E-Screen (Mobile Use) and Language Development in Children

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Abstract
There is a prevailing confusion regarding which is the right age to provide a developing infant with certain advanced gadgets which in turn will turn out to be a part of the child's daily schedule, in the long run. The developing infant is volatile to any dynamic changes and thus the changes that are provided are to be carefully monitored. Innumerable studies regarding any physical damage due to smart phone exposure has been widely done. However, studies and researches with regard to social, economic and educational background on the basis of development of semantics, pragmatics, morpho-syntatic and play age levels are scanty. The study is based on data collected from minors aged 2 to 7 regarding on screen time they are exposed to on a daily basis, information collected from the providers with a previously prepared questionnaire and administration of valid test material to calculate their particulars with respect to language development. The documentation also aimed at an increment of parent awareness in relation with e-screen exposure. This study correlated the e-screen time-based aspects with any speech and language delays -if present- by the survey of the same.
Key words: *Screen Time, Sedentary behaviours, Speech-Language development and electronic gadgets*

I. Introduction

In this modern era, it is important to demarcate the importance of mass media and its influence on the developing child. The cognitive, linguistic, behavioural and emotional development profusely depends on the duration of exposure and the type of media content being examined (Bansal, S., & Mahajan, R. 2017). The socio-economic status of the individual is an important determinant of the time duration of exposure. Parents often complain regarding the obsession of their school going children towards the smart phone which can be due to lack of strict parenting strategies or due to the inadequate knowledge with respect to the concept.

The impact of any electronic gadget on its user is very high and so is its educative and communicative values. Any comparison will conclude with increased evidences that with proper maturity attained, no teaching aid can surpass this wonderful invention. When it comes to a society, awareness has to be raged regarding the fact that the emerging teens are not passive in the process but active in socialization by means of electronic gadgets like smart phones (Xu, H., Wen, L. M., & Rissel, C. 2015).

Families aim at moulding the personals as they grow by upbringing their ethical and moral values and focusing on resolution of problems in a peaceful and satisfactory manner. Often use of electronic gadgets work against this very point of view as their advertising strategies often aims at making them addictive asking them to spend more time staring to the screen working on their mood swings and lack of patience. Thus, researchers point out to the very need of further studies in this area so as to rule out deficits in any area during the early childhood.

Biddle et al, (2004), stated that sedentary behaviour primarily referred to sitting or lying behaviour and spending time doing physically inactive tasks which do not require a lot of energy during waking hours. A major source of sedentary behaviour in young people is screen time, which refers to the time spent watching television or movies, playing video games, using computers and using mobiles. Paediatric organizations recommend no more than 1-2 hours of daily screen time for children aged 2-5 years and discourage screen time for children younger than the age of two.

In a study, it was reported that 3.2 billion people are exposed to technology (International Telecommunications Union, 2015). Also, 14% of infants (6-23 months) watch at least 2 hours of media per day and 1\3rd of children under 3 has Television in their bedroom (Zimmerman, Christakis, & Meltzoff, 2007a). About25%of 3–4-year-old use tablet computers. Children are growing up with a digital foundation and their interaction is immersed in the cyberspace where they learn, entertain themselves and play. Here the researchers are directly questioning how interactive media may be affecting children both mentally and physically (American Academy of Paediatrics, 2011). However, their focus was on TV which is a passive experience and the results

may not be applicable compared to the highly interactive screen technology such as tablets and smart phones and thus uniqueness of the mobile phones has to be considered.

Researchers have given strict bans regarding provocation of young individuals with the certain electronic gadgets which can be attributed to the harmful effect that the aid can cause to the physical and mental maturation.

A study by Jenny S Radesky, JaynaSchunacher and Barry Zuckerman (2015), on mobile and interactive media use by young children: the good, the bad and the unknown deals with formulating certain specific guideline related to mobile usage. They observed that the use of interactive screen media is increasing rapidly in young children. However, research regarding its impact on learning, behaviour, and family dynamics has lagged considerably behind the rate of adoption. Paediatric guidelines regarding mobile device use by young children have not yet been formulated, other than recent suggestions that a limited amount of media use may be acceptable for children, aged 2 years. However new guidance is needed as mobile media differs from television in multiple modalities and the aim of this commentary was to review the existing literature, discuss future research direction and suggest preliminary guidance for families.

Bansal.S.R and Mahajan (2017), carried out a cross sectional study in Maharashtra. Children below the age of 15 who attended the department of paediatrics (DOP) were included in the study during January to march of 2017. The study was carried out on 450 children. It was reported that 414 (92.1%) parents used mobile phones and 350(77.8%) parents had smart phones. around 194(43.1%) were found to be using mobile for 1-3 hours followed by 130(28.8%) use mobile for more than 4 hours. There was a decreased physical activity in 189(45.8%) children, laziness in 143(34.7) children, pain in fingers and wrist in 76(18.5%) and eyes symptoms in 148(35.7%) children. While mental issues faced were, throwing tantrums if mobile not given in 187(45.3%) children, not obeying parents 110(26.6%), reduced grades in schools 89(21.4%). There was increment of Physical, social and psychological impact and recommended further for the need of family role to regulate and moderate the usage of mobile phones.

1.1. Need

Studies on physical social and educational consequences of mobile usage were well employed and less attention was paid to the speech-language development aspects in the previous studies. Also concern of parents was regarding the visual ability of the child being affected. Lesser focus was laid on the linguistic milestone development and e-screen time of usage. The literature study by Kildare, C. A., & Middlemiss, W. (2017), presents us with mixed opinion on the use of electronic gadgets in the development if speech language abilities. The long term effects of delay in speech milestones are nothing but a hindrance to the natural social participation and they also tends to retard the user academically. To be aware of certain condition that leads to severe and broad impairments in syntactic, phonological and lexical production is henceforth a necessity. Focus was given to any social, behavioural or academic change that was noticed as due to addiction or overuse of smart phones or other gadgets. The concerns that the parent had regarding the age at which phone was to be provided and the duration to which it had to be given, addressed.

II. Aim and objectives

The study was aimed at investigation of the relation between electronic screen held time (mobile phone users) and the prevalent speech language, academic and behavioural abilities. To rule out the exposure of handheld smart phones for various entertainment and non-entertainment purpose in the current generation and to check the awareness of the care takers with respect to the same. It also aims at inquiry of the factors that would prompt for the more mobile usage among the infants. The study documented the speech language abilities among the children as an objective to investigate the impact of screen time on delay or deviancy of the same.

III. Method

3.1. Participants

The participatory criterion was selected to be minors within age range of 2 to 7 representing children from pre-kg to II standard. Parents from different economic backgrounds were included so as to rule out any changes in the duration of e-screen exposure. Also, children selected for the survey was normal and not subject to any cognitive or neurological deficits. The recruitment was based on both rural and urban settings as well are school setups. Candidates of the survey were parents who reported to provide their phones even with certain rules and others who reported as not providing phone were excluded.

3.2. Instrument

The questionnaire prepared as a part of the study aimed at questioning the smart phone usage duration and the behavioral changes that were noticeable. It included a primary data collecting area where the data regarding the name, age and standard and the further contact details and economic status as well as family status is noted. Thereafter a platform containing 4 basic sections – smart phones exposure (duration and time related

factors), the content, impact of smart phones on general behaviors and the other impacts of smart phones were brought to consideration. Upon the statistical analysis for the rated items, a 21 items questionnaire was finalized. It contained the ratings ranging from 1 to 5 where 1 -always, 2- sometimes, 3- occasionally, 4- no and 5- never. The ratings were profusely dependent on the responses given by the parent and this was followed by the administration of *Speech Language development chart* (SLDC) to rule out if the speech and language development corresponds to their chronological age.

3.3. Procedure

Followed by preparing the questionnaire, focus was placed on face-to-face interviewing of the parent or the caretaker who is reportedly responsible for providing the phone and administering the previously prepared questionnaire followed by administering the *Speech Language Development cart (SLDC)* given by Gilman, Leslea, Gorman, Jim (1993) was administered. Valid results were documented and charted for further analysis and study. Collected results were tabulated based on the age group they belong to and studies done accordingly.

IV. Results and Discussion

The study was conducted with objectives of profiling the e-screen (Mobile & Tabs) usage behaviours among infants and early school going children.

4.1. Demographic characteristics

The parents of a total of 32 male and 28 female children in the age range of 2 to 7 years took part in the study. Parents of children in the age range of 6 years constituted to be 25% among the participants. 66.7% of the children had the first language (L1) of Malayalam. Children with parents having an income of more than 10, 000PM were 90% among the participants. From the table 4.1, it is observed that the children who were reported to use mobile phone (e-screen) for less than thirty minutes of time were 63.33%. Children with e-screen time of more than 2 Hours per day was 15 % in the study.

Table 4.1: *Demographic Characteristics of the participants*

Demographic Variables	Groups	Frequency	Percent
Gender	Female	28	46.7
	Male	32	53.3
First Language (L1) of participants	Hindi	8	13.3
	Kannada	11	18.3
	Malayalam	40	66.7
	Telugu	1	1.7
Age	2 Years	4	6.67
	3 Years	12	20.00
	4 Years	9	15.00
	5 Years	11	18.33
	6 Years	15	25.00
	7 Years	9	15.00
Socio-Economic Status/Income	Below 6000PM	0	0
	6000-10000PM	6	10
	>10,000	54	90
Hours of mobile usage per day (e-screen time)	Less than 30 Minutes	38	63.33
	30min-1 Hour	5	8.3
	1Hour to 2 Hour	8	13.3
	More than 2 Hours	9	15

4.2. Smart phone exposure (Time related) characteristics

The parents reported that children were exposed to smartphone occasionally in 73.3% of the participants followed by 25 % of exposed sometimes. Internet connection was present among 88.3% of mobiles used by the children. Most of the parents (48.3%) reported that there was no a fixed time of exposure to mobile phones in a day. More than half of the parents of children reported that their children demanded for the smartphone use. Parents (56.7%) felt that their children were exposed to smartphone relatively longer time.

4.3.   Smart Phone content characteristics

The smartphone was used for music and videos in most of the participants' children (73.3%) with a response of always. Gaming and social medias were reported to be used sometimes (52.8%) of the time.

Table 4.2: *Mobile exposure and time characteristics*

Items	Responses	Frequency	Percent
How frequently your child is exposed to smart phones	Always	0	0
	Sometimes	15	25.0
	Occasionally	44	73.3
	No	0	0
	Never	1	1.7
Is internet connection available for the provided smart phone	Always	53	88.3
	Sometimes	2	3.3
	Occasionally	2	3.3
	No	2	3.3
	Never	1	1.7
Is there any certain hours for smart phone usage	Always	6	10.0
	Sometimes	6	10.0
	Occasionally	17	28.3
	No	29	48.3
	Never	2	3.3
Does your child demand for smartphone usage	Always	30	50.0
	Sometimes	11	18.3
	Occasionally	14	23.3
	No	4	6.7
	Never	1	1.7
Do you think that your child is longer exposed to smart phone in a day	Always	0	0
	Sometimes	22	36.7
	Occasionally	34	56.7
	No	3	5
	Never	1	1.7

4.4 Impact of Smart phone on general behaviours

The smart phone use had impacted the general behaviours of the children. In the present study it was found that 35% of parents reported negatively for the changes of behaviours among children with the smartphone use. 3.3% of parents reported that it was positively impacted the behaviours.

Smartphone use didn't change the way children interact with peers and family members (65%). 5% of the parents reported that interaction skills were changed among the children. Children demanding for the phone use was noted occasionally in 15 % of the parents reporting. Majority of children (33.3 %) reported to stop phone use whenever they were instructed to do so. Reluctance to involve in household activities was absent among the participants.

Table 4.4.: *Smartphone use and behavioral changes.*

Items	Responses	Frequency	Percent
Does your child show behavioral changes while using smartphones	Always	2	3.3
	Sometimes	12	20
	Occasionally	13	21.7
	No	21	35
	Never	12	20
Do you observe any behavioral changes in the child's interaction with peers and family	Always	3	5.0
	Sometimes	4	6.7

	Occasionally	4	6.7
	No	39	65.0
	Never	10	16.7
Does your child demand for smartphone for daily routine activities like eating, bathing etc.	Always	7	11.7
	Sometimes	16	26.7
	Occasionally	13	21.7
	No	20	33.3
	Never	4	6.7
Does your child stop using smartphones when asked to	Always	20	33.3
	Sometimes	10	16.7
	Occasionally	9	15.0
	No	19	31.7
	Never	2	3.3
Is there any reluctance in indulging in household activities?	Always	1	1.7
	Sometimes	5	8.3
	Occasionally	7	11.7
	No	39	65.0
	Never	8	13.3

4.5 Impact of Smart Phones on other skills

Aggressive behaviours reported to be absent in majority of the children who used smartphones (50%). Around 21.7 % of the parents reported that children were becoming aggressive when the smartphones were withdrawn or not given. More than 68.3 % of parents reported that there were no changes with respect to the children's communication and interaction patterns. However, 11.7 % of the participants reported a change of communication patterns among the children. Academic performance was not impacted by smartphone use by the children. However, 38.3% of the parents reported that they received complaints from the teachers and school occasionally among the children who used smartphones.

Table 4.5.: *Smartphone use and communication and other skills*

Items	Responses	Frequency	Percent
Does your child turn aggressive when smart phone is not provided when asked for	Always	4	6.7
	Sometimes	11	18.3
	Occasionally	13	21.7
	No	30	50.0
	Never	2	3.3
Do you find any evident changes in **communication &** interactive patterns of the child	Always	0	0.0
	Sometimes	1	1.7
	Occasionally	7	11.7
	No	41	68.3
	Never	0	0.0
Do you find any changes in child's academic **performance** due to smartphone usage	Always	0	0.0
	Sometimes	0	0.0
	Occasionally	12	20
	No	26	43.3
	Never	22	36.7
Were there any complaints from teachers/school regarding child's behavior?	Always	1	1.7
	Sometimes	2	3.3
	Occasionally	23	38.3
	No	18	30.0
	Never	16	26.7

The cross – tabulation and tests of correlation coefficient were administered. Phi and Cramer test for nominal by nominal and Mcnemer – Bowker test for nominal by interval scales.

Table 4.6: *Cross tabulation and correlation coefficients on selected characteristics & demographic variables.*

		Age	Gender	Socioeconomic Status	Escreen time	Language Ages
Does your child demand for smartphone usage		.714 (0.591)	.032 (0.78)	.602* (0.007)	.514 (0.12)	.514 (0.045)
Do you think that your child is longer exposed to smart phone in a day		-.047 (0.322)	.002 (0.740)	-.183 (1.00)	.963* (0.005)	.264 (0.220)
Your child uses smartphone for the purpose of Music and Videos, Games	Phi and Cramer & McNem er and Bowker Test	.275 (0.91)	-.157 (0.04)	.177* (0.005)	.175 (0.008)	.205 (0.06)
Do you observe any behavioral changes in the child's interaction with peers and family		.156 (0.003)	.003 (0.821)	.209 (0.003)	.299* (0.000)	.228 (0.34)
Were there any complaints from teachers/school regarding child's behavior?		.003 (0.541)	.627 (0.02)	.085 (0.300)	.702 (0.77)	.761 (1.00)
Do you find any changes in child's academic performance due to smartphone usage		.521 (0.371)	.206 (0.003)	.147 (0.28)	.491 (0.001)	.219 (0.015)

Demand for the smartphone use correlated positively with the age in a positive with a value of 0.714 correlation coefficient. It was significantly correlated positive with socioeconomic status. Children with parents having higher income (>10,000PM) in the study were reported to demand for smartphone use all the time. Parent's opinion on exposure time to smartphones positively correlated with the e-screen time with coefficient value of .963 with a statistical significance of less than 0.005. Use of smartphones for videos, music and games were correlated positively to socio economic status. Behavioural changes positively correlated with e-screen time among children with a coefficient of .299 with a statistical significance level of less than 0.005. Complaints from teacher and school positively correlated with e-screen time, however it was not statistically significant. Academic performance changed in a positive correlation with respect to e-screen time with a coefficient value of 0.491 as illustrated in the table 4.6.

V.   Conclusion
The study with an objective to study the prevalent e-screen time on speech- language and cognitive, play skills focused on children from 2 years to 7 years. It documented the aspects of awareness among parents regarding smart phone usage with respect to usage time. The study revealed no impact of e-screen time on the developmental chart. The present study is in line with the earlier reported studies where in parents reported that watching educational television programs helped in the learning process (Peisner-Feinberg, 2004). However, the findings were in opposite to the studies Devitt, K., and Roker, D. (2009), where in it was concurred that screen time decreased academic achievement, fitness, lowered scores in prosocial behaviour and selfesteem, and instead increased victimization, lead to sedentary lifestyles. Findings limited itself to generalization due to the lesser samples and hence forth necessitated to study on larger populations.