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Int J Edu Sci, 1(1): 15-18 (2009)
PRINT: ISSN 0975-1122 ONLINE: 2456-6322
DOI: 10.31901/24566322.2009/01.01.03

Effect of Socio-economic Variables on Immediate Memory Span of School Children of Hisar

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KEYWORDS Memory. PGI Memory Scale. Memory Span For Digits. Ecological Variables

ABSTRACT The present study was attempted to make an insight into the immediate memory span for digits among the school children aged (10-12 years) and its relation with different socio-economic variables. A sample of 204 school going children was selected purposively from Hisar city in Haryana. They were tested individually for memory span with the help of PGI Memory scale and other aspects were studied with the help of a pre-structured interview schedule. The results showed that overall mean span of memory were 6. 04 in 10-11years and 6. 06 in 11-12 years. This shows that immediate memory span increases gradually and slowly with age. On studying the association of memory span and various socio-economic variables, it has been found that Age, sex, family type and type of school were not related significantly to memory span. Whereas, income, caste, education, occupation of father and school environment showed a statistically significant relationship.

INTRODUCTION

Memory is the most important ability behind intelligence which plays an important role in learning and reasoning. It includes various processes like memorizing, retaining, reproducing and forgetting. Infact, it is one's ability to solve problems which depends on obtaining information when it is needed. Memory may be temporary or permanent or short term and long term. Memory Span is a type of memory which refers to the greatest number of items an individual can correctly reproduce immediately after a presentation of series of items of a single type.

Assessment of immediate memory span is useful in educational guidance and vocational success. There are many factors which affect immediate memory span like performance intelligence, home environment etc. The immediate memory span is influenced by cumulative set of interactions and transactions children have with their parents, school and family as well as influence of other economic and social variables. Mohanty and Sharma 1995 found a moderate to high significant correlation between working memory and various components of visual search and number matching across socially disadvantaged and advantaged and working memory of less competent groups of children. Further more according to them a varied and colourful environment typical of high class families provides intrinsic motivation for development. Kashinath and Gudi 1997 compared advantaged (upper caste with high socio-economic status) and disadvantaged (large family with low SES). Children on Guilfords memory abilities differed significantly in their attainment of different abilities. Mohanty and Das 1997 studied the effects of SES on working memory capacity of children and found favourable trends for high SES children. Whereas, Krikorian et al.1996 concluded that performance on the configural attention test was not meaningfully related to SES. Moreover, Liben 1982; Nagaich l986; and Banmali and Dash 1997 found it increasing with age because of developmental changes in use and strategies for remembering. Engel et al. 2008 evaluated the impact of socio economic factors on children's performance on tests of working memory and vocabulary. They found that children in the age group of 6-7 years from the low socio economic group obtained significantly lower scores on measures of expressive and receptive vocabulary than their higher income group peers but no significant group differences were found on the working memory measures. So the present study was planned.

Objectives of the Study

1. To study the immediate memory span for digits among the school children
2. To study the relation of immediate memory span for digits with socio-economic variables.

METHODOLOGY

The Sample: A sample of 204 school children (age between 10-12 years) was selected from the schools of Hisar city giving fair representation to all the strata's of society Table 1. The age group of 10-11years and 11-12 years contained a sample of 102 children each. Half of the sample was of female children. Further a sample of 68 children each represented low, middle and high income groups. The data was collected in the year 1998.

Table 1: Sample composition (N=204)

Income	*10-11 years*		*11-12 years*	
	Male	*Female*	*Male*	*Female*
Low	17	17	17	17
Middle	17	17	17	17
High	17	17	17	17
Total	51	51	51	51

Tool: The respondents were tested individually for memory span with the help of PGI Memory Scale Pershad and Wig 1988 Memory span consisted of a number of items an individual could correctly reproduce after one presentation of series of items of a single type of forward digits. The scores were categorized and symbols were given as Low (3-5 digits) one score, average (5-7digits)two score and high (7-9digits)three score. Information on other aspects was obtained by interview with the help of a pre -structured schedule. The schedule consisted of following questions like sex ,age, type of school, medium of instruction in the school, system of education, location of school, family structure and relationship, family type ,family income, did the students have adequate atmosphere for studies?, did they get textbooks and stationeries as and when required ?,did they get sufficient time to revise lessons taught in the class?, did parents express their expectations?, did their parents encouraged them for participation in co-curricular activities ?did their parents use corporal punishment ?did their parents meet them regularly etc.? The data so collected was subjected to tabular analysis, mean, standard deviation and correlation were calculated.

RESULTS AND DISCUSSION

Tables 2, 3 show the span of immediate memory for digits varies among individuals as per various ecological system variables. These ecological system variables are classified by Bronfenbrenner's Ecological systems theory 1989. According to this theory the factors have been classified into four groups of factors operating at four ecological levels i. e micro system which is immediate surrounding i. e. age, sex, type of family, education of parents, family income, home facilities, present and past creative facilities and school environment. The second level is the mesosystem refers to connections

Table 2: Mean digit span scores as per ecological system variables (N=204)

S. No. Variables	*Categories*	*Mean digit ±S. D*
Microsystem Variables		
1 Age	10-11yrs.	6. 04±1.41
	11-12yrs.	6. 06±1.41
2 Sex	Male	6. 15±1.41
	Female	5. 95±1.41
3 Family type	Nuclear	6. 04±1.47
	Joint	6. 08±1.26
4 Education		
a. Father	Illiterate	
	Primary-Middle	5. 31±1.11
	High school -Graduate	6. 09±1.30
	Graduate–P. G.	6. 78±1.36
b. Mother	Illiterate	5. 21±1.17
	Primary-Middle	6. 06±1.28
	High school -Graduate	6. 43±1.30
	Graduate –P. G.	6. 94±1.40
	Low	5. 21±1.17
5 Income	Middle	6. 23±1.23
	High	6. 71±1.31
6 Home facilities	Low	5. 46±1.33
	High	6. 47±1.29
7 Present creative facilities	Low	5. 44±1.20
	High	6. 70±1.29
8 School environment	Low	5. 67±1.35
	Medium	6. 56±1.11
	High	6. 47±1.33

Table-3: Mean digit span scores as per Meso-, Exo- and Macro-system variables (N=204)

S. No. Variables	*Categories*	*Mean digit ±S. D*
Mesosystem Variables		
Parental interest	Low	5. 58±1. 37
	High	6. 41±1. 31
Exosystem Variables		
1 Occupation (father)	Labour	4. 31±0. 64
	Business	6. 21±1. 32
	Service	6. 29±1. 36
2 Occupation (mother)	Labour	4. 33±0. 67
	Business	5. 53±0. 97
	Service	6. 86±1. 41
	Housewife	6. 06±1. 27
Macrosystem Variables		
1 Caste	Low	4. 62±0. 79
	Middle	6. 46±1. 34
	High	6. 08±1. 20

among Microsystems, such as home, school, etc. that foster children's development. e. g. parental interest, social visits. The third level is the exosystem refers to social settings of which the children are not a part but the system affects their relations and experiences in immediate environment and occupation of parents are its aspect. The fourth level is the macro-system which is the outermost sphere of ecological model refers to values, customs, caste which bears an influence on the experiences and relations at lower level of environment.

The data in table 1 shows that the overall mean span of memory in the age group of 10-11 years is 6. 04 and 11-12 years are 6. 06 which show immediate memory span increases with age. The results are in consonance with the findings of Chang 1980; Nagaich 1986; Dash 1988; Krikorian et al.1996; Mishra and Dash 1996 and Banmali and Dash 1997. However, Ellis et a1.1989 and Bjerklie and Horton 1992; did not find any significant correlation between age and memory span. The results also elucidate that as regarding sex differences males showed slightly wider digit span (6. 15)for memory than the females (5. 95) . The findings are in concordance with various psychologists Kakkar 1983, Konovalov et a1.1987, Singh and Misra 1989. Whereas, Nagaich l986, Krikorian et al.1996 and Bjerklie and Hartron 1992 found that sex did not correlate significantly with scores of the SMT. Kasinath and Gudi 1997 compared advantaged and disadvantaged children on Guilford Memory Abilities and found that boys as well as girls of both categories, did not differ significantly in their attainment of memory abilities. Thus, it can be said that no set pattern is observed in various studies on the performance of memory tests in males and females.

It is clearly evident from the results in table 2 that respondents whose parents were illiterate scored less on memory span scale. The memory span of children improved with the education level of both parents. Likewise, income of the household was observed to have a positive correlation with the memory span of sample children. As regards income, the highest scores (6.71) were obtained by the respondents belonging to high income group followed by the respondents belonging to middle (6.23) and low (5.21) income groups. The respondents from higher category of home facilities, past and present creative facilities had higher mean memory span scores. Similar results were found by Jaschuck and Das 1991 and Mohanty and Das 1997. But the results of Krikorian et al. 1996 were not in agreement with the above results. As regards, type of school more mean memory span scores have been found in private schools (6.42) than government and semi government schools (5. 84). Moreover when memory span scores were assessed in school environment with medium facilities it was found to highest (6.56) then followed by schools with high facilities (6.47) and low facilities (5.67).

Data in table 3 shows that Parental interest; a mesosystem variable also had an effect on memory span of the children. Children, whose parents took more interest in the studies and co-curricular activities of the child, scored higher (6.41) than those whose children took little interest. Regarding, the impact of exosystem variables, it was found that occupation of parents lead to high score of respondents. It was found that children whose father were in service and business they had more scores i. e 6.29 and 6. 21 respectively. Whereas , the children of labour class had only 4. 31 values. Similarly, the children whose mother were in service the children had higher scores (6.86) followed by housewives (6.06), businesswomen (5. 53) and women of labour class (4.33). The results with regard to macro- system variables i. e caste show that children from middle caste had highest memory span (6.46) followed by high caste (6.08) and low caste (4.62).

Table 4 elucidates the association between memory span and various variables. Age, sex, family type and type of school have not shown statistically significant relationship. Whereas, income, caste, education, occupation of father and school environment had a statistically significant relationship. The plausible explanation

Table 4: Association between digit memory span and ecological variables N=204

S.No.	*Variables*	*d. f.*	χ^2*-value*
1	Age	2	0. 77
2	Sex	2	2. 92
3	Income	4	39. 82**
4	Caste	4	47. 73**
5	Education-Father	6	39. 68**
6	Education-Mother	6	39. 53**
7	Occupation-Father	6	41. 12**
8	Occupation-Mother	6	49. 59**
9	Family Type	4	2. 46
10	Type of school	2	5. 73
11	School Environment	4	35. 42**

** p<O. Ol

could be that income facilitates the flow of money in family which enhances the socio-economic level of the family and more opportunities/ facilities could be provided to the younger ones. This helps in improving their talent. Moreover, educated parents are also fully aware of their child's growing mental abilities and thus can provide more conducive environment and sufficient opportunities for mental growth hence their children had higher scores. Engel et al. 2008 found no significant group differences on the working memory measures.

CONCLUSION

The present study concludes that immediate memory span increases gradually and slowly with age. On studying the association of memory span and various socio-economic variables, it has been found that Age, sex, family type and type of school were not related significantly. Whereas, income, caste, education, occupation of father and school environment showed a statistically significant relationship.

RECOMMENDATIONS

The study highlights that intervention can be planned to improve the memory span of the children. There is need to emphasize on creating more stimulative environment in homes and schools so that memory abilities of the children could be enhanced. Moreover, it should also facilitate the psychologists and educationists to develop appropriate strategies for disadvantaged groups of children.

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