

Introduction

CHILDREN ARE BORN AS INFORMATION SEEKERS, "BRIGHT AND DARK SIDES OF MULTIMEDIA FOR CHILD DEVELOPMENT"

Noboru Kobayashi MD

Director, Child Research Net, and Professor Emeritus, University of Tokyo, Japan.

Babies first cry when they are born, and calm down within a few minutes to the alert state (neonatal alertness). Then they begin to look around and apparently can notice the mother's face and those of others¹. This indicates how a child is born as an "information seeker". This is further proven by psychological studies showing that the more information on object in the environment offers, the longer the neonate and young infant stares at it. They are already curiosity-minded².

Almost all the babies in Japan will be exposed to television (TV) soon after birth, since all families have television at home and further the home itself has so little space that the TV has to be placed in a same room as the baby. Although they are apparently indifferent to the TV at the beginning of life, they soon start to glance at it on hearing it within a month after birth. When they begin to sit, they start to watch the screen intently. At approximately the age of 3 months, 30% of infants start to stare or possibly to watch the screen. When they begin to crawl, they try to reach the TV. When they start to stand, they try to switch to change the channel. When they become able to stand and walk, they enjoy seeing their favorite character continually on the screen. At 12 months, according to our study, they may watch TV for nearly 2 hours per day. This behavioral development of the baby with respect to TV gives important insights into the fact that children are information seekers³.

It is well accepted that the capability to seek information of the neonate and infant must be genetically determined, although we have to admit that there is significant individual difference. This fact is clearly shown by the following consideration of human evolution.

Anthropological studies have shown that our ancestors appeared in Central Africa nearly 5 million years ago, and soon started to move from there to the south and the north, probably to find a better place to live. Thereafter they moved further out from Africa to the Middle East, a million years ago, and this was followed by emigration into Europe, Asia and the other continents. They were certainly motivated to such emigrating movement by the search for information⁴.

We know that people have invented various means of communication to exchange information throughout our history. Our ancestors used biological means such as behavior, facial expression and probably cooing at the beginning, and then started to speak as the vocal cord developed. As information for daily life was increased by improvement of the arts of hunting, gathering and dwelling, they started to make cave paintings to record the information, and this was followed by inventing writing symbols, letters, characters, and words as the means for improving this recording. The production of paper, pen, ink and other things facilitated writing. They then developed printing devices to record information in books in the 15th century and later in newspapers in the 16th century. Accordingly the amount of recorded information greatly increased^{5,6}.

In the last century, when electric power was harnessed, the telegraph and telephone were developed. Then television, interconnected computers, and finally the Internet followed in this century. This quest for tools of information and communication has paralleled our biological evolution since the beginning, and the tools have continuously improved, and never disappear after their invention⁶.

These considerations show that the information seeking of human beings is genetically determined from the neonatal stage as well as the starting of human history. At present, children in the affluent world are now living in multimedia societies. They are exposed to multimedia at home and at school as well as in the community. For instance, in Japan, in addition to TV, modern electronic fads include television games, Karaoke and PDA in the 1980s, and pagers, cellular phones, Print Club. Tamagotchi and Pocket Monster have emerged in the 1990s. Each has two specific features, "mobility solo" and "play". Even in the 1980s, it was reported that 60 to 70% of children enjoyed games at home, and nearly all schools at present have 10 to 70 computers, depending on the grade⁷.

The parents of the children, who are now enjoying multimedia, have grown up with TV since the beginning of life. When the children of now are grown up and become parents, what will happen for their children? We have to consider this point at present for the 21st century.

Even now, the use of multimedia is widespread enough to have an effect on child development. In Japan, we can notice a considerable change in the behavioral pattern of children. As an example, adolescents are searching for friends using handy phones, pagers (beepers) and the so-called Print Club in addition to the standard ways at school and at home. Among them, the Print Club teaches us the need to study the effect of the multimedia on child development. The Print Club is a type of camera machine box that prints photo-seals of the face, postage-stamp sized snapshot stickers, located at arcades,

game centers and stations, where young girls can pose alone or together with friends. A sheet of the stickers is printed within a few minutes. They plaster the stickers, or exchange them with others to be plastered in their notebooks for making peer relationships. Of course, they communicate with each other over the Internet or by other digital means to introduce themselves in some cases in addition to showing their own stickers⁷.

Why did the Print Club become so popular in Japan? The only child is predominant here, without brothers and sisters. Parents often work in the day time and leave children alone in many homes. Most families are nuclear in the urban society. Children have to grow up with much less relation to parents and other family members at home than before. It can be said that Japanese children are starving for human contact in many ways, including peer relationships. This is why the Print Clubs have grasped the girls minds so rapidly, for they wish to initiate friendship and to boast about the number of friends. In addition, they can reproduce a mirror image of themselves with portrayal of a fancier self, and also memorabilia. There may well be narcissism in their feeling for the Print Club. In another aspect, this may be related to the Japanese custom of exchanging name cards as the back ground of this new behavior. In addition, like PDA and pagers, the manifestation of the Print Club may well be related to mobility in the development of electronic fads.

The multimedia have certainly a bright side as well as a dark side for children. The bright side is shown by the application of the multimedia to education, which requires more studies and research in education science, and to the entertainment of children, if they are properly used. Particularly, children with serious illnesses in hospitals and those with handicaps in institutions are much benefited in many ways by the multimedia.

The dark side includes separation from nature, passive participation, and overload with negative information such as violence and sexually explicit material, which exploit criminal activities. In addition, there may be developmental problems in social relations, including peer relations. Isolation from direct participation among family and friends, especially in the adolescent stage, may produce unexpected influences in the future.

We know that those girls now enjoying the Print Club will grow up to adulthood anyway, and that the multimedia will be improved in future, probably more mobile and handy. We have to keep our eyes open with a media-ecology-mind to see, what is going on at present among children and plan for the next century, when the multimedia will be diffusely infiltrated into society.

As the Guest Editor of this special issue, and also the planner and the organizer of the CRN International Symposium 98, "Augmented Childhood, Evolution of

Child Development in the Multimedia Environment", I sincerely hope that this issue will be useful not only to pediatricians but also to any professional concerned with children and contribute to their better future in the 21st century.

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