Screen Time Before the Age of 2 and Preschool Language Development and Attention (A Field Study in Erbil City)

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ABSTRACT

Science argues that a toddler is expected to speak at least 50 clear words by the age of two. However, globally, infants' language delay and inattention have become a phenomenon. Many researchers have proven that early screen exposure can cause language delay and inattention problems. The objective of this study is to explore the contribution of infant heavy exposure to child-directed programs to language delay and inattention at preschool age. Eleven preschoolers participated in this qualitative study in Erbil city. Snow balling technique has been used to collect samples through Semi-structured interviews with the mothers of the preschoolers to gather detailed information on their exposure to screen and their language development and attention. The findings of this study reveal that both the duration of infant exposure to screens and the media type contribute to language delay and inattention in preschool-aged toddlers and children. Increased infant exposure for 2+ hours in a day to child-directed programs such as COCO Melon from 0-2 years old seems to have direct contribution to language delay, especially for infants with limited social interaction. However, infant exposure for less than 3 hours in a day to child-directed programs between 0-2 years old does not seem to strongly contribute to inattention at preschool age.
KEY WORDS: Inattention, language delay, screen time, preschooler, cognitive development

1. INTRODUCTION

According to Piaget's theory of cognitive development, two of the most important milestones of infant cognitive skills development for the pre-operational stage (2-7 years old) are language development and attention and response (Rosskopf et.al, 1970). Those skills refer to a set of intellectual abilities that researchers consider to be 'normal' for infants, toddlers, and preschoolers. In other words, it's the quantity of how much a child should be able to speak, understand and respond by a certain age.

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Researches from different countries globally, indicate that nowadays, infants' language delay and inattention have become a phenomenon in many countries. The phenomenon has attracted the attention of many researchers around the world to dig into the details, the factors, and the results of the problem in toddlers, preschoolers, and children at their later ages because language development is an indicator of brain development according to Piaget's theory of cognitive development (ibid).

Further, since the lockdown of COVID-19 in 2019-2020, screen use by infants and toddlers has increased worldwide. The phenomenon of highly increased use of screens by infants under two has also been noticed remarkably in the Kurdistan Region of Iraq (KRI) since the breakdown of COVID-19 in 2020. The use of screens is related to the development of technology and the spread of the internet globally. In other words, using phones, tablets, iPads, laptops, and television screens is not locational/geographical and it is less cultural but

rather global, i.e., technology has reached the majority of communities worldwide. Therefore, as a result of the COVID-19 lockdown, parents are noticed to spend less time or no time playing and/or talking to their infants and many keep their children and toddlers busy with screens. In many cases, media programs replace human interaction with infants which may negatively affect their language and attention development. Since the lockdown, we can observe at shopping malls, restaurants, family and social gatherings, etc. infants with telephones or tablets in their hands, spending hours watching media content although a few studies support the American Academy of Pediatrics (1999) recommendation that children under the age of 2 should not be exposed to television programs (Barr et al., 2010).

A personal observation of the researcher of her social network shows that there are many preschoolers at childcare centers, kindergartens, and primary schools (mostly grades 1 and 2) who cannot speak or speak very poorly with utterances while researchers argue that by the age of two a toddler is expected to speak about 50 clear words. However, in KRI many children these days do not speak at all by the age of two or even older in many cases. In addition, many toddlers with language delay also have inattention problems as has been observed i.e, they have poor attention to their social networks, they do not respond when their names are called, they do not point to the things that they want to get, they do not make eye contacts when they are spoken to, etc. "In the 2021-2022 academic years, we received about 2-3 preschoolers in each class of 30 kindergartners with language delay and attention problems but in 2022-2023 the number of such kind of children dramatically increased to about 6-8 children in each class of 30 kindergartners when we received new kindergartners!", said Zhwan Rashad Abdulla, a teacher in a public kindergarten in Erbil city in an informal interview.

An internet search and deeper online search through Zanco Journal of Pure and Applied Sciences showed no research on this topic in KRI. Therefore, this research will probably be new in the region on the impact of infant screen exposure to child-directed programs on language delay and inattention.

This study is going to examine infants' high exposure to media content (including both educational and non-educational child-directed programs) and its negative impact on language delay and inattention at the preschool age. It will specifically examine if the children who watch child-directed programs through screens from 0-2 of their age excessively are diagnosed with language learning and inattention difficulties after the age of 2 as part of their cognitive development. The research analysis of the negative impact of screen time before the age of 2 and preschool cognitive development will help decrease the phenomenon of screen use by infants with specific concerns about child-directed media content. The findings of the research will later, with high probability, be shared with media outlets, in a conference, and with governmental institutions to raise the awareness of parents about the risk of infants' excessive use of screens under the age of two on their language and cognitive development.

2. RESEARCH AIM

This research aims to explore the following two points:

- The impact of infant heavy exposure to child-directed programs (either simple educational or entertainment) under the age of two on their language development by the preschool age
- The impact of infant heavy exposure to child-directed programs (either simple educational or entertainment) under the age of two on their attention skills development by the preschool age

3.RESEARCH QUESTIONS:

1. What is the impact of high levels of exposure to child-directed programs at 0-2 years on the language development of infants and preschoolers?
2. What is the impact of high levels of exposure to child-directed programs at 0-2 years of age on the attention skills of preschoolers?

4. LITERATURE REVIEW

4.1 Cognitive Development

Many researchers have proven that early exposure to screens can cause language delay and inattention problems. According to Hart and Risley (1995), The period from 1-2 years is probably the most important stage of the life of human beings for fast learning of vocabulary which is based on the interaction between infants and their parents and/or caregivers. In other words, language development by infants is proven to be directly related to how much parents/caregivers interact and talk to their infants (Ibid).

According to Piaget's theory of cognitive development which was written in the 1920s, the development includes several stages of a child's life of which the first stage is sensorimotor. This stage of cognitive development starts from birth and lasts until two years of age (Biology Dictionary 2019). The two main progress of an infant's life at this stage are language development and attention and response to demands and events around them as important parts of a child's

cognitive development (Rosskopf et.al, 1970).

Language development is one of the most studied examples of cognitive development. Most scientists recognize that language develops by two important factors: genetics and environment. Language, then, further develops through a process of learning with continuous interaction and engagement between infants and their surroundings, especially their parents (Hart and Risley 1995). Infant attention and response to their surrounding is another part of executive functioning of cognitive development which rapidly develops by the age of two. (Ibid)

4.2 Heavy Screen Exposure and Language Delay and Inattention

According to the American INCE 1999, The American Academy of Pediatrics has recommended no screen media for children of 2 years of age or younger and not more than 1 hour from the age of 3 to 5 because screen time may cause delays in infants' cognitive development, including language delay (American INCE 1999, cited in Schmidt et al. (2009b)).

Many studies worldwide have examined the relationship between early exposure to television and/or screen media content including Youtube.com and other social media platforms to language development and attention. Some have concluded in their research that there is no association between infant exposure to media content and cognitive skills development after the age of two for those children who have watched screens for an average of less than two hours per day (Schmidt et al., 2009b). In their quantitative research, Schmidt et al. who studied 872 participants, examined the association between an average of 1.5 hours of infant exposure to television screens (which is less than what the American INCE 1999 has warned about), concluded that the exposure does not seem to be associated with language or visual motor skills at the age of 3.

Other researches, such as Barr et. al. (2010), Cliff et al. (2018) and, Al Hosani et al. (2023) more deeply established the correlation between infants' increased screen use and cognitive skills development by preschool-aged children. Barr et al., (2010) further argue that the negative outcome of early exposure to media on cognitive skills, especially language development is bound to the media content type. They further argue that infant exposure to child-directed programs does not delay language development but rather exposure to adult-directed programs does at the age of 4 for those children who had an average of 2 hours exposure per day during their infancy, i.e. under the age of 2. According to Barr et al., an average of approximately 70% of infants between 12- to 18 months watch child-directed programs which is considered to be a high rate.

Thus, in their research, Barr et. al. (2010) concluded that television content is related to the cognitive skills and language development of children. They found that screen exposure to children-directed programs did not have a negative impact on executive functioning but that heavy exposure to adult-directed programs did. That research fails to more specifically examine the association between the type of child-directed programs and cognitive skills and language delay at the age of 2 and older. The researchers generally studied the impact of infant exposure to child-directed programs in general and found no correlations. Child-directed programs vary and heavy infant exposure to different types of such programs may also result in negative impacts such as language delay and inattention. Christakis, Zimmerman, DiGiuseppe, and McCarty (2004) who studied 1345 child cases found out, that infant exposure to educational child programs would improve and help language development in contrast to the uneducational child programs which can negatively affect cognitive development later in preschool age. However, in their research, Linebarger and Walker found out that child informational and child entertainment viewing were not significantly related to expressive language production. In contrast, adult programming was positively related to both the rate of growth and acceleration of this rate; that is, the growth rate associated with viewing adult programs was 0.15 utterances per month with an additional acceleration of the growth rate of .007 utterances per month (slope d = 0.64, acceleration d = 0.88)" (PP.14 2005).

Furthermore, researchers have found a negative association between early television exposure at the age of 1-3 with attention problems at the age of 7(Ibid). Barr et al. (2010) argue that early exposure to adult-directed television content might disrupt attention regulation. They further believe that disruption in attentional skills is more likely to be caused by exposing infants to adult-directed programs rather than child-directed programs. Again, the researchers of this study fail to separate the heavy exposure of young minds to educational and entertainment child-directed programs such as ABC, number, shape songs, and COCO Melon songs, which as mentioned above may contribute to poor attentional skills due to the repetition of the same colorful picture, sounds, and similar child song rhythms. The researcher has observed from children in her personal social circle that entertainment and some educational child-directed programs do not seem to help the language development of infants and children but rather cause delays.

5. METHODOLOGY

5.1 The Community and Research Sample:

A qualitative method of data collection has been used in this research. Eleven mothers of eleven preschoolers (7 boys and 4 girls) participated in this study. Five of the preschoolers physically participated in this study. Three of whom were monitored each for 1 hour at the child care centers where they used to go every day. The monitoring sessions which were led by the researcher were organized by the mothers of the 3 children, the managers of the child care centers, and the teachers at those centers. The purpose of the monitoring was to observe the language the preschoolers used, the number of the clear vocabularies they used along and monitoring their cognitive skills during the sessions. The two others of the 5 preschoolers were monitored at their homes through a visit by the researcher for the same purpose mentioned above.

5.2 Data Collection Method:

The snowballing technique has been used to find out the research cases which stood out to be the most effective and fastest technique for data collection because many mothers of preschoolers with language delays at language therapy centers refused to talk to the researcher when they were approached and asked to be taken as a research sample. The parents preferred to have the language and inattention issues of their children uncovered by their surroundings.

A semi-structured tool has been used to interview the voluntary mothers of the 11 preschoolers (i.e. the research participants) aged between 2.5- 4.5 years old who had been exposed to screen between 2 to 7 hours in a day and were noticed with language delay. The tool was developed by the researcher depending on Piaget's theory of language and cognitive development (including attention) which identifies the milestones of infant cognitive development at specific ages of the child life cycle (Rosskopf et.al, 1970). She linked the theory to the American Academy recommendation of 1999 on infant screen limitation before the age of 2 which has been proved to negatively affect infant language development (Barr et al., 2010). The semi-structured interviews included a combination of a pre-determined set of open-ended questions which prompted the interview discussions, observation and some non-determined questions for exploring further information on specific themes and responses during the interviews. The interviews were conducted face-to-face with 2 of the mothers and online call, using WhatsApp application with the rest of the 9 mothers. Each interview took about 40 minutes during which 27 structured questions and a few more non-structured questions (that popped up during the interviews) were asked to the interviewees. All the interviews have been recorded with the permission of the interviewees. Then, the records have been transformed into written texts on paper and kept as an academic record. The names and the voice records of the participants in addition to some sensitive data about a few of them have been kept confidential.

All the interviews have been conducted between September 10 to 30th, 2023. The 11 cases are residents of Erbil city, Kurdistan Region of Iraq.

5.3 Research Challenges:

During this study, the researcher faced the following challenges:

- It was quite difficult to engage in cases of toddlers and preschoolers with language delay and the symptoms of cognitive development issues in this research although there are many such cases around in Erbil city. There are several centers for speech therapy and strengthening cognitive development for toddlers and children in Erbil city; however, when the researcher approached the managers of three of those centers through telephone calls for the help of allowing some of their cases that were relevant to the research topic to participate in this research as cases, all the three managers replied that the parents of their cases would be rejecting or quite reluctant to participate in researches because (as the mangers mentioned) they preferred to keep the case of their children private and confidential at the centers only. Two of the managers believed that the parents felt ashamed of talking about the language delay of their children as they felt that it was their fault to expose children (when they were infants) to screens which was highly assumed to be the cause of the language delay problem in their children. The researcher also approached two childcare centers for the same purpose explained above. Only one of them was ready to connect the researcher with the parents of 2 preschoolers with language delays. To overcome the challenge, the researcher, used the snowball method of data collection among her social network and the network for a few cases.
- The mixture between the symptoms of Autism Spectrum Disorder (ASD) has been another difficult challenge of this paper. Since many children with ASD condition have communication problems, some parents who had not had their children diagnosed by doctors with ASD condition thought that their children had only speech delays. During 3 interviews with mothers of three

cases with language delay, the researcher recognized some symptoms of ADS in those children and canceled the interview. As a result, the researcher had to exert double effort to make sure to engage children with cognitive development problems and language delays only. In other words, the researcher had to add some extra questions to the interview structured questionnaire to recognize the symptoms of ASD in the cases if there were, to be able to decide to exclude them if the symptoms were recognized as the researcher has some academic teaching experience on ASD.

- Another challenge of this research was the lack of accurate data about children with language delays and cognitive development issues. The researcher exerted a lot of effort to find other related research conducted in KRI to use its data, searched on the official website of the KRI directorate of data, and approached three centers of speech therapy but could not find accurate data on the topic.

6. RESULTS

6.1 Participants:

There have been 11 preschooler participants with language delays (7 boys and 4 girls) aged between 2.5-4.5 years old. To collect Information, the mothers of the 11 participants were interviewed each for 40 minutes regarding their child's gender, age, the status of language and inattention issues and the age at which their child first started watching screens, the amount of time the infants spent viewing screens. Further, the mothers were asked about the type of program content that their children watched.

Among the 11 participants, 5 preschoolers (45%) were the only child of the family and the other 6 (55%) had either older or younger siblings. Ten of the 11 preschoolers were from nuclear families, i.e. small families of parents and children living in one residential. Only 3 (27%) of the preschoolers went to child care centers after the age of 2 and 5 (45%) of them who are now between 4-5 years old went to kindergarten by the age of 4.

6.2 Mothers of the preschoolers:

Only 3 (27%) of the mothers of the 11 preschoolers were part-time working mothers who left their preschoolers when they were infants/toddlers with their grandparents. The rest of the mothers were housewives who looked after their preschoolers themselves. Ten (91%) mothers of the 11 preschoolers stated that they spent little time, approximately 1 hour in 24 hours, socially interacting, speaking and playing with their preschoolers, especially when they were between 6 months to 3 years old.

The parents of 10 (91%) preschoolers noticed language delays in their children between the ages of 2-2.5 years old. However, among those 10, the parents of only 3 (27%) decreased their toddlers' exposure to screen time to less than 2 hours after the age of 3.

Parents of only 4 (36%) preschoolers had knowledge about the correlation between exposing infants to high screen times and language development before their preschoolers faced language delay issues. Others mentioned that they did not have any knowledge of the correlation unlit they realized that their children had language delays by comparing them to children of their age and/or when their children were diagnosed with language issues by specialists.

6.3 Screen Time and Device Type:

Eight (73%) of the preschoolers were exposed to screens when they were at an average age of 7 months (2 of them at the age of 5 months, 2 at 6 months, 1 at 7 months, 2 at 8 months and 1 at the age of 10 months). The rest of the 3 (27%) preschoolers started watching screens when they were 1-year-old or older.

Before the age of 2, five (45%) of the preschoolers watched screens for an average of 2 hours daily (for an average of 5 days in a week). The other 6 (55%) preschoolers spent an average of 4+ hours watching screens daily for an average of 5 days in a week.

Between the ages of 2 and 3, 8 (73%) of the preschoolers spent an average of 4 hours using screen time daily for 5 days per week on average. The remaining 3 (27%) preschoolers watched screen for approximately 1 hour per day for an average of 5 days in a week.

Three (27%) of the 11 preschoolers watched Television screens, 7 (64%) of the 11 ones watched Television and mobile phone screens, and 1 watched only tablet screens.

6.4 Program Type and Media Content:

The media content and the program type that the preschoolers watched from 0-2 years old of their age are classified into child-directed entertainment, educational, and programs that have a mixture of entertainment and educational content at the same time, such as learning ABCs, numbers, days of the week songs, etc.

Between the ages of 0-2 years old, 9 (82%) of the preschoolers watched both entrainment and a mixture of programs of entertainment and educational content. Two others watched only entertainment program types. However, from 2-3 years of age, 10 (91%) preschoolers were exposed to a mixture of programs of child-directed entertainment and educational content. Among the total

preschoolers, 2 of them were also exposed to adult-directed programs.

6.5 Language Development:

Two (18%) of the research preschoolers uttered less than 10 words by the age of 2.2 years old and 3 (27%) others by the age of 2.5 years old. Those 4 preschool participants were able to make simple sentences of 3 words by the age of 3 only. Some of them learned those 10 words from screens. Six (55%) of the 11 preschoolers started their first few clear words by the age of approximately 3 years. Three among those 6 participants were able to make simple sentences of 3 words by the age of 3.5 and the other 3 (27%) were not able to make sentences before the age of 4. Only 2 (18%) of the 11 preschoolers had 2nd-degree family members with genetic language delay.

6.6 Attention:

Five (45%) of the preschool-aged toddlers and children did not have noticeable attention issues by the age of 2. They were able to make eye contact before the age of 2 and socially interact. However, 6 (55%) preschoolers had inattention by age of 2 and older. In other words, they were not able to respond when their names were called before the age of 3 or 4. Those with inattention also could not make proper eye contact until they reached the age of 4 and older.

7. DISCUSSION

The main coding dimensions used for these analyses included total screen time in hours, the age of the preschoolers when watched screens, and the program content and type (child-directed educational, entertainment, mixture of educational and entertainment) that they watched.

7.1 The Impact of Infant Screen Exposure on Language Development

This research reveals the strong impact of heavy infant exposure to screen on language development by the preschooler age and earlier. The total of the 11 preschoolers who participated in this study had language delays, i.e. could not speak or were able to speak less than 10 words by the age of 2.

According to the data collected on the preschoolers, 5 (45%) of them watched screens for an average of 2 hours in one day and 6 (55%) of them spent an average of 4+ hours watching screens in one day for an average of 5 days in a week when 91% of them were younger than 10 months old. That finding justifies the guidelines by The American Academy of Pediatrics which has recommended no screen media for children of 2 years of age or younger and not more than 1 hour from the age of 3 to 5 (American INCE 1999, cited in Schmidt et al. (2009b).

Further, the language delay of the preschoolers explained above did not improve noticeably by the age of 3 because the children continued watching screens between the age of 2-3 years old, and the screen time exposure was even increased for 8 (73%) of the preschoolers who had an average of 4 hours using screen time use in 1 day for 5 days per week on average. although the remaining 3 (27%) preschoolers watched screen for approximately 1 hours per day for an average of 5 days in a week. That is because all the preschool participants in this research watched child-directed programs for more than 2 hours a day between 5 months to 2 years of age.

Those research findings support the previously stated research of McHarg G. et al. which revealed that, "concurrent screen time was not significantly associated with children's EF [Executive Functioning] such that there appeared to be no direct relation between screen use and EF when children were 36 months of age …; however, screen time ….. (when children were 24 months) was negatively associated with children's EF at 36 months" (Pp: 5, 2020)

More importantly, the content that the research preschoolers with language delays watched from 0-3 years of age was a mixture of child-directed educational and entertainment programs. The content of the programs was generally learning ABC letters, numbers, days of the week, etc. for the educational programs and baby and child songs for the entertainment programs along with a few cartoon films. More specifically, between the ages of 0-2 years, 9 (82%) of the preschoolers watched both entrainment and a mixture of programs of entertainment and educational contents for an average of 3+ hours a day for 5 days a week. The other 18% of the preschoolers watched only entertainment program types for an average of 3+ hours in a day, 5 days in a week. In addition, from 2-3 years of age, 10 (91%) preschoolers were exposed to a mixture of programs of child-directed entertainment and educational contents.

In their research, Barr et. al. (2010) concluded that television content was related to cognitive skills and language development of children but that screen exposure to children-directed programs did not have a negative impact on executive functioning but heavy exposure to adult-directed programs had. In contract this research paper, reveals that heavy infant exposure to either entertainment of educational child-directed program contents has strong negative influence on child language development by the age of preschool, i.e 3-5 years old. The impact was initially noticed by the parents

of this study's participants when their children were between the ages of 2 to 2.5 years old.

The findings, further reveal that the most watched child-directed program, of mixed entertainment and educational, by 9 (82%) out of 11 (100%) participants from 0-2 years old has been the COCO Melon YouTube channel which is an American free education and entertainment channel. Therefore, increased infant exposure to some child-directed programs such as the COCO Melon channel from 0-3 years seems to have a negative impact on language delay for all 82% of participants. That finding is in contrast to the findings of Barr et al., (2010) research, which strongly argues that infant exposure to child-directed programs does not delay language development but rather exposure to adult-directed programs does at the age of 4 for those children who had an average of 2 hours exposure per day during their infancy, i.e. under the age of 2.

On the other hand, the discussion of this study supports Linebarger and Walker's (2005) findings that educational child-directed programs do not necessarily seem to help child-brain development when infants are highly exposed. The mothers of 91% of the preschoolers mentioned that their children used to either watch the screen or play alone regularly and they had limited time socializing with their siblings or other children. Thus, the negative impact of screen use on language delay that this research has shown is most probably due to the heavy infant exposure to screens in place of engagement with human interaction and socialization. That finding is inline with the findings of Alroqi H., Serratrice L., Cameron-Faulkner T. which indicated that "children whose caregivers co-engaged with them in viewing/using screens and verbally interacted with them while co-viewing had larger expressive and receptive vocabulary size than their counterparts who engaged in solo media use or had passive non-interactive co-viewing". (PP:22, 2022). Infants need humans to socialize with to develop cognitive skills as a consequence rather than screens. Lack of or limited infant interaction with parents and other children may have lifelong consequences of little cognitive development, including language development and attention skills.

7.2 The Impact of Infant Screen Exposure on Attention skills

Research results show 2 findings of the influence of infant exposure to screens before the age of 2 on attention skills. The first finding does not show a high impact of infant exposure to screens before the age of 2 on attention skills for those preschoolers who had watched screens for up to 3 hours in a day. Five (45%) of the preschool-aged toddlers who were exposed to screens for 3 hours or less in a day did not have noticeable inattention by the age of 2. They were able to make eye contact before the age of 2 and older. Further, they were socially interacting within the normal range (i.e. playing with their siblings and children of a similar age or new people if they were around). Contrary to this, the second finding reveals that the rest of the 6 (55%) preschoolers who had watched screens for more than 3 hours in a day between 0-2 years of age with limited human and social interaction had inattention issues. They were not able to respond when their names were called and they were not able to point to things around them when they needed to before the age of 3 and some not even before the age of 4. They also could not make proper eye contact until they reached the age of 4 and older.

It is important to mention that 5 (45%) among those 6 (55%) preschoolers with inattention had watched screen for 3+ hours in one day before the age of 2 while the rest of the preschoolers who did not have inattention issues had watched screens for less than 3 hours in a day before the age of 2. Only 1 (9%) out of the 11 (total research participants) had watched screens for more than 5 hours in a day and still had convincing attention by the age of 2.

Thus, screen viewing for an average of 3 hours or more in a day for 5 days in a week seems to have negative effect on child attention skills and contributes to child inattention.

8. CONCLUSION

This research study argues that high exposure to screens for 2+ hours in 1 day for an average of 5 days in a week has a negative effect on language development of the preschool age when infants are exposed to child-directed programs between 0-2 years of age. Further, infant heavy exposure for 3+ hours in a day to screens between 0-2 years also contributes to inattention in preschool-aged children. More specifically, the research findings reveal that the COCO Melon channel which is an American free education and entertainment child-directed YouTube channel has a strong contribution to language delay for 82% participants of this research who used to watch its programs between 0-3 years of age.

Further research is needed to study the effects of specific and very popular child-directed programs such as the COCO Melon YouTube channel, Ibaby TV, Tyoor Al Janna TV, and Chuchu TV to determine their negative impact on infant cognitive skills development especially when infants are exposed to them before the age of 2 and when their human and social interactions are limited. All the mothers that participated in this study, highly recommended that other mothers prevent their infants,

especially between the ages of 0-3 from using screens so that they can normally grow and develop their cognitive skills as children. Public and Parent awareness programs and campaigns are crucial in Kurdistan Region of Iraq with regard to infant screen use and its long-term impacts on children's cognitive skills development and on their later life and school performance.

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APPENDIX

Semi-Structured Questionnaire:

1. Age of child
2. Sex of the child
3. Do you have other children? Younger or older than X?
4. Is a working mom? How much time leave the child? With whom?
5. Do you have nanny/maid at home? Local or foreigner? Speaks your native language?
6. How much time do you spend with the child since birth? Play? Speak?
7. Does the child go to nursery? Since when?
8. Can your child speak clearly?
9. When did s/he start speaking? Uttering clear words?
10. Does your child respond when you call her/him or when you order him? How quickly if yes?
11. Does your child make eye contact?
12. If No, what do you do to get his attention
13. Does your child interact with other children?
14. When did your child start watching media contents?
15. Did anyone from your surrounding inform you about your child's inattention/language delay?
16. What do you think has caused the language delay?
17. What type of device did the child use?

TV Mobile Tabs/Ipads

18. If the child watched Adult-directed:
a. Name of the programs?
b. Hours watched in 24hrs?
19. If the child watched Child-directed:
a. Name of the programs?
b. Hours watched in 24hrs?
20. How many hours in total did your child used media screen in a day (including both child-directed and adult-directed programs if any)?
21. Does your child still watch media screens?
a. What type of program?
b. What type of device does your child use nowadays?
22. If the child goes to nursery now: do you notice language development of your child after he went to nursery?
23. Did you or your partner have information about the association between screen time and above problems?
24. Have you taken your child to any specialist for therapy? If No, why?
25. If yes, how often? Have you noticed any positive change in your child's problem?
26. If you have other children, is X your only child with inattention/language delay?
27. What is your advice for others moms who have infants and may expose them to screen?