

Original Research Article

Effect of cartoon viewing habits on developmental skills and attention span of preschool children

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ABSTRACT

Background: Mass media has an important role in the development of behaviour of children as they are exposed to it at very young age itself. Computers, television, video games and other entertainment media have become a part of their day-to-day life. The present study aimed at identification of the effect of cartoon viewing habits on developmental skills and attention span of preschool children.

Methods: The correlational research study was conducted on consecutively selected 200 preschool children from selected schools of Calicut district. A semi-structured questionnaire was used to identify the cartoon viewing habits of children and four tests (colour cancellation test, number cancellation test, colour trails test and Knox cube test) were used to detect the attention span and Vineland social maturity scale was used to detect the developmental skills. Through individual interview data from 200 preschool children and their parents were collected during a period of 6 weeks after validating the tools and the data analysed using descriptive and inferential statistics.

Results: Children who watched fewer cartoons have more social quotient (98%). Developmental skills are more in younger children (96%). Cartoon viewing habits have significant association with age, gender, birth order, number of siblings, and the class of study. Significant relationship between cartoon viewing habits and developmental skills.

Conclusions: The study concluded that to assess the impacts of cartoon viewing habits on developmental skills and attention span of preschool children revealed that increased duration of cartoon viewing can have detrimental effect on the attention span and developmental skills of preschool children.

Keywords: Preschool children, Cartoon viewing habits, Attention span, Developmental skills

INTRODUCTION

Human brain completes majority of its development over the first 18 to 24 months of life in response to various physical and psychosocial stimuli present in the environment.¹ Interaction with parents and caregivers aid in overall development of children and help them to formulate their behaviour.² Changes in the family structure, that is, joint family to nuclear family, living standards, and working parents had brought changes in child care practices. Most of the time, the very young children are left with baby sitters and are often forgotten

in front of television. Television acts as a console for human interactions. Television has taken over the role of a babysitter in many families.³ Spending a lot of time in front of television interfere with activities such as being physically active, reading, doing homework, playing with friends and spending time with family.^{1,4} Birth to six years is a crucial period in the development of children and they change rapidly during these years.¹ Critical period for brain growth is the first three years of life.^{5,6} This is when infants and small children need to interact with their parents, eye-to-eye and not eye to screen.⁶ However, several studies have revealed that children

begin to watch cartoons by an average age of six months and by two or three years they become enthusiastic viewers.^{7,8} They spent a considerable time on these entertainment resources. A study conducted in US has revealed that children below six years spend an average of about two hours a day with screen media (1.58 hours), about the same amount of time that they spend for playing outside (2.01 hours) and three times as much time as they spend in reading or being read to (39 minutes).⁸ So spending too much time in front of television may lead to physical, emotional and cognitive disturbances.

Kids really enjoy watching television, specifically cartoons. They are attracted to cartoons because of various reasons: the colour, movements and sound effects are designed to capture the interest and attention of children. The cartoon characters are presented with well-made costumes and children like their looks. They possess super power to overcome foes and villains at the end. The good guys winning over the bad guys give delight to a young kid's heart. Children see variety in cartoons and each character have their own signature moves, styles, attitudes, modes and temperament and the viewers can relate it with them. Cartoons often respond to the children's need and tendency to be active. Often parents encourage children to watch it, and children feel this as an acceptable form of behaviour.⁹

Based on these facts various research studies have carried out in different parts of the world to identify the television and cartoon viewing habits of children and its impacts on them. A study conducted among children of 0-6 years were found that 74% children under the age of five year had watched television and 59% of them were watching television for an average of 2 hours.¹ In another study on 2600 children aged 1 to 3 years found that, when the children are more exposed to television, there is increased chance for the children to have less attention span in later years.³ A study was conducted in 2011, regarding the immediate impact of different types of television shows on young children's executive functions and it revealed that those children who watched the fast-paced television cartoons performed significantly worse on the executive function tasks compared to their counterparts.¹⁰

Various studies in these areas reveal that those children who are accustomed to fast-paced visual stimulation on television has trouble to pay attention to their teachers. It is because, children feel television shows as so exciting and fast-paced and they consider reading and other school works as dull and not interesting. So they feel boredom and are unable to concentrate on their studies. Children who view fast paced cartoons have short attention span and remain sleepless during night which may lead to less alertness during day.¹¹ In addition, it may reinforce the negative behaviours like aggressiveness, negativism, bad dreams, anxiety, stereotype behaviours and health problems like smoking, alcoholism, obesity and visual problems in later years.^{3,4,6}

Aim and objectives

The purpose of the study was to identify the influence of cartoon viewing habits on preschool children's developmental skills and attention span. Objectives of current study were to identify the cartoon viewing habits of children aged 4-6 years, to assess the attention span of children aged 4-6 years, to assess the developmental skills of children aged 4-6 years, to identify the relationship between attention span of children aged 4-6 years and their cartoon viewing habits, to identify the relationship between developmental skills of children aged 4-6 years and their cartoon viewing habits and to find out the association between cartoon viewing habits of children aged 4-6 years and selected demographic variables.

METHODS

Non experimental research approach was considered to assess the effect of cartoon viewing habits on developmental skills and attention span of preschool children. The design of the present study was correlational research design. The main setting of the study was Nirmal Hridhay english medium school, Mancave, Assisi nursery school, Malappuram, Face India public school, Puthiyara, Little Kings school, Malappuram at Calicut, during the period of 2 September 2019 to 15 October 2019. Population for the study was preschool children aged 4 to 6 years and their parents. Total 200 numbers of preschool children were participated in this study. Selection of participants was done by using consecutive sampling technique. Tools used for the study were semi-structured questionnaire, Goodenough's draw-a-man's test, colour cancellation test, number cancellation test, colour trails test, Knox cube test, VSMS. A semi-structured questionnaire was distributed to collect basic demographic data and to identify the cartoon viewing habits of their children. After that, different tools for assessing the attention span and developmental skills were administered to the children. The data were collected for a period of 5 weeks. It took around 15- 20 minutes for a child to complete all the tests. The investigator could complete the data collection process within the period. After getting permission from the school authorities, parents of children were contacted. Informed consent was taken from all the parents.

Inclusion criteria

Inclusion criteria for current study were preschool children between the age group of 4-6 years, whose parents were available and consenting to participate in the study and who were able to follow instructions.

Exclusion criteria

Inclusion criterion for current study was physically or mentally challenged children.

Statistical analysis

Data were analysed using statistical software SPSS version 20. Various descriptive and inferential statistics were used for analysing the data. Demographic variables and cartoon viewing habits were analysed using frequency and percentage.

RESULTS

Description of the cartoon viewing practices of children

This section identifies the cartoon viewing practices into two categories: cartoon viewing habits and reaction and response of children in reaction to cartoon viewing. Cartoon viewing habits are described based on language of the cartoon which the child watches more, age at which the child started to watch cartoons, duration of cartoon viewing before attending preschool, on holidays, and week days, with whom child watches cartoons and type of cartoon in which child is more interested.

Table 1: Frequency (percentage) distribution of socio-demographic characteristics of preschool children (n=200).

Socio-demographic characteristics	N	%
Age of the child (years)		
3.5-4.5	62	31.0
4.5-5.5	84	42.0
5.5-6.5	54	27.0
Gender		
Male	112	56.0
Female	88	44.0
Birth order of the child		
First	116	58.0
Second	69	34.5
Third	14	7.0
Above third	1	0.5
Number of siblings		
Nil	89	44.5
One	84	42.0
Two	21	10.5
More than two	6	3.0
Grade in school		
LKG	108	54.0
UKG	86	43.0
1st Std	6	3.0
Care taker of the child during day time after schooling		
Father/mother	141	70.5
Grand parents	52	26.0
Siblings	7	3.5

Children were equally interested to watch Malayalam (48.5%) and English cartoons (48%) (Table 2). Most of the children started to watch cartoons by 3-4 years

(43.5%) and were not watched cartoons before they attend preschool (43%).

Table 2: Frequency (percentage) distribution of cartoon viewing habits of children (n=200).

Cartoon viewing habits	N	%
Child watches cartoons more in		
Malayalam	97	48.5
English	96	48.0
Hindi	6	3.0
Other Languages	1	0.5
Age at which the child started to watch cartoons (years)		
2-3	72	36.0
3-4	87	43.5
4-5	34	17.0
5-6	7	3.5
How long the child used to watch cartoons before attending preschool (hours/day)		
Not watched	86	43.0
Less than 3	68	34.0
3-6	45	22.5
More than 6	1	0.5
Time spent on cartoon viewing on holidays (hours)		
Not watching	20	10.0
1-3	103	51.5
3-5	50	25.0
More than 5	27	13.5
Time spent for cartoon viewing on week days (hours/day)		
Not watching	59	29.5
Less than 1	78	39.0
1-3	59	29.5
More than 3	4	2.0
Child watches cartoons		
Alone	102	51.0
With siblings	73	36.5
With parents	23	11.5
With friends	2	1.0
Type of cartoon in which the child is interested		
Adventurous	39	19.5
Comic	69	34.5
Adventurous with comic	56	28.0
Fantastical	36	18.0

Majority of the children used to watch cartoons 1-3 hours on holidays (51.5%) and 39% of preschool children spent less than 1 hour for cartoon viewing on week days. Majority of the children watched cartoons alone (51%) and most of the children were interested in comic cartoons (34.5%). Most of the children were not bothered about their surroundings when they watch cartoons (38%), and were disturbed if channels changed while they watch cartoons (44.5%) (Table 3). Majority of the subjects had no special type of behaviour after they watch cartoons (74%). 63% parents reported that they have not noticed any behavioural change and 85% parents reported that no changes occurred in academic performance of

their child after he or she had started to watch cartoons (Table 3).

Table 3: Frequency (percentage) distribution of impacts of cartoon viewing habits on child’s response, behaviour, and academic performance (n=200).

Impacts of cartoon viewing habits	N	%
Reaction of the child while watching cartoons		
Imitates sounds and actions	36	18.0
Not bothered about surroundings	76	38.0
Passive observation	39	19.5
Interact with others	49	24.5
Child's reaction on changing channels while viewing cartoons		
Disturbed	89	44.5
Aggressive	15	7.5
Cooperative	83	41.5
Not bothered	13	6.5
Type of behaviour of the child after watching cartoons		
Imitates cartoon characters	47	23.5
Destructive behaviours	2	1.0
Aggressive behaviours	3	1.5
No special behaviour	148	74.0
Changes in behaviour of the child noticed after started to watch cartoons		
Changes in eating habits	57	28.5
Changes in sleep	4	2.0
Increased aggressiveness	3	1.5
Others	10	5.0
No changes noticed	126	63.0
Changes in academic performance after the child has started to watch cartoons		
Class grades improved	10	5.0
Class grades came down	7	3.5
Reduced interest in studies	13	6.5
No changes noticed	170	85.0

Assessment of the attention span of children

This section deals with assessment of attention span of preschool children using four different tests. Children were divided into groups based on score and age for the purpose of analysis. Preschool children took an average of 0.0421 minute to cancel one column in colour cancellation test (Figure 1). In this, children with minimal cartoon viewing habits (group 1) took less time (0.0378 min) to cancel one column than children with moderate cartoon viewing habits, group 2 (0.0378 min) and children with severe cartoon viewing habits, group 3 (0.0522 min) and younger children (group A) took more time (0.0475 min) to cancel one column than children between 4.5-5.5 years, group B (0.0397 min) and 5.5-6.5 years, group C (0.0396 min). Children took an average of 0.0931 minute to cancel one ‘4’ in number cancellation test (Figure 2). In this children with severe cartoon viewing habits (group 3) took more time (0.0957 min) to cancel one ‘4’ whereas moderate cartoon viewing habits

children (group 2) had taken less time (0.0918 min) to cancel one ‘4’ and older children (group C) took lesser time (0.0877 min) to cancel one ‘4’ in age groups. Children took an average of 3.78 minute to complete the colour trails test (Figure 3). Children with severe cartoon viewing habits (group 3) took more time (4.0996 min) to complete the test and moderate cartoon viewing habits children (group 2) took less time (3.6358 min) to complete the test. Older children (group C) took lesser time (3.4179 min) to complete the test.

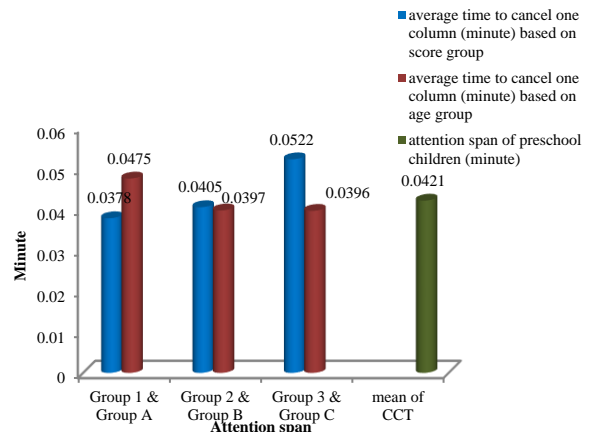


Figure 1: Average time taken to cancel one column by preschool children and which is based on score group and age group.

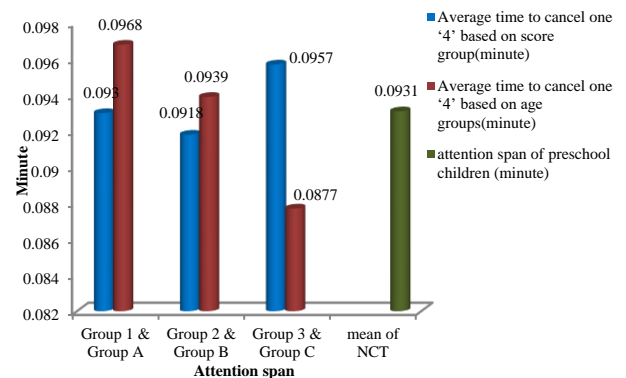


Figure 2: Average time to cancel one ‘4’ by preschool children and which is based on score group and age group.

Knox cube test

In Knox cube test subjects were assessed for their attention span and then they were classified based on their age and score on cartoon viewing habits.

Percentage distribution of children who could perform different levels of Knox cube test

Total 92% of preschool children could complete level a, and level b, level c and level d could be done by 75%,

38% and 1.5% of preschool children respectively (Table 4).

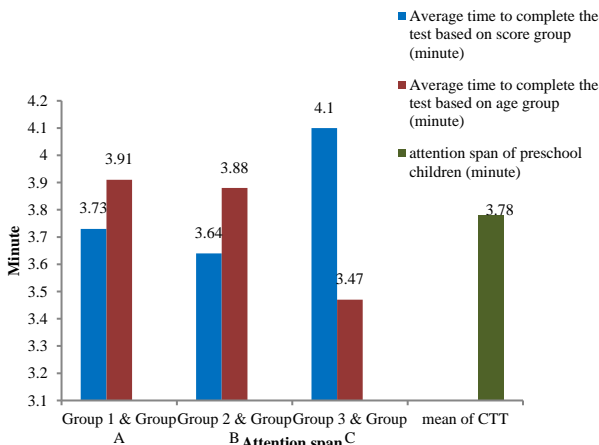


Figure 3: Average time to complete the test by preschool children and which is in score group and age group.

Table 4: Frequency (%) of preschool children who could perform different levels of Knox cube test (n=200).

Levels	N	%
Level a	184	92
Level b	150	75
Level c	76	38
Level d	3	1.5

Assessment of the developmental skills of children

This section assesses the developmental skill of preschool children and again in terms of social quotient in score group and age group. Social quotient of preschool children aged 4-6 years were 94% and it was 96%, 94 % and 90 % in children with minimal (group 1), moderate (group 2) and severe (group 3) cartoon viewing habits respectively (Figure 5-6). Social quotient of younger children (group A) was 98%, and of children between 4.5- 5.5 years (group B) and 5.5-6.5 years (group C) were 94%, and 88% respectively (Figure 7).

Association between selected demographic variables and cartoon viewing habits

This section assesses the significance of the relationship between selected socio-demographic variables and cartoon viewing habits. In order to identify the association of selected demographic variables with cartoon viewing habits Chi-square statistics was used. H₀: there is no significant association between selected demographic variables and cartoon viewing habits of children aged 4-6 years.

Age has significant association with duration of cartoon viewing before attending preschool (p=0.031) and on holidays (p=0.002). It also shows that gender is associated with duration of cartoon viewing on week days (p=0.046) and type of cartoon in which child is interested (p=0.001) (Table 6).

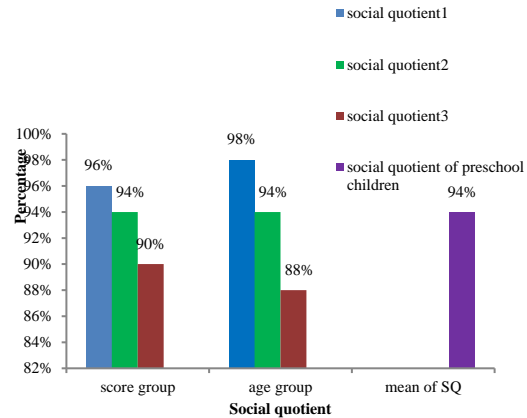


Figure 5: Percentage of social quotient in score group and age group.

Significant relationship exists between attention span and cartoon viewing habits in colour cancellation test (p=0.000) and Knox cube test (p=0.001) (Table 7). Other two tests failed to bring out a relationship between attention span and cartoon viewing habits at 0.05 significance level. So the null hypothesis H₀ is rejected and research hypothesis is accepted, there is significant association between attention span and cartoon viewing habits of preschool children.

Relationship between developmental skills and cartoon viewing habits

This section identifies how the developmental skills and attention span were related. To identify the significance of association between developmental skills and cartoon viewing habits one way ANOVA was used. H₀: there is no significant association between developmental skills and cartoon viewing habits of children aged 4-6 years (Table 8). There is significant relationship between developmental skills and cartoon viewing habits of preschool children (p=0.002) at 0.05 level of significance. So the null hypothesis H₀ is rejected and research hypothesis is accepted i.e. there is significant association between developmental skills and cartoon viewing habits of preschool children.

DISCUSSION

The present study revealed that 38% of children were interested to watch television when they were at home. A previous study among young children on how they spend their time was revealed that as the age advances television viewing time decreases.¹² In the present study, 35% of children were interested in playing outside of

their home and 23% of children were interested in playing with toys.

Table 6: Association of age and gender with cartoon viewing habits (n=200).

Variable	Cartoon viewing habits	X ² value	Df	P value
Age	Language of cartoons interested	10.927	6	0.091
	Cartoon viewing started age	8.844	6	0.183
	Duration of cartoon viewing before attending preschool	13.895	6	0.031
	Duration of cartoon viewing on holidays	20.709	6	0.002
	Duration of cartoon viewing on week days	10.462	6	0.107
	Cartoon viewing company	7.957	6	0.241
	Type of cartoon in which child is interested	7.304	6	0.294
	Gender	Language of cartoons interested	6.426	3
Cartoon viewing started age		2.588	3	0.460
Duration of cartoon viewing before attending preschool		5.731	3	0.125
Duration of cartoon viewing on holidays		4.479	3	0.214
Duration of cartoon viewing on week days		7.997	3	0.046
Cartoon viewing company		6.208	3	0.102
Type of cartoon in which child is interested		16.552	3	0.001

It showed that children had variety of interests and it changes as the age advances. The previous study had also revealed that mothers' education and home environment have influence on the television programme which the child watches. In the present study around half of the mothers (46.5%) were educated up to graduation or above and 57% were home makers. Whereas only 11.5% of children were used to watch cartoons with their parents and they were interested in different types of cartoons. So the present study does not support the previous study report that mothers' education and home environment have influence on the television programme which the child watches. A study to determine the television

viewing habits of children were revealed that the median age at which children exposed to regular media was nine months.¹³

Table 7: Association between attention span and cartoon viewing habits (n=200).

Attention span tests	df	F value	P value
Colour cancellation test	2	9.305	0.000
Number cancellation test	2	0.215	0.807
Colour trails test 1	2	2.191	0.115
Colour trails test 2	2	0.354	0.702
Knox Cube test	2	7.637	0.001

Table 8: Association between developmental skills and cartoon viewing habits (n=200).

Social quotient	df	F value	P value
VSMS	2	6.720	0.002

The same study revealed that children less than two years of age spend more than 1.5 hours per day for television viewing. Another study in US had revealed that children below six years spend an average of about two hours a day with screen media, which is about the same amount of time they spend for playing outside. The present study findings are also consistent with above study findings which showed that 36% of children were started to watch cartoons by two to three years, which is close to three to four years (43.5%). It also revealed that 30 to 35% of children spend an average of one to three hours a day for cartoon viewing.

In the present study 85% of parents reported that they did not notice any change in the academic performance of their child after he or she had started to watch cartoons. A study over three years on children between two to five years had revealed that television viewing and academic skills relates on the contents of the programme which the children viewed. In the present study parents might have not noticed the changes in the academic performance of their child as the children are very young to bring out the changes or parents might not be much concerned of the academic performance at this very young age. Parents may not be aware of the association between cartoon viewing habits and academic performance.¹³⁻²⁰ An experimental study conducted on the very immediate effects of fast paced show on children revealed that kids who viewed fast paced cartoons did worse on tests to assess the attention, problem solving ability and other skills than those children who watched other neutral shows.¹⁸ It can be compared with the present study results that those children who watched more duration of cartoons could perform less than those children who viewed lesser duration of cartoons. Present study has revealed that there are differences in the attention span of children according to their age. A previous study also revealed that younger children are less stable in their attention than older children.²¹

Limitations

Limitations of current study were; study was limited to preschool children aged 4-6 years, children at 4years and 6years are not similar. There was difference in their cognitive and psychomotor skills. Some parents have positive attitude towards cartoon shows. But that was not included in the present study.

CONCLUSION

The present study to assess the impacts of cartoon viewing habits on developmental skills and attention span of preschool children revealed that increased duration of cartoon viewing can have detrimental effect on the attention span and developmental skills of preschool children. Assessment of the relationship between selected demographic variables and cartoon viewing habits revealed that only a few cartoon viewing habits have significant association with selected demographic variables. Among the four tests used to find out the relationship between cartoon viewing habits and attention span, two tests (colour cancellation test and Knox Cube test) proved that there is significant relationship between cartoon viewing habits and attention span. Another test used to detect the association between cartoon viewing habits and developmental skills also proved a significant relationship between them.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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