

The Interaction of Infants with The Television, Smart Phone and Tablet Computers

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Abstract - The present study aimed to investigate the interaction of infants, who are emphasized to refrain from the use of technological materials, with the technology. In the study, the views of the parents on the significance of the television, phone and tablet computers in infant's life, the conditions under which the infants interact with these communication technologies and their behavior during these interactions were investigated. The study group included 14 infants and their mothers reached using convenience sampling method. In the present qualitative study, data were collected with a semi-structured interview and video recording methods. Thus, it was determined that the interaction between the infants and the television started on the 5th month. It was observed that the infants interacted with their smart phones and tablet computers daily and their mothers utilized interesting features of technological instruments to attract the attention of infants, especially during feeding, and to amuse the infants while they were busy with another task. It was concluded that mothers did not have adequate knowledge on the advantages and disadvantages of technological material for the infant. It was determined that infants demonstrated great interest in technological material due to the influence of their visual and auditory attractiveness, they particularly perceived smart phones as a toy and mimic adults in using smart phones.

Keywords-Infants, television, computer, technological material.

I. INTRODUCTION

Technological advances are an indispensable part of everyday life. Individuals of all ages and institutions in the society utilize technological materials for various purposes, and at the same time, this is a vital necessity. The communication approaches of individuals who utilize new technologies have changed with the digital age as well [1]. The use of smartphones became indispensable in everyday life. In Turkey and in the world, individuals started to fulfill most of their needs through social media that now has over 2.7 billion users.

The age of utilization of technological materials varies independent of the competency of the individuals or the warnings about their hazards to human health. Technological developments

also affected the health of individuals, their familial relationships and parenting roles [2]. Certain parents utilize technological material since they consider that technological material contribute to child development and others as support in difficult situations. In particular, technological material can be used for reasons such as feeding and silencing, engaging the child, and allowing the child to sleep and talk [3]. Infants who encounter technological material with several attractive features from birth would be affected by these environmental factors in different ways. The time period that infants and children use smartphone and tablet and adequacy of the utilized applications for their age could affect them positively. However, the opportunities provided by the technology are accompanied by certain risks. When the web sites, e-mail and chat rooms are not controlled, these could lead to serious problems during the 0-6 age period, when the subconscious is developed. In these ages, the negative effects of useless or violent visuals would be high when compared to other periods [4]. The child who eats while hypnotized by the videos she or he watches on the TV OR the smartphone and is not aware of what she or he eats would be negatively affected, while she or he could learn certain concepts such as numbers and colors in the meantime [5]. It is considered that the development areas of the children who were exposed to technologies during the play period would be negatively affected. It was observed that the use of technology was at the root of autism and pervasive developmental disabilities [6, 7].

Social media also introduced the problem of smartphone dependency. To be engaged in a certain behavior through isolation from the real world, the repetition of this behavior and the difficulties related to its control etc. are considered as a dependency. Smartphone dependency or technology dependency exhibit similar characteristics to drug or substance abuse [8, 9]. It is important for the parents to provide a role model to acquire right habits since the behavior acquired in these ages through imitation would become a habit over time [10]. The internalization of the acceptable behavior by the child, the encouragement and guidance of the family, and the support of the child's behavior would lead to retention of these behavior [11]. Individuals who are exposed to the use of technological material since infancy would be likely to use technologies easily in the future, however they could also develop technology dependency. Thus, introduction of technological tools at an early age could affect mental, psychological, psycho-social, motor and language development positively or negatively, while preparing them for the future. As a result, parents and teachers should develop themselves on children's computer use [12, 13, 14, 15].

The present study aimed to investigate the interaction of infants,

who are emphasized to refrain from the use of technological materials, with the technology. In the study, the views of the parents on the significance of the television, phone and tablet computers in infant's life, the conditions under which the infants interact with these communication technologies and their behavior during these interactions were investigated.

II. METHOD

The study group included 14 infants and their mothers reached using convenience sampling method. Infants between 4 months and 24 months (mean age: 14.2) old were included in the study (7 female and 7 male infants). In the present qualitative study, data were collected with a semi-structured interview and video recording methods. A semi-structured interview form that included 8 questions was used to determine the views and behavior of the mothers on the significance of television, smart phone and tablet computer use in the daily life of their infants. The questions on the form were "Does your child watch television, use a smartphone or tablet computer? How long does your child interact with these materials every day?", "Which programs your child watches on television, and the applications your child is interested in tablets computer? Why?", "Would you encourage your child to watch television, use a smartphone or tablet? Under which circumstances?", "What do you think about the benefits of television, smartphone or tablet computer use for your child?"

Interactions of the infants with television and smart phones were recorded on video. The data were analyzed with content analysis conducted on the interview forms video recordings. The collected data were interpreted based on themes. In data coding, 4F means 4 months old female infant and 22M means 22 months old male infant. The validity was established by providing direct quotes of the views of mothers.

III. FINDINGS

The interactions of infants with television and tablet computers were determined based on the interviews conducted with the mothers. The views of the mothers demonstrated that all infants in the study group interacted with TV and tablet computer except for one infant (12E). It was determined that the interaction of the infants with television and tablet varied between unlimited time and 5 minutes. It was determined that infant 4F interacted with the TV for 30 minutes, 9F for 60 minutes, and 22M for 1-2 hours, while 10M and 12M interacted with smartphones and tablets for 1-2 minutes and 10F and 24M interacted with smartphones and tablets while eating food. On the topic, the mother of 23M stated the following: "There is no time limit. He is in interaction with the TV when he does not play." The mother of 12M stated that he interacts with the tablet for about 2 minutes during the time it takes to play the game. The mother of 10F stated that they used tablet computer during the mealtime.

Table 1: Frequency distribution of TV-tablet preferences of the infants and mother attitudes *

Infant's	TV Interaction	f	Tablet Interaction	f
Interest	All	3	No specific content	1
	Commercials	8	Videos	3
	Cartoons	4	Cartoons	2
	Shows with music	3	Pictures	3
Reason for Preference	No preference	2	Imitating the parent	2
	Changing colors	5	Colors	4
	Changing sounds	5	Animals	1
	Changing movements	4	Movements and music	5
Mother's Encouragement	Yes	6	Yes	3
	No	8	No	11

*More than one response.

As seen in Table 1, the infants mostly preferred commercials on TV (N = 8), followed by cartoons (n = 4) and musical / singing shows (n = 3). It was observed that certain infants did not prefer specific programs (n = 3). On the lack of a preference, 20F's mother stated that she would watch whatever they watched on TV as a family. Based on the properties of the programs watched, it was observed that changing colors (n = 5), sounds (n = 5) and movements (n = 4) were preferred by the infants. On the topic, 8M's mother stated the following: "He prefers it due to the interesting and constantly changing sounds." 22M's mother stated that her child preferred it due to the music and movements. It was observed that the preferred content in smartphones and tablets included videos (n = 3) and photographs (n = 3), followed by cartoons (n = 2). The reason behind the infants' preferences were movements and music (n = 5), changing colors (n = 4) and imitating parents (n = 2). On the topic, 4F's mother stated the following: "She is not interested in anything particular, she just watches." 10M's mother stated that "The bright colors on the screen and the changes that occur when he touches it attract his attention." 12M's mother stated that her child imitated the parents.

Eight mothers stated that they did not encourage their infants to watch TV and 11 stated that they did not encourage their infants to interact with smartphones and tablets. Among the other mothers who stated that they encouraged their infants, 4F's mother stated the following: "I allow her to watch television when she is flatulent. She forgets the pain when she is concentrated on the TV. Sometimes, I turn it on when I leave her alone, so that she would not cry," 24M's mother stated the following: "I encourage him to watch educational programs to improve his concentration. If I have a lot of chores at home, the TV works as an entertainment. I use the smartphone during feeding and to induce sleep."

When mothers were asked about their views on the advantages and disadvantages of television, smartphones and tablets, they stated that these devices were both beneficial and harmful. Thus, 10M's mother stated that "The benefit of the television is the fact that it entertains the child and I could find the time to do housework. Its disadvantage is the fact that it desensitizes the child about the events and objects in the environment," the mother of 10F stated the following: "I think some children shows are beneficial for child development and education," 8M's mother stated that "I do not think it is beneficial. I try not to have my child watch too much television,

but as far as I can see, the television fixes hyperactive children at one point. Children who normally make sounds, play, or speak stop doing these when they watch the TV. Thus, it hurts children more than its benefits. In addition, smartphones emit radiation." Mother of 12M stated the following: "The phones and tablets have no benefits for children younger than 4 years old, they can be used for educational purposes after 4 years." 20F's mother stated the following: "Educational programs support language and conceptual development. Social development is inhibited." Mother of 24M stated the following: "The child learns the concepts, develops empathy. It inhibits socialization, use of the brain and imagination."

Video analysis of infants' interaction with television and smartphones for 1-2 minutes demonstrated that infants stared at the TV steadily and their interactions with the environment was interrupted for a short time. In their interaction with the smartphones, it was observed that they exhibited the behavior of moving their finger up and down on the screen, imitating the adults, and utilized the phone as any material by putting it in their mouth and shaking it. When compared to the television, it could be argued that the infants watched the images on the smartphone closely and more carefully.

IV. RESULTS AND DISCUSSION

In the present study, it was determined that the interaction between the infants and the television started on the 5th month. It was observed that the infants interacted with their smart phones and tablet computers daily and their mothers utilized interesting features of technological instruments to attract the attention of infants, especially during feeding, and to amuse the infants while they were busy with another task. It was concluded that mothers did not have adequate knowledge on the advantages and disadvantages of technological material for the infant. It was determined that infants demonstrated great interest in technological material due to the influence of their visual and auditory attractiveness, they particularly perceived smart phones as a toy and mimic adults in using smart phones.

The study findings demonstrated that infants interact with technological material at home environment or are encouraged to use technological material with the influence of family members. This could lead to positive and negative consequences. Thus, the need for the society to acquire digital citizenship or digital literacy skills in early ages becomes obvious. It is important for individuals to know what to do or not to do in the digital environments [16]. It can be argued that this should be considered during the development and implementation of future curricula when it is considered that the future children would have technological material experiences from infancy.

The effects of technological material such as fulfilling everyday needs and facilitating learning improve their popularity. Especially when it is considered that children are eager to learn and experience several things during preschool period, it can be argued that the effect of technological instruments on the acquisition of positive behavior is indispensable. As it is considered as a facilitator of learning computers, the topics on internet and computer use are addressed in projects developed starting from the pre-school period in foreign countries [17]. In a study conducted with college students, Işık and Kaptangil (2018) determined that social media use increased smartphone dependency. Kenanoğlu and Kahyaoğlu (2011) found that 31.1% of 4-6 years old pre-school children used internet every day, 27.8% used internet once a week, 6% used internet once a month in a study conducted on internet use of preschool children in Diyarbakir province, however it was also found that 30,1% of the

children did not use the internet. In a study conducted by Gündoğdu et al. (2016), it was determined that 9 out of 102 children watched only TV, 35 used both the TV and computers, 31 used the TV and tablet, and 27 used television and mobile phones [18]. Kızıltaş ve Ertör (2018) had investigated the parents' opinions about the smartphone use of preschool children. Findings from the research are; the vast majority of families allow their children to use their smartphones, their children are busy with their smartphones every day of week (n=34), 3-4 times a week (n=31), once a week (n=17), families think of the smartphone as an ideal vehicle for occupying their children [19]. Based on these data, it is possible to observe the extent the technological materials affect the children. The internet, which is widely used by the children, could open new doors for children and offer new experiences for the families. However, if attention is not paid, excessive use could lead to technology dependency among children. This could be a major problem for the child, the family and the teacher.

In conclusion, it was determined that there were positive and negative effects of interaction with technological materials during infancy. The positive effects of television, smartphones and tablets, which are effective on the support of developmental, could be utilized. In particular, 0-2 years old infants could not yet make their own choices. They are only exposed to the preferences of the responsible adult. Interests and habits occur as a result of long-term exposure. Here, the purpose and the method that the technological materials are used are significant. Perhaps, it would not be a bad idea to use a smartphone or tablet computer during infancy to play music that would allow the child to fall asleep. However, their excessive use that could affect the mother-infant relationship negatively could lead to problems when the mother is busy with another task and directly exposes the baby to these materials. It should not be forgotten that physical contact and visual proximity may lead to certain physiological problems, and as a result of prolonged exposure, the baby may develop attention and perception disorders.

V. RECOMMENDATION

It is possible to conduct studies for educators and parents on technology use in educational institutions. The use of technological material by children from infancy could be addressed. The effects of the attitudes of educators and parents as adults on child development could be emphasized. Both children and families could be informed about digital citizenship and the prevention of technology dependence among children.

The present study was conducted with a small group and on the infancy period. A similar study could be conducted with a different sample group and as a longitudinal study. In addition to qualitative data, methods that would allow the collection of quantitative data could be utilized in future studies.

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