) to boys and girls. Mean score of girls ($M=1.83$) was higher than boys ($M=1.30$), which indicates that girls received more encouragement of social maturity than boys at their home. Non-significant differences were observed in language stimulation, physical environment, variety of stimulation, maternal attitude and discipline as well as total home environment of boys and girls. Mean scores of different aspects of home environment were similar for boys and girls, *i.e.*, language stimulation ($M=2.83$ and 2.77 , respectively), physical environment ($M=2.85$ and 2.77 , respectively), variety of stimulation ($M=2.56$ and 2.60 , respectively) maternal attitude and discipline ($M=2.68$ and 2.65 , respectively) and total home environment ($M=12.23$ and 12.62 , respectively).

Table 1: Comparison of home environment against gender
N=400

Home environment	Boys (n= 200)		Girls (n= 200)		Z - test
	Mean	SD	Mean	SD	
Language stimulation	2.83	1.07	2.77	1.11	0.59

Physical environment	2.85	0.84	2.77	0.89	0.87
Encouragement of social maturity	1.30	0.81	1.83	0.43	8.15*
Variety of stimulation	2.56	1.06	2.60	1.21	0.31
Maternal attitude and discipline	2.68	0.84	2.65	0.98	0.33
Composite home environment	12.23	2.62	12.62	3.13	1.33

* Means differ significantly within the row at 5% level of significance

It can be concluded that underprivileged boys and girls received similar level of language stimulation, physical environment, variety of stimulation, maternal attitude and discipline as well as total home environment. Gender difference was observed in providing stimulation for social development.

C. Comparison of children’s home environment across area and gender

Glimpse of Table 2 shows area wise comparison of children’s home environment across gender. Significant differences found in providing physical environment (F(3,396)=3.64) and encouragement of social maturity (F(3,396)=27.36) among boys and girls of Hisar and Ambala districts at 5% level of significance. Mean scores determined that mothers of both districts provided better physical facilities to boys (M=3.04 and 2.81, respectively) than girls (M=2.66 and 2.74, respectively) and gender differences in providing physical facilities to children was more in Hisar district (boys, M=3.04 and girls, M=2.66) as compared to Ambala district (boys, M=2.81 and girls, M=2.74). Girls of both districts (M=1.78 and 1.88, respectively) received more encouragement for social development by mothers as compared to boys (M=1.14 and 1.46, respectively).

Results further reflected that there were non-significant differences in language stimulation, variety of stimulation, maternal attitude and discipline as well as total home environment among boys and girls of Hisar and Ambala districts.

Table-2: Comparison of home environment across area and gender
N=400

Home environment	Hisar (n= 200)		Ambala(n= 200)		F-value
	Boys	Girls	Boys	Girls	
Language stimulation	2.88 a±1.02	2.74 a±1.09	2.79a± 1.13	2.80a± 1.14	0.28
Physical environment	3.04 a±0.69	2.66c ±0.86	2.81a b±0.92	2.74 c±0.93	3.64*

Encouragement of social maturity	1.14 c ±0.82	1.78 a±0.48	1.46 b±0.78	1.88 a±0.36	27.36*
Variety of stimulation	2.63a± 1.01	2.64a± 1.22	2.50a± 1.11	2.56a± 1.20	0.33
Maternal attitude and discipline	2.65a± 0.95	2.70a± 0.96	2.72a± 0.72	2.61a± 1.0	0.29
Composite home environment	12.34a ±2.49	12.70a ±3.20	12.13a ±2.75	12.54a ±3.06	0.73

*Means with different superscripts within the row differ significantly at 5% level of significance.

In crux, data revealed that area cum gender wise differences subsisted in providing physical environment and encouragement of social maturity to children.

D. Comparison of children’s cognitive abilities against gender

Details regarding gender wise comparison of selected sample are displayed in Table 3. Significant differences were existed in verbal (z=3.95), perception (z=3.57), motor (z=2.85) and general cognition (z=3.07) of boys and girls, however non-significant differences were seen in quantitative and memory aspects of cognitive abilities at 5% level of significant. Boys surpassed girls in verbal, perception, motor and general cognition.

Table 3: Comparison of cognitive abilities against gender
N=400

Cognitive abilities	Boys Mean±SD	Girls Mean±SD	Z-test
Verbal	29.91±7.21	27.13±6.87	3.95*
Perception	31.23±9.55	28.20±7.28	3.57*
Quantitative	32.35±7.96	31.41±8.48	1.15
Memory	27.52±5.55	26.56±5.96	1.67
Motor	34.20±10.43	31.29±9.95	2.85*
General cognition	64.54±12.64	60.73±12.18	3.07*

* Means differ significantly within the row at 5% level of significance.

Mean scores demonstrated that boys gained more mean scores in all aspects of cognitive abilities (verbal M= 29.91, perception M=31.23, quantitative M=32.35, memory M=27.52, motor M=34.20 and general cognition M= 64.54) as compared to girls (M= 27.13, 28.20, 31.41, 26.56, 31.29 and 60.73, respectively).

It can be concluded that due to more stimulation and better physical facilities found at home, boys had performed better than girls.

E. Comparison of children's cognitive abilities across area and gender

To compare cognitive abilities of boys and girls from Hisar and Ambala district, ANOVA was run. Significant differences were observed in verbal (F(3,396)=6.83), perception (F(3,396)=5.12), motor (F(3,396)=2.97,) and general cognition (F(3,396)=3.94) of boys and girls of both districts at 5% level of significance.

Table 4: Comparison of cognitive abilities across area and gender N=400

Cognitive abilities	Hisar		Ambala		F-value
	Boys Mean±SD	Girls Mean±SD	Boys Mean±SD	Girls Mean±SD	
Verbal	28.91 b±6.05	26.72 c±6.92	30.92 a±8.12	27.55 bc±6.82	6.83*
Perception	30.40 ab±7.78	28.68 bc±7.16	32.07 a±11.01	27.72 c±7.40	5.12*
Quantitative	32.70 a±7.14	31.30 a±8.86	32.01 a±8.72	31.52 a±8.13	0.57
Memory	27.05 ab±4.89	26.10 b±5.08	28.0 a±6.13	27.02 ab±6.72	1.82
Motor	33.64 ab±9.24	30.99 b±8.66	34.76 a±11.52	31.59 b±11.13	2.97*
General cognition	63.78 a±12.26	59.62 b±11.31	65.31 a±13.02	61.84 ab±12.05	3.94*

* Means with different superscripts within the row differ significantly at 5% level of significance.

Boys of Ambala district achieved highest mean scores in all aspects of cognitive abilities (verbal M=30.92, perception M=32.07, quantitative M=32.01, memory M=28.0, motor M=34.76 and general cognition M=65.31) followed by boys of Hisar district (M=28.91, 30.40, 32.70, 27.05, 33.64 and 63.78, respectively). Girls of both districts had scored less as compared to boys of same districts in almost aspects of cognitive abilities.

Overall, it can be interpreted that boys and girls of Hisar and Ambala districts differed in their cognitive abilities, i.e., verbal, perception, motor and general cognition.

Correlation between children's home environment and cognitive abilities

Table 5 reveals correlation of different aspects of home environment with cognitive abilities of the children. Pearson analysis disclosed that language stimulation provided at home was positively and significantly correlated with verbal (r= 0.40), perception (r= 0.41), quantitative (r= 0.44), memory (r= 0.38), motor (r= 0.31) and general cognition (r= 0.49) at 0.05 level of significance. Similarly, physical environment of home was

significantly correlated with verbal (r= 0.36, p< 0.05), perception (r= 0.38, p< 0.05), quantitative (r= 0.32, p< 0.05), memory (r= 0.30, p< 0.05), motor (r= 0.30, p< 0.05) and general cognition (r= 0.41, p< 0.05).

Same pattern was found for variety of stimulation, maternal attitude and discipline as well as composite home environment. There were positive and significant correlation between variety of stimulation provided by family at home with verbal (r= 0.33), perception (r= 0.36), quantitative (r= 0.30), memory (r= 0.33), motor (r= 0.26) and general cognition (r= 0.36) at 5% level of significance. These cognitive abilities were also positively and significantly correlated with maternal attitude and discipline (r= 0.36, 0.38, 0.25, 0.26, 0.33 and 0.41, respectively) and composite home environment (r= 0.53, 0.56, 0.48, 0.46, 0.43 and 0.59, respectively).

Table 5: Correlation between home environment and cognitive abilities

Home environment	Psychological abilities					
	Verbal	Perception	Quantitative	Memory	Motor	General cognition
Language stimulation	0.40*	0.41*	0.44*	0.38*	0.31*	0.49*
Physical environment	0.36*	0.38*	0.32*	0.30*	0.30*	0.41*
Encouragement of social maturity	0.09	0.11	0.08	0.07	0.07	0.06
Variety of stimulation	0.33*	0.36*	0.30*	0.33*	0.26*	0.36*
Maternal attitude and discipline	0.36*	0.38*	0.25*	0.26*	0.33*	0.41*
Composite home environment	0.53*	0.57*	0.49*	0.46*	0.46*	0.60*

* Significant at 5% level of significance

It is concluded from results that different cognitive abilities of children were strongly influenced by language stimulation, physical environment, variety of stimulation, maternal attitude and discipline and composite home

environment. Poor home stimulation provided by parents degraded verbal, perception, numeracy, memory, motor and general cognition of disadvantaged children.

F. Regression analysis of home environment with cognitive abilities

Table 6 highlights linear regression model, which indicated that home environment as a significant predictor for cognitive abilities of the children. Home environment contributed 28 per cent variance in predicting verbal ability of the children. This model was significant as $F(1,398)=157.08, p < 0.05$. Next, stimulation at home contributed 32 per cent of variance in perception ability of the children, with a significant model $F(1,398)=188.43, p < 0.05$. Similarly, 24 per cent variance was contributed by home environment for quantitative ability of the children and this was also a significant model $F(1,398)=120.94, p < 0.05$. Data regarding memory and motor abilities of the children, home stimulation contributed 22 per cent of variance in predicting memory and 21 per cent variance in predicting motor ability of the children. These models were significant ($F(1,398)=115.14$ and $F(1,398)=109.59$) at 0.05 level of significance.

Table 6: Regression analysis of home environment with cognitive abilities

N=400

Psychological abilities	Unstandardized Coefficient		Standardized Coefficient
	B	SE	Beta
Verbal	1.31	0.10	0.53*
Perception	1.64	0.12	0.57*
Quantitative	1.39	0.12	0.49*
Memory	0.94	0.09	0.47*
Motor	1.70	0.16	0.46*
General cognition	2.61	0.17	0.60*

Verbal ability, total adjusted $R^2= 0.28$; $F(1,398)=157.08, p < 0.05$

Perceptual ability, total adjusted $R^2= 0.32$; $F(1,398)=188.43, p < 0.05$

Quantitative, total adjusted $R^2= 0.24$; $F(1,398)=125.77, p < 0.05$

Memory, total adjusted $R^2= 0.22$; $F(1,398)=115.14, p < 0.05$

Motor, total adjusted $R^2= 0.21$; $F(1,398)=109.59, p < 0.05$

General cognition, total adjusted $R^2= 0.36$; $F(1,398)=229.31, p < 0.05$

Also for general cognition, home environment was significant predictor ($F(1,398)=221.72, p < 0.05$), which accounted 36 per cent of variance in general cognition of the children.

Considering the statistical prediction pertaining to cognitive abilities of the children, linear regression analysis revealed that although home stimulation provided by mothers was a strong determinant for verbal, perception, quantitative, memory, motor and general cognition of the children but there are so many other unknown extraneous factors like heredity, school environment, health of child, parent-child relation, exposure to

mass media and so on which also contributed in determining cognitive abilities of the children.

IV. DISCUSSION

The home environment has a profound impact on the development of children. Present study provided evidences that majority of the underprivileged children received poor stimulation at their home. This finding gets support from previous research studies. Manocha and Balda (2011) explained that mothers exposed low level of stimulation for language development, physical environment, variety in stimulation and maternal attitude and discipline to their children. The study conducted by Pooja (1997) supported the above results. She observed that low stimulation was provided by the mothers for intellectual development of the children. Manocha and Narang (2006) also reported that majority of rural women provided poor home environment to their children. Further, the study revealed that children of Hisar district received better physical environment, however, children of Ambala district received more encouragement for social maturity than their counterparts. Nearly similar kind of language stimulation, physical environment, variety of stimulation, maternal attitude and discipline provided to boys and girls. But girls received more encouragement of social development as compared to boys at their home, while boys were given better physical facilities than their counterparts. Gender stereotype thoughts of rural mothers were the main root for more encouragement of social maturity to girls and provided more physical facilities to boys. Rural mothers motivated girls to look after the younger ones and carry out all household work when mothers go out to work. Saini (2011) agreed that most of the rural families provided low quality of home stimulation to their children and male children were given better home environment than female children. In addition, study also revealed that poor performer children received low category of home stimulation as compared to other children. Saini (2011) also supported that slow learner children found below average home environment than normal children.

Psychologists explore concepts such as perception, cognition, attention, emotion, phenomenology, motivation, brain functioning, personality, behavior and interpersonal relationships. All these mental functions and behaviors are influenced by individual's surroundings. The results of present study highlighted that majority of disadvantaged children had mental age below their chronological age. Similar finding was reported by Hurt *et al.* (1998). They demonstrated that only 20 per cent of the low SES 6 years old children scored in the normal range of IQ and rest were below normal range. Replicating previous studies, the current study also revealed that disadvantaged children performed poor in verbal, perception, quantitative, memory and motor aspect of cognitive skills. Kavita (2008) also reported that majority of respondents who had low score on intelligence were belonged to lower income group. Children with grade II and III

malnutrition had poor development in all areas of behavior, *i.e.*, motor, adaptive, language and personal social (Upadhyaya *et al.*, 1989). Results showed that children of Ambala district were performed slightly better in verbal, perception, quantitative, memory, motor and general cognition as compared to children of Hisar districts. Multicultural locality of Ambala district and better exposure to the children at schools by teachers made these children better than children of Hisar district. Singh and Dhanda (2010) indicated that children of urban areas surpassed children from slums and rural areas and boys from three locations exceeded than girls in mental abilities.

It was found that although performance of younger and older children was not appropriate as per their age still younger children performed well than older as per their different standard scores in verbal, numeracy, memory, motor and general cognition. This reflects decline and stagnation in the available environment in term of opportunity and facilities thus, performance of older poor children was worse than younger. Similarly, Jaswal (2000) in his study reported that all quantitative abilities showed advancement with increase in age but there was decrease in relative Scale Index score with increase in age. Children living below the poverty threshold are more than 1.3 times as likely as non-poor children to experience learning disabilities and developmental delays (Brooks and Duncan, 1997). Smith *et al.*, (1997) concluded that poorer children scored between 6 and 13 points lower on various standardized tests of IQ, verbal ability and achievement. Kar *et al.* (2008) also stated that chronic protein energy malnutrition affects the ongoing development of higher cognitive processes during childhood years rather than merely showing a generalized cognitive impairment. Stunting could result in slowing in the age related improvement. In addition, it was found that boys surpassed girls in verbal, perception, motor and general cognition. The plausibly explains that boys get the opportunity to spend most of their time in playing which help them to improve their perception, cognition and motor development (Baghurst *et al.*, 1995). Kavita (2008) agreed that intelligent quotient of boys was higher than girls. Similar findings have been reported by Banach *et al.* (2008). Boys surpassed girls in motor skills as reported by Kavita (2008), Crandell and Hobson (1999) and Dhanda (2002).

CONCLUSION

Childhood years laid the foundation for lifelong learning, health, personality, social behavior and nurture oneself as an adult. The experiences children have in early years shape the brain and the child's capacity to learn, to get along with others, and to respond to daily stresses and challenges. Therefore every child has a right to an enriched and supportive environment in order to reach his full potential. But many children do not reach their full human potential because of their families' income status, geographic location, malnutrition and non stimulating home environments which detrimentally affect cognitive, motor, and

social emotional development of children. It is concluded that majority of the disadvantaged families provided poor quality of home stimulation to their children. Not surprisingly, being raised in poverty has been linked with unfavorable verbal, perception, quantitative, memory, motor, cognitive and behavior outcomes. The lost childhood and the non stimulating environment deprives children from their basic needs and rights, leaving a lasting impact on their personality and behavior. This leads them to deviate from the basic societal norms with which the strength of the nation is inter-linked. Society and government should think about upgrading the conditions of these families and ensuring optimal conditions for a child's development. Investing on children increases a nation's capacity to compete and grow in a global economy.

REFERENCE

- McCarthy, D. 1972. *Manual for Mccarthy Scales of Children Abilities*. The Psychological Corporation, New York, USA.
- ACPHHS 2004. *Middle Childhood: Taking Action Together*. Child and Adolescent Development Task Group (FPT), Advisory Committee on Population Health and Health Security, pp.7.
- ADB 2006. Technical assistance to Kyrgyz republic for preparing the second community- based early childhood development project. Asian Development Bank.
- Baghurst, P.A., McMichiael, A.J., Tong, S., Wigg, N.R., Vimpani, G.V. and Robertson, E.F. 1995. Exposure to environmental lead and visual-motor integration at age 7 years: The port pirie cohort study. *Jstor Epidemiology*, 6(2): 104-109.
- Banach, R., Thompson, A., Szatmari, P., Goldberg, J., Tuff, L., Zwaigenbaum, L. and Mahoney, W. 2008. Relationship between non-verbal IQ and gender in Autism. *Journal of Autism and Developmental Disorder*, 2: 1573-3432.
- Brooks, G.J. and Duncan, G.J. 1997. The effects of poverty on children. *Future of Children*, 7: 55-71.
- Crandell, L.E. and Hobson, R.P. 1999. Individual differences in young children's IQ and social-developmental perspective. *Journal of Child Psychiatry*, 43(3): 455-464.
- Cole, D.A. 1991. Preliminary support for a competency-based model of depression in children. *Journal of Abnormal Psychology*, 100: 181-190.
- Dhanda, B. and Singh, C.K. 2008 Social skills of children in rural Haryana, *J. Dairy, Foods and H.S.*, 27 (3&4): 247-248.
- Dhanda, B. and Singh, C.K. 2010. Strengthening of human resources: An impact of effective intetvention programme. *Asian Journal of Home Science*, 5(1): 51-52.
- Eccles, J.S., Wigfield, A., and Schiefele, U. 1998. Motivation to succeed. In: *Handbook of Child Psychology: Social, emotional, and personality development*, 5th edition, Vol. 3 (Eds. Damon, W. and Eisenberg, N.). Wiley, New York, USA, pp. 1017-1095.

- Harter, S.1998. The development of self-representation. In: *Handbook of Child Psychology: Social, Emotional and Personality Development*, 5th edition: Vol. 3 (Eds. Damon, W. and Eisenberg, N.) Wiley, New York, USA, pp. 553-618.
- Higgins, E.T., and Parsons, J.E. 1983. Social cognition and the social life of the child: Stages as sub-cultures. In: *Social Cognition and Social Development* (Eds. Higgins, E.T., Ruble, D.N. and Hartup, W.W.). Cambridge University Press, Cambridge, MA, UK, pp. 15-62.
- Hurt, H., Malmud, E., Braitman, L., Betancourt, L.M., Brodsky, N.L., and Giannetta, J.M. 1998. Inner-city achievers: who are they? *Archives of Pediatric and Adolescent Medicine*, 152: 993-997.
- Jaswal, S. and Saini, S. 2000. Assessment of quantitative abilities of pre-school children in Panjab. *Journal of Family Ecology*, 2(1): 76-85.
- Kar, R.B., Rao, L.S. and Chandramouli, A.S. 2008. Cognitive development in children with chronic protein energy malnutrition. *Behavioral and Brain Functions*, 4: 31.
- Smith, J.R., Brooks, G.J., Kohen, D. and McCarton, C. 2001. Transitions on and off AFDC: Implications for parenting and children's cognitive development. *Child Development*, 72: 1512-1533.
- Upadhyaya, S.K., Agarwal, K.N. and Agarwal, D.K. 1989. Influence of malnutrition on social maturity, visual motor coordination and memory in rural school children. *Indian Journal of Medical Research*, 90: 320-327
- Singh, C.K., Dhanda, B. and Shanwal, P. 2010. Gender difference in motor and mental development in children: an impact of stimulating activities. *Anthropologist*, 12(2):153-154.
- Saini, P. and Sangwan, S. 2010. Impact of cognitive package on pre-school slow learners. *Psycho-Lingua*, 40(1&2): 130-132.
- Manocha, A. and Balda, S. 2011. Family's social climate and support system in rural Haryana. *Journal of Psychology*, 2(2): 89-94.
- Manocha, A. and Narag, D. 2006. Existing levels of stimulation among rural mothers. *Indian Journal of Social Research*, 46(1): 1-8.
- Mohite, P. 1989. *Mohite's Home Environment Inventory: Child's observation Technique*. National Psychological Corporation, Agra, Uttar Pradesh, India.
- Kavita 2008. Promoting intellectual and social abilities of low performers: interplay of heredity and environment. Ph.D. Thesis, CCS H.A.U., Hisar, Haryana, India.
- Pooja 1997. Parental stimulation for selected development aspects of preschoolers. M.Sc. Thesis, Child Development, CCS H.A.U., Hisar, Haryana, India.
- Saini, R. 2011. Intervention programme for visual-motor integration skills for slow learner children. Ph.D. Thesis, Department of Human Development and Family studies, CCS H.A.U., Hisar, Haryana, India.
- Sameroff, A.J. and Haith, M.M. 1996. *The Five to Seven Year Shift: The Age of Reason and Responsibility*. University of Chicago Press, Chicago, USA.
- Smith, J.R., Brooks, G.J. and Klebanov, P. 1997. The consequences of living in poverty for young children's cognitive and verbal ability and early school achievement. In: *Consequences of Growing Up Poor* (Eds. Duncan, G.J. and Brooks, G.J.). Russell Sage Foundation, New York, USA.
