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CRI Project Report: The Impact of Technology on Attachment and Social Skills

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With fast speed emerging technologies, there has been a dramatic increase in very young children using technologies, including smartphones, tablets, and other forms of technology. It's important to recognize the impact of technology on child development and well being relevant to the child welfare system. However, according to Terrence McCoy's (2015) report, Jenny Radesky, a clinical instructor at Boston University's Developmental-Behavior Pediatrics, stated, "[t]he impact these mobile devices are having on the development and behavior of children is still relatively unknown" (2015, paragraph 1). Because these devices are recently emerging, insufficient thorough research has yet to be conducted to reveal the impact of technologies on the development and social skills of children.

Caseworkers need information that they can share with parents about the benefits and/or disadvantages of using smartphones, tablets, and other forms of technology at an early age so that parents can be assisted in making informed decisions that support child development. If there are great advantages to the use of technology at an early age, caseworkers may need to help parents and children who do not usually have access to bridge the technology gap. This ICHP/CRI project will focus on determining the impact of technology on the development of children's social skills and moral development. This study addresses the issue: What does technology do to the attachment style and social skills of children?

This study focuses on children under 18 years old. The use of technologies in the home has become very common among young children. This paper reviews research on: 1) the impact of new technology use on children's development (age from K to 18), 2) the use of the smartphone as a babysitter (age zero to 2), and 3) some guidelines provided by the other researchers to arrange informal computer experiences that will promote the development of children's social skills based on their studies: first, that children should be encouraged to use technologies for moderate amounts of time (2–3 days a week for an hour or two per day); second, that children's use of technologies should (a) include non-violent action-based computer games as well as educational games; and third that technology should not displace social activities but should instead be arranged to provide opportunities for social engagement with peers and family members and also involve content with pro-social and non-violent themes.

Children's technology use and the development of social skills

New technologies such as computers, cell phones and the Internet have become an integral part of young children's life. In 2009, among 8–18-year-olds in the USA, 93% reported having a home computer, with an average of two computers at their home, 66% reported having a cell phone (Rideout, Foehr, and Roberts, 2010). The amount of time the young people were exposed to digital technologies was up to nearly 12 hours in a typical day, Rideout et al. reported in their 2009 study. As technology has become an integral part of young children's lives, there are many questions about the impact of technology use on their development (Straker, Pollock, & Maslen. 2009). Reviews of the impact of technology for children

confirm that a great number of children are using computers at home as well as at school, with much of the home use taking place in the absence of an adult.

> Exposure to the violent content found in many computer games can increase aggression, at least in the short term. Internet use by teenagers and children is providing access to sexual content and pornography. There is also emerging cross-sectional evidence that musculoskeletal symptoms and vision problems can result from computer use. Valuable aspects of computers include communication capabilities and access to vast sources of information. Perhaps the most notable feature of research is how much is still unknown, although this is unsurprising given the extremely rapid changes in technology and its use (Straker, et al, 2009, p. 1393).

Straker, et al. (2009) claimed that technology provided a positive impact, including "the potential for increased learning opportunities, rapid access to vast stores of information, communication with family and friends, access to an environment where physical attributes or disabilities can be of minimal impact and training of fine motor and visual skills" (p. 1388). Their study also reported that, in addition to positive cognitive and social development, the technology use also had negative impact on children's development, such as 1) child safety, 2) inappropriate cognitive development (exposed to pornography on their computer and two-thirds of this was unwanted exposure), 3) inappropriate social development (exposed to violent content and aggression), and 4) displacement of other activities. Due to the increasing use of technologies by children and teenagers, there is concern that physical activity will decline further and thereby impact future health, particularly the increased obesity of current generations (Straker and Mathiassen 2009).

Campbell (2005) noted a "dark side" to social development and new technology: the phenomenon of cyber- bullying via new technology such as mobile phones, websites and email. Research is in its infancy but this may be a particularly damaging form of bullying because there is 'a potential for a much wider audience to be aware of the incident than in schoolyard bullying', researchers (Compbell, 2005; Straker, et al. 2009) predicted.

Tran & Subrahmanyam's study (2013) suggested that the use of technology has a positive impact on children's development in terms of their academic-, cognitive-, and social skills. As compared with the literature on technology and academic- and cognitive skill development, research on the impact of the use of technologies on the development of children's social skills is scarce. Tran & Subrahmanyam proposed three factors through which the use of technologies may influence children's social skills: (1) time on the computer entails time spent on activities relevant to developing social skills and replaces time engaging in other activities relevant to developing social skills (e.g. face-to-face interactions with family members); (2) opportunities for social engagement on the computer can help to develop children's social skills and (3) computer content (e.g. software, games and websites) includes social themes (e.g. aggression, friendship and sharing), which may influence social skills.

1. Time on the computer and social skills

To understand the relation between children's technology use and their social skill development, the first factor considers the impact on both the individual child as well as the family system. The computer both supported and impaired family connections. Although time on the computer displaces social activities, it generally seems to displace other solitary or minimally interactive activities such as listening to music, reading and family communication (Lanigan, Bold, and Chenoweth 2009). Similarly, the effect of technology time use on children's family relationships might also be moderated by the kind of family

activities that may be displaced, content of activities on the technologies, family dynamics and individual characteristics (e.g. extroverted or introverted personality).

2. Opportunities for social engagement on the computer and social skills

New technologies can provide many different opportunities for social engagement and interaction. For instance, they can serve as a catalyst for social interaction, such as when pre-school children need assistance with operating the computer and whenever they experience problems (Plowman and Stephen, 2005). One study on 3-5-year-olds reported that they primarily turned to their parents for computer help whereas other family members (grandparents and siblings) were secondary. Interestingly, children did not identify their teachers or pre-school educators as sources of help with computers (Stephen, et al. 2008). New technologies may also provide opportunities for young users to co-operate, negotiate and collaborate, especially in informal settings where device availability may be limited (Johnson 2010).

As the computer is limited by its input devices – typically one screen, one keyboard and one mouse – it is often viewed as an individual activity; however, as discussed earlier, young children's computer use is often enveloped in social dialogues. Children have to negotiate the use of computers with adults, siblings and other children (at school), they have to seek assistance and enjoy using the computers with others. Although the social aspect of computer assistance decreases with growing competency (Plowman and Stephen 2005).

3. Computer content and social skills

The broad video game literature (Anderson, Shibuy, Ihori, Swing, Bushman, Sakamoto, Rothstein, and Saleem, 2010; Bandura, Ross & Ross, 1961; Bandura, 1977; McLeod, 2014; Sestir and Bartholow, 2010) indicates that the playing of violent video games is quite robust and has demonstrable effects, such as increased aggressive behaviour.

According to Bandura (1961, 1977), social skills are learned from the environment through the process of observational learning. Children are surrounded by many influential models, such as parents, characters on children's TV and games, friends within their peer group and teachers at school. These models provide examples of behavior to observe and imitate, e.g. pro- and anti-social behavior. The famous Bobo Doll experiment conducted by Bandura (1961) has important implications for the effects of media violence on children. In this study, in which 72 children participated, those who observed the aggressive game made far more imitative aggressive responses than those who were in the non-aggressive or control groups.

Participants who played a non-violent game had decreased aggressive thoughts and feelings compared with those who played a violent video game. Similarly, a review of four studies revealed an association between pro-social gaming and pro-social behaviours across Singaporean students, Japanese children and adolescents and US undergraduates (Gentile, Anderson, Yukawa, Ihori, Saleem, M. , Ming , L. K. , Shibuya, Liau, Khoo, Bushman, Huesmann, and Sakamoto, 2009). In conclusion, studies from video games suggest that both aggressive and pro-social messages in electronic games can influence children's aggressive and pro-social behaviours.

Based on the available evidence, children's use of new technologies should be monitored so that it does not displace social activities such as interactions with peers and family members. Children should also be

encouraged to use new technologies in ways that provide opportunities for social interaction and collaboration. Such opportunities include (1) children co-using the devices with their parents, siblings and peers, (2) placing devices in shared spaces, having children share the devices with siblings and having fewer devices than children in informal group settings (e.g. after school programmes and summer camps) and (3) children playing computer games with others (peers, parents, relatives, and so on) as a social activity. It is also recommended that children access video games and monitored online content that contain pro-social and non-violent themes and avoid content that contains aggressive and violent themes.

Using a smartphone as a babysitter and the development of social skills

Today's children are being raised as 'digital natives' in a world dominated by all kinds of new technology. Many adults including the parents even use the new technologies as babysitters. An electronic device in the hands of a child may seem like a quick and easy distraction, but experts say it is not good for children's development.

According to Vygotsky's (1978) theory, social interaction plays a fundamental role in the process of cognitive and social development. He claimed that every function in the child's social development appears twice: first on the social level, and later on the individual level; first between people (interpersonal) and then inside the child (intrapersonal) (Vygosky, 1978). Children need to interact with people as part of their learning process.

The National Early Childhood Intervention Council president said the long-term effect of exposure to new technology would affect the social and speech development of children, as well as cause physical problems like obesity.

The essential message from the book Raising Generation Tech is that excessive or unguided exposure to new technology is not good for children. Children should be raised by parents, not by technology. Taylor (2012) pointed out that technology on its own is neither good nor bad. A television, computer or phone is value-neutral. It's how we choose to engage with it that has consequences.

The American Academy of Pediatrics recommends that children under the age of two not be introduced to television and other entertainment media because their rapid brain development requires human interaction (Nadirah, 2015). Nadirah also reported that some Asian regions have set up rules to regulate and limit children's technology use. Taiwan, for example, recently passed a new law banning children under the age of two from using electronic devices. Under this law, parents can be fined for allowing their young children to play with electronic devices. South Korea has also instituted a similar policy as part of the Protection of Children and Youth Welfare and Rights Act. In Malaysia, pediatrician Dr. Amar-Singh, President of the National Early Childhood Intervention Council, concerned that long-term exposure to electronic devices would affect children's social and linguistic development and cause physical problems like obesity, suggested that parents spend quantity time with their children, instead of using smartphones and other electronic devices as babysitters.

Guidelines

Based on the evidence presented, Rideout et al. (2010) provided guidelines to enable parents, teachers, social workers and other adults to manage technology experiences so as to maximize potential benefit for children's development.

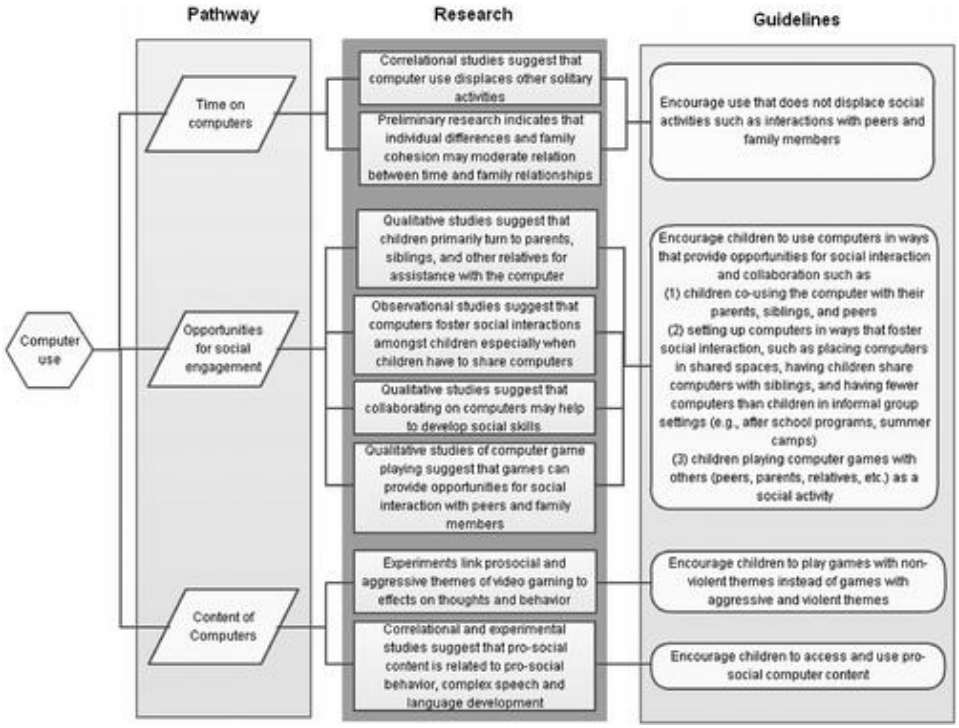

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Table 1 Guidelines for the informal use of computers by children

Methods

This research project applied a case study primarily based on the detailed data collection of observations and interviews. Yin (1989) defined the case study as an investigation of a contemporary phenomenon within its real-life context in which the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used (p. 23).

The research site was in the United States. The study focused on children under 18 years old. Data collection included sources from observations; interviews with parents, social workers and K-12 teachers.

I went to Adirondack National Park and Robert Camping Site to observe young children's behavior differences with and without using technologies (e.g. cell phones, iPad, etc.) during the summer 2016 from August 2 to August 10. Approximately 200 children were observed, with an average of 25 children per day. I also interviewed some of the children's parents.

The interview questions were:
1. What are the differences in your children's behaviors with cell phones from those without cell phones?

Parent responses: They noticed that their children are happier, more cooperative, and more active when they weren't using cell phones. The children were more willing to engage in substantive conversation, make eye contact, and enjoy family activities. So most parents set up rules for cell phone use on camp sites: No listening to music on the cell phone, no cell phone use except to take pictures. The parents said that there were good things and bad things about cell phone use, but that the bad outweighed the good.

2. What is the impact of technology on attachment and social skills?
Parent responses (the parents who provided the responses were serving in the military): The parents have three children aged 5, 7, and 8 years old. The parents were serving in the military so technology plays an important role in parent-children communication. Their children were under 14 and staying with baby sitters. The parents said that it depended on the age of the children regarding the use of technology. They did not think that children under 14 had self-discipline, so they did not allow their children to use cell phones or iTunes. However, they relied on technology to build solid communication with their children. They set up time to talk with their children using Face Time via iPad. Their children were very cooperative with their parents. At the camp site, they were happy to help their parents wash dishes, build a cooking fire, walk the dog, and pack up.

Observations in the park and around the camp site showed that those children under 18 years old qho were not making use of technology, and in particular a cell phone, were energetic, happy and friendly. They said "hello" to campers and made eye contact with the people around them. They were also riding bikes with their friends and siblings, hiking, swimming, kayaking, and singing. They were also observed taking good care of each other. When the older siblings noticed that their younger siblings were left behind while riding their bike, they either went back to get them or else slowed down to wait for them. They were cooperative and more willing to listen to and help their parents. They happily washed dishes and fetched water. The children in the park and at the camp site wholeheartedly enjoyed nature and their families and friends. They also enjoyed using the camera to take selfies and pictures of nature and of their families and friends.

Conclusion

Taylor (2012) points out that technology on its own is neither good nor bad. Any technology -- a television, computer or phone, for instance -- is value-neutral. It's how we choose to engage with it that has consequences. We know that these devices are changing the ways in which our brains work, and we don't know what their long-term impact on our children will be. But there is evidence of deleterious effects on our ability to focus as our time spent with technology increases -- which Tommerdahl (2010) agrees will influence development in even more diverse ways than we have described. Future research should systematically examine when the effects stemming from the use of computers are most likely to occur so that we can better harness their potential as well as protect our children from any harm.

There is no evidence that the use of technology is educationally beneficial for infant and early childhood development. This research suggests that educational emphasis for children under the age of 2 should be on developing healthy social attachment without screen exposure. There are better ways to learn social skills, through human interaction and physical manipulation, such as hiking, camping, playing games, and so forth. Parents are encouraged to discuss the role they want technology to play in their family life. Parents and social workers first need to examine their own attitudes and behavior. If the grown-ups are browsing the Internet on their laptops or checking their phones during meals and on trips to the park, that behavior sends a much more powerful message than the rules we attempt to establish.

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