

LEARNING FROM SCREEN MEDIA IN EARLY CHILDHOOD: A DOUBLE-EDGED SWORD

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ABSTRACT

The present study aims to examine the long-term process of learning from screen in early childhood in the child's familial environment. Specifically, it focuses on the process of screen-aided acquisition of a second language by a young girl (here called Dana) who was 12 months old at the beginning of the study and three years old towards its end. The family was selected for in-depth analysis because of the great emphasis that Dana's mother placed on use of touchscreen media to support her daughter's learning of English. First and foremost, the research findings demonstrate the limitations of this use, especially when it is not accompanied by appropriate parental mediation. The study shows that use of a smartphone for learning purposes without the mother's instructive mediation was barely able to advance Dana's English acquisition that was limited to phonetic elements only. Moreover, the findings reveal that with her mother's encouragement, Dana acquired highly problematic smartphone use habits that could be harmful to her health and development. Hence, the research findings call for increasing media literacy among parents of infants and toddlers who need to know how to support the development of appropriate media habits among their young children.

Key words: infants and toddlers, early childhood, second language learning, touchscreen media, smartphone, parental mediation.

Introduction

As the oldest electronic device in young children's lives, television is the most widely studied screen medium regarding the learning potential of screen viewing in early childhood. The extensive literature of the past few decades shows that television could contribute to advancing cognitive development in early childhood, if the screen content is adapted to the cognitive skills of young viewers, such as emphasis on animals and young children, slow-moving objects, female-voice narration and a simple and didactic plot (Christakis, 2009; Lemish, 2015; Linebarger & Walker, 2005). This being said, up to age 30 months, toddlers better understand new material when it is explained to them by a real person rather than by a screen figure. This phenomenon is known as screen deficit and is explained by infants' difficulty to "translate" two-dimensional information on screen to its three-dimensional representation in life (Barr, 2013).

One essential means of reducing young children's screen deficit is parents' instructive mediation, aimed at providing explanation and interpretation of the images, situations and behaviors they see on screen (Pempek & Lauricella, 2017). Accordingly, for infants and toddlers, parental mediation can turn television into a "talking picture book" (Lemish & Rice, 1986), if parents carry out deductive activities that while viewing (Lemish, 2015; Strouse, O'Doherty, & Troseth, 2013).

With regard to learning from touchscreens in early childhood, initial empirical evidence indicates that interaction with adults can take place through the screen as well. For example, in an experiment that examined two-year-olds' language learning via tablets, it was found that the toddlers succeeded in doing so when there was interaction between them and the on-screen actor (Kirkorian, Choi, & Pempek, 2016). Another experiment conducted among children aged 2½ to 3, that examined learning a new activity, indicated that when toddlers were given instructions via the interactive screen content, they succeeded at the objective in a manner similar to toddlers who received the same instructions from a live actor (Lauricella, Pempek, Barr, & Calvert, 2010).

Despite its contribution to better understanding touchscreens' learning potential among young children, the current literature displays several substantial limitations. First, most of the studies were carried out among children at the upper bound of the toddler age group and none addressed touchscreen learning by children under age two. Second, these studies pointed only to the touchscreen learning potential examined under laboratory conditions, indicating nothing about long-term screen learning in the children's natural environment. Finally, instructive mediation was conducted by actors, who followed researchers' instructions regarding specific mediation to be carried out. As such, we lack empirical data regarding the manner in which parents fulfill this role spontaneously in everyday life.

One pioneer study on this topic is ethnographic research that observed a family with two children, aged two and four, over an eight-month period (Nevski & Siibak, 2016). The study documented how the two-year-old toddler was using touchscreens to learn a second language with her mother's support. However, the study lacks any indication of how the child's digital activities were mediated and does not specify the frequency and duration of such mediation. Moreover, the study results did not stipulate whether touchscreen use actually engendered or facilitated language learning, nor are we aware of whether and how the toddler used the touchscreen without parents' help.

The present study attempts to fill gaps in the literature by being the first to examine the long-term process of learning from the screen in early childhood in the child's familial environment. More specifically, the research objective was to examine the evolving media habits and preferences of a baby girl (here called Dana) over a period of two years and her mother's screen-related practices and mediation efforts aimed at encouraging Dana's acquisition of a second language by facilitating her media exposure.

Methodology

The methodology selected for this research is based on a case study of one family that allows in-depth comprehension of a unique social phenomenon from a holistic perspective (Stake, 1995; Yin, 2014). The family belongs to a sample of ten families with infants aged 4-12 months at the beginning of the study and 28-36 months by its end. Research was conducted in Israel between 2016 and 2018. The family on which the present article focuses was selected for in-depth analysis because of the great emphasis that Dana's mother placed on use of screen media to support her daughter's learning of English as a second language. Dana's parents are in their early forties, with academic degrees and white-collar professions. At the outset of the study, there were three children in the family (10, 7 and 1 year old).

The study continued for two years and included six observations (each lasting three hours), conducted at the family home every four months. Furthermore, when Dana was 30 months old, one observation was held from 8:00 AM until 9:00 PM in "a day in the life" format (see Gillen et al., 2007). All observations were filmed by video and documented by protocols that contained detailed descriptions of all Dana's media-related behaviors, as well as her interactions with family members. Additionally, in-depth interviews were conducted with Dana's mother every half year, for a total of five interviews. The research was approved by the research ethics committee of the institution where it was conducted. Dana's parents signed a consent form prior to the study and agreed to film Dana in all observations. The video content collected during the study is stored on a password-protected hard disk with the first author having exclusive access to these data.

Thematic analysis was applied to transcripts of the interviews and observation protocols as is customary in qualitative research (Lindlof & Taylor 2002; Strauss & Corbin, 1990). The principal themes that emerged from our reading of the research materials were Dana's uses of different media devices, her media-related skills and changes that occurred over time, Dana's mother's attitudes towards media's positive and negative effects on children's development, her mediation efforts and her uses of media as a parenting tool. The themes were further refined and exemplars of quotations from the transcripts and protocols selected to demonstrate our underlying arguments.

Findings

From the outset, most of Dana's media uses concerned learning English as a second language. Accordingly, the findings presented below are divided into two distinct developmental periods: The first traces Dana's media use from ages 12 to 18 months—a period during which children learn one word at a time as an object label or as a holophrase, wherein one word transmits a more complex meaning ordinarily represented by a phrase. The latter period is characterized by Dana's continued learning of English at ages 1.5 to 3 years, when children acquire language at an accelerated pace and display symbolic thinking (DeHart, Sroufe & Cooper, 2000). These two periods also differ in terms of motor development, enabling more varied and independent use of media, particularly touchscreens (Bedford et al., 2016). The findings will be presented chronologically, with an effort to depict the development of Dana's media habits and her progress with English acquisition as accurately as possible.

12-18 months: First encounter with second language

Dana's screen-assisted language learning already began at the age of one year, at which time Dana was taken care of by her mother, who was running a business from home. Under these circumstances, the mother often used television to keep Dana busy. Consequently, Dana would watch infant-oriented programs for 2-3 hours straight, with her mother checking on her for periods of a few minutes each time. At that time, Dana's viewing menu consisted primarily of Hebrew programs, with one exception—a musical series entitled *Rinat in English Land*. In an interview, the mother said that she herself had difficulty with English and consequently considers it essential that her children master this language. Accordingly, she decided to exploit screen media to support their English learning, as can be seen in the following quotation, referring to her positive experience with her eldest son and her current attempts to provide the same conditions for Dana:

[When my son was younger], I introduced him to English through television programs. Wherever I could "stuff in" [some English], I did so, because English

is really important. Today, I feel that he has an easy time with English [at school]. I believe that children may learn from screens. This is why I play Rinat in English Land DVDs for Dana. What's more, when I put on an English-language film for the boys, Dana joins them too (from the interview conducted when Dana was 12 months old).

As Dana approached the age of 16 months, the mother decided that one day a week, she would watch only English screen content, since she began displaying obvious signs of having learned vocabulary from the programs she watched in Hebrew. Accordingly, the mother hoped that Dana would be able to learn foreign-language words with the same degree of success:

Dana began to speak and is learning words from the programs [in Hebrew]. That's why this is the right time for her to learn English... One day a week, I put on animated songs that teach colors and shapes. I put the first one on and it goes on to the next automatically (from the interview conducted when Dana was 16 months old).

At the age of a year and a half Dana began to say English words she learned from the programs she'd watched, with her mother encouraging her by asking her to translate words from Hebrew to English, such as "What does 'dog' mean?" It is important to emphasize, however, that this mediation was accomplished mostly during the mother's performance of household chores and not during focused viewing together with Dana. Another development of no less significance was Dana's increased use of her mother's smartphone. Her interest in this device actually began earlier (at about age 14 months), but her mother objected strenuously, defining a smartphone as a tool to be used for her own work purposes only. Within a short time, however, the mother's objections declined in intensity and the device began to occupy a key role in Dana's media experience, primarily as a means of watching animated clips in English that her mother selected on YouTube:

What guides me is selection of educational programming for her [viewing]. When I need time for myself, I put on children's songs from YouTube, but only those that can teach her English. She understands and repeats words like "round" or "elephant" (from the interview conducted when Dana was 18 months old).

A similar pattern was evident during our observation. At 6:00 PM, when Dana began showing signs of tiredness, her mother put an English animated clip on her smartphone and left the living room to perform household chores. Dana sat there quietly and watched a clip of the popular children's song *The Wheels on the Bus*, followed by similar animated songs

her mother put on the playlist. Dana was glued to the screen for about 20 minutes and sought no contact with her mother. The entire time, as far as Dana's mother was concerned, her daughter's use of the device achieved two goals simultaneously: Language learning and amusement, so that her mother would be free to perform other tasks.

20-36 months: In bed with the smartphone

At about age 20 months, Dana became more independent and energetic, as her mother noted: "It is more and more difficult to keep her busy without the smartphone". During our observation, Dana sat alone in the living room and watched animated songs in English for about 40 minutes, while her mother was in the kitchen. From time to time, Dana's mother had to help when Dana unintentionally pressed the screen and paused the clip. As soon as the problem was solved, the mother returned to the kitchen without relating to the content watched.

From age two, Dana's use of the smartphone became almost entirely independent. Dana's mother taught her how to skip ads and Dana learned to select clips for viewing all by herself. At this age, it was evident that television had ceased to interest Dana almost entirely, with most of her attention directed towards the smartphone. During an interview, her mother even emphasized that she attempts to persuade Dana to watch television, but with no success. By contrast, Dana was willing to watch "virtually anything" on the smartphone (said her mother). As such, Dana's mother exploited her daughter's craving for smartphones by increasing her exposure to YouTube videos in English.

The mother also used the smartphone extensively for parenting purposes, as she realized that the device makes it very easy for her to handle her daughter. The most common situation in which the mother needed the smartphone to take care of Dana was before bedtime. During our observation, we found that Dana would watch clips on a smartphone for about half an hour before falling asleep, with the "digital babysitter" a substitute for a parent's bedtime story. Thus, Dana lay in her bed in the dark, with the device placed horizontally (while the content was screened vertically) at a distance of 10 cm. from her face. Moreover, the clips were played at particularly high volume and included glaring colors and fast cuts from shot to shot. All this time, Dana was completely alone, while her mother entered the room only once, to take the phone after Dana fell asleep. In an interview, the mother attempted to justify this practice, claiming she believes that the time just before sleep, when Dana is alone in her room, is most effective for language learning.

At age 30 months, Dana had already learned to recite her favorite songs: *Five Little Monkeys* and *The Wheels on the Bus*. In an interview, the mother expressed great satisfaction with Dana's progress:

I am very satisfied that Dana is already learning songs in English. [...] She does not complain when it's time for me to do other things [because she is watching videos on a smartphone] and what's more, she's learning something as well. I expose her to a new language instead of sitting and teaching her myself. I simply place the content before her and she takes it in and learns it on her own (from the interview conducted when Dana was 30 months old).

This quotation expresses the mother's belief that it is sufficient to create an English-language background around Dana so that learning takes place "on its own," without the mother's having to support the process actively. At the age of 30 months, however, Dana's knowledge of the English language appeared to be mostly phonetic: She knew how to recite short songs of up to seven words and to say the names of about 20 objects, animals and colors, but without knowing what most of them represent in reality and without using these words in their proper context.

Towards the end of the study, when Dana was three years old, she began to express overt objection to her mother's choice of English programs, displaying a preference for programs in Hebrew. During the observation, we noticed that the moment the mother chose a *Peppa Pig* episode from YouTube, Dana switched to a Hebrew program as soon as her mother left the living room. At around this same age, the mother began noticing disparity between Dana's extensive exposure to programming in English and her relatively poor knowledge of this language in practice. When asked about the reasons for this disparity, that the mother described in terms of "disappointment," she first mentioned the difficulty of providing Dana with instructive mediation to support her language learning:

I have no way of speaking English to her at home. It isn't natural. I did everything I can do with the means I possess... She watched these clips many times, but didn't learn from them. [...] What I taught her [myself] is what stuck and what I didn't teach her, she does not know. This disappoints me because I expected more. The younger children are, the more their brains could absorb, but she didn't (from the interview conducted when Dana was three years old).

The last interview with the mother thus reveals the transformation she underwent. During almost two years of the study, the mother expressed an optimistic belief in media's almost unlimited ability to serve as an effective resource for her daughter's learning the English language, without necessitating parental investment of time and effort. Towards the end, however, the mother had realized that Dana's "failure" attests to the absence of her mother's instructive mediation and active engagement in Dana's viewing.

Conclusions

The case presented here reveals the complexity of using screen media in early childhood as a resource for learning a second language in the family context. Most importantly, this case demonstrates the limitations of this use, especially when it is not accompanied by appropriate parental mediation. The study's findings show that use of a smartphone without the mother's instructive mediation was barely able to advance Dana's acquisition of the English language, that was limited to phonetic elements only. In other words, Dana's learning process lacked "scaffolding" (Vygotsky, 1978) on the mother's behalf aimed at enhancing the child's cognitive abilities in general and the development of language skills in particular.

Moreover, the findings show that with her mother's encouragement, Dana acquired highly problematic smartphone use habits (e.g., long bedtime viewing of loud clips with fast cuts and blinding colors) that could be harmful to her health and development. Hence the research findings call for increasing media literacy among parents of infants and toddlers who need to know how to support the development of appropriate media habits among their young children.

Finally, we would like to thank Dana's parents, especially her mother, who opened their home and hearts to us and allowed us a rare glimpse into the life experience of a contemporary family in which an infant is born into a wide variety of media and content and is constantly exposed to new digital formats and learning options. We wish to emphasize that our analysis does not seek to blame Dana's mother for misuse of media with her daughter. On the contrary, this case reveals the complexity of parenting in the digital age and calls for more studies that would shed light on modern parents' everyday life constraints and dilemmas.

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