

Fan (Linda) Liu

## Contents

|   |  |     |
|---|--|-----|
| 1 | Introduction .....                                     | 617 |
| 2 | Stages and Development .....                           | 618 |
| 3 | Modern Science and Technology in Early Education ..... | 625 |
| 4 | Future Directions .....                                | 626 |
| 5 | Cross-References .....                                 | 626 |
|   | References .....                                       | 627 |

---

### Abstract

Since the twentieth century, science and information technology have developed rapidly. This has impacted families' and children's lives. This chapter describes the development of children's psychological and cultural health to ensure the improvement of children's physical and psychological well-being. Technology and high technology mobile devices have advantages and disadvantages in early childhood education. Teachers should balance the use of these devices and technologies in teaching.

---

## 1 Introduction

When a baby is born, the parents and child will live together, sharing the child's happiness and pain as the baby grows. Parents give their love willingly, and they hope their baby will be smart, lively, and lovely. They also hope that the baby will

---

F.L. Liu (✉)

Bilinguage Educator, Bilinguage Support Association, Wollongong, Fairy Meadow, NSW, Australia

e-mail: [lfnj1959@hotmail.com](mailto:lfnj1959@hotmail.com)

**Table 1** Children's stages of growth and development

| Age          | Stage       |
|--------------|-------------|
| 0–18 months  | Infant      |
| 18–36 months | Toddler     |
| 3–5 years    | Preschooler |
| 7 years +    | School age  |

Source: Kearns (2010)

excel and grow up to be intelligent and wise. Children's stages of growth and development are listed in Table 1.

## 2 Stages and Development

### 2.1 Infants and Toddlers

A child's development includes physical and psychological development. Psychological development is based on physical development, and each influences the other (Yu 1993).

#### Physical Development

In terms of physical development, an infant can rise to a sitting and standing position and can pick up small objects with a fine pincer grasp (Yu 1993). From the perspective of brain and nervous system development, in early infancy, the brain cells increase in size and there is rapid growth of nerve fibers to form complex links between one another. From the sensory development perspective, a baby can focus, gaze at shiny objects, and sometimes can adjust his or her position to see objects. Their visual memory is good. A baby's eyes can only see light before beginning to hear sound or feel touch. Later they become interested in their new environment, seeing, hearing, smelling, tasting, and touching. As babies grow, they learn and respond immediately to their names, and they gradually recognize their mother and father, sounds and voices, and other people (Johnson and Pupilumpu 2008).

#### Brain Development

Mothers should ensure that healthy conditions exist in the womb. When babies are born, they have their first contact with their new environment. A variety of stimuli (light, sound, temperature, food, etc.) affect brain development. The brain increases in size and function. The cerebral cortex develops rapidly, the shape and size of the cells change, and the cortex area increases (Yu 1993). Gradually, the nerve fiber sheath marrow increases in length, reaching deep into the various layers of the cortex and forming complex neural connections. When the nerve cells excite nerve fiber conduction, development of the lower part of the cerebral cortex and bone marrow improves.

From birth, infants have the instinct to breast-feed, and they know hunger and fullness (that is, the development of the oral manifestations of hunger, the experience of taste, and the bloating sensation of fullness). Babies also excrete feces and urine (this is a visceral function).

After 3 months, babies begin to learn to sit with their backs straight and to kick vigorously, with their legs alternating or occasionally together. They can also wave their arms and bring their hands together. At about 3 months, babies can smile and chuckle with their parents and can cry loudly to express a need. They also began to learn to turn over in bed.

Around 6 months, babies love to explore objects with their hands and their mouths. Sometimes they will grasp a foot with their hands. At 9 months, babies enjoy exploring and start to crawl or move about by shuffling or scooting on their bottoms (this is the development of limb function). At this age, babies can call to their mother and father (this is a developmental language feature).

Babies begin to learn to walk when they reach about 1 year old. The baby expands the limits of activity with this development of sensory and physical ability. They begin seeing more things, listening to more sounds, and contacting with more objects (the sense of touch features in development). Language develops into conversation, with increasing intonation, although there are very few recognizable words. This not only improves the ability to live but also increases psychological ability and meets the requirements of actions and activities. As the sun goes down, the parent will turn off the lights and put the baby to bed. In the morning, when the baby wakes up, the parent will dress the infant and wash his or her face. Next, the parent will show the infant how to use a spoon and bowl to meet the need of hunger. After lunch, the infant will play with toys to meet the need of children to play.

The baby depends on the parent's leadership for their education and learning and development of human life functions and psychological function. Parents are the education guides for most of a baby's activities in the home.

The promotion of early childhood psychological health development is discussed in the following sections.

### **Promotion of Brain Development**

Brain development is important in the development of intelligence (Yu 1993). During this period, it is essential to provide adequate nutrition to supply the needs of both physical and psychological activity. Physical exercise is an important means to promote blood flow to assist brain development. Parents should create a spacious area so the infant has freedom to move about. Suggested activities include visiting a park to see flowers, trees, and animals, playing games, drawing, and reading books.

### **Training the Child to Develop Hygienic Habits**

Some children learn to be independent and are able to follow the parents' example, learning quickly and meeting their own hygiene needs. To encourage children to develop good habits, parents should let children wash their own hands and faces,

brush their teeth, get dressed, comb their hair, and feed themselves. Many parents do not realize how important it is for the child to learn these life skills. They are so fond of their children, especially when they are small, that they insist on doing everything for them instead of training the children to do it for themselves. Children in kindergarten can take care of life habits, and parents are advised to give children opportunities to develop self-confidence through practicing life skills.

### **Cultivation of Good Behavior and Character**

Some infants, as they develop self-reliance, may become too confident and self-assured. They do not want their parents' help, insisting, "I can do it myself!" and will not cooperate with the parents. This phenomenon is called the first period of resistance. Parents should encourage their child to develop a good personality and good behavior. Thus, communication is important, and parents should explain what is right and what is wrong.

### **Language Development**

Infants are curious and may ask many questions: "Why?" "What is this?" Parents should be patient, as this activity increases the child's knowledge and teaches them to speak.

## **2.2 Early Childhood**

During this period, a child's physical and psychological development is continuous and rapid. The physical and physiological characteristics of preschool children (3–5 years) are discussed below.

### **Physical Development**

During this period, the children grow very fast in terms of height and weight.

### **Brain Development**

After 3 years, a child's brain develops quickly. The weight of the brain gradually increases and brain cell volume increases. There is rapid growth of nerve fibers and an increase in branching. Complex linkages are formed and nerve fiber function continues to improve. The brain liaison bone sheath of nerve fibers substantially completes the rapid development of nerve conduction.

At this stage, as children enter preschool, they should be psychologically prepared. Parents can help by explaining to their child the benefits of attending preschool and describing the fun of participating in games and activities with other children. This orientation process should occur over a minimum period of 2 or 4 weeks. On the first visit to the school, the parents can stay with the child to become familiar with the setting and the routines. The child can be shown the colorful preschool room, with tables and chairs, blackboards, and pictures and the

playground and play equipment. Children can be encouraged to meet the teachers, staff, and other children. If these processes are neglected, children can experience fear when they are separated from their parents and resist going to preschool again. Even when parents have prepared a child, the child will still sometimes experience difficulties adjusting. Then it is important for the preschool teachers and staff to recognize and address this situation.

### **Cognitive Function**

Cognitive function involves knowing and understanding a concept, for example, the difference between inside and outside activities. As this function develops, children can answer questions like: "What do you see?" "What is this like?" "What do you hear?" "What do you want to do?" "What do you need?"

### **Emotional Function**

Participating in different kinds of activities can be satisfying or unsatisfying, and may make a child happy or unhappy, willing or unwilling, laugh or cry, or be angry or calm. The psychological results can be rebelliousness and jealousy or harmony and happiness.

### **Behavioral Performance**

Parents and teachers should be aware of how behavioral performance can be influenced by psychology. How do children think? A child can choose to do or not do, to complete a task or not to complete a task, to learn or refuse to learn, to participate in group activities or individual activities, to complete or fail to complete.

### **Social Life**

To develop healthy social skills, children should learn to play and to live together happily and to understand the social rules of their culture. When, for example, children take food from other children, refuse to participate in group activities, quarrel with other children, or refuse to share toys, the parents and childcare center staff should cooperate to address these problems.

### **Performance and Changes in Children's Psychological Attitude**

Psychological fear can be caused by a child's insecurity. A child's initial development is in the mother's womb. After birth, the child is at home with his or her parents and feels secure there. This feeling of security is important in a child's life. When children go outside the home accompanied by their parents, they have a carefree attitude because they feel secure. When children go to preschool with teachers and staff who are strangers, they do not know what to expect. Parents can help by encouraging their children to play with others and participate in various social activities, such as playgroups, to develop the ability to mix well with other children. Teachers should also provide guidance and help children to participate in

a variety of learning games and other preschool activities. Thus, children will develop feelings of security rather insecurity, which will gradually eliminate their fear.

Although there are many games, balls, storybooks, and toys available at preschool, these distractions do not guarantee that a child will feel secure, especially after parents leave. If children have not been prepared for separation from the parent, they will find it very difficult to suddenly be left at preschool. In this situation, the staff at the childcare center should play a role in settling the children, comforting them to make them feel secure and safe.

### **Psychological Loneliness**

Some children prefer to play alone, ignore other children, and refuse to participate or talk with other children. They may lack facial expression and display no obvious attachment when parents leave. Loneliness can cause disorders in a child's performance. The teacher can try to arrange for such children to play with others to strengthen ties, guiding them to participate actively in many different activities.

### **Psychological Rebelliousness**

Some children may display infantile emotions and bad behavior. When this is accepted by the child's family as normal, it influences a child's behavior. Preschool teachers can help children by correcting bad behavior and promoting good behavior in democratic education. Parents and preschool staff should teach children what is right and what is wrong to help them develop character and maintain good behavior.

### **Psychological Maladaptive**

Children who don't understand their new environment may feel uncomfortable when entering preschool. For example, if they don't know where the bathroom is or where they will sleep. Preschool teachers can help the child to adapt quickly to preschool by teaching about the lifestyle in the new environment, which includes going to the bathroom, washing hands before eating, where to sleep, and where to play.

### **Psychological Depression**

Some children can have difficulty separating from their parent at the beginning. Usually, parents are very busy and want to put their children in preschool quickly. Yet some children cannot yet speak and are unable to adjust to the new environment. For example, if a child wants a drink and doesn't know how to communicate, this may cause misunderstanding and conflict. The child may cry because of frustration and anxiety. This situation can cause a psychological disorder. It is strongly suggested that parents teach children simple language at home. Parents should encourage their child to communicate with staff and other children before the child enters preschool. This helps promote the development and growth of the child's psychological health.

## 2.3 Problems in Early Childhood

Some common problems of early childhood are discussed in the following sections.

### Finger Sucking

Newborn babies suck, swallow, and grasp. This is a physiological response when babies feel hungry. When a baby's lips hit something, the baby starts sucking reflexively. Even when a baby is asleep, he or she may spontaneously put a hand over his or her mouth and begin sucking. This is a conditioned reflex and will gradually disappear as the baby grows up.

For babies who have reached 1 year of age and still have a sucking habit, it is strongly recommended that parents help the child to stop this sucking habit. Following are some suggestions:

- To meet infants' and young children's emotional and psychological needs, breastfeeding is suggested every time the baby is hungry. Use of a milk pacifier should be limited. It is better to feed slowly to make the baby comfortable and enjoy the feeding time, which satisfies the desire of sucking reflexes (a psychological need).
- Feeding and cuddling is good for meeting babies' emotional needs.
- After feeding and sleeping time, parents can give toys to babies to play with to keep them busy playing and distract them from the sucking habit.

### Feeding Problems

Some children have difficulty eating. They can develop eating disorders, where they do not eat properly or vomit after eating. This may be caused by a poor physiological function. Sometimes it is necessary to feed slowly and teach them to eat slowly. Every infant is different; some infants learn new things quickly and some do not.

### Children with Strong Self-Will

Parents sometimes complain about children who are naughty, rebellious, and say "no" to almost everything. And, of course, parents want obedient children who are easier to handle. Some children are of the active resistance type and are very stubborn, often saying, "No, I quit, I am not going to do it!" Other children are negative confrontational, and they sulk and complain.

When faced with unreasonable demands by children, parents should guide them to the right behavior. When parents can't accommodate unreasonable demands by infants, parents should cooperate to answer the requirements of infants and young children. For wayward children, the following practices are recommended:

- (a) Transfer target or storytelling
- (b) Cooling method
- (c) Comparative guide
- (d) A no-hitting approach

### **Managing Bed-Wetting**

It is common for children to wet the bed in a childcare center during sleep time. Enuresis usually is caused by psychological or other factors, including a family history or genetic factors, bladder function, or anxiety.

Options for solving this problem include

- (a) Adjusting the eating and drinking schedule.
- (b) Establishing a reasonable lifestyle and routine.
- (c) Not letting children get too excited before sleep time.
- (d) Not punishing children before sleep time
- (e) Reminding the children to go to the toilet.

### **Pay Attention to Children's Curiosity**

Children grow every day and they become curious about their surroundings. They imagine the nature of the world and ask many questions, such as, "What is this?" "Can rain drown trees?" When children listen to stories, they can imagine the characters in those stories. When children listen to the music, they can follow the rhythm of the music. Imaginary play is very important. These psychological activities are part of almost all kinds of activities, and learning activities, music, and painting are conducive to the development of intelligence and psychological development.

### **Cultivate the Preschool Child's Psychological Health**

#### **Organize Games and Activities**

The majority of children spend most of their time playing and play is a major form of social interaction and development and learning. Playing games helps children develop friendships and emotions, teaches focus and concentration, and promotes learning and physical exercise.

In individual play, there is no peer socialization but children cultivate concentration and development of their intellect and imagination. A child playing with building blocks may make a house, a tree, and a road, and use cars to go on the roads. If you ask the child why small cars go slow, the reply may be that when the small cars travel over the bridge too fast, the cars might get into an accident and fall off the bridge. In this case, this child is thinking and trying to find the answers.

Sometimes when several children play together there is no organization or common game; rather, each child has their own idea and they are happy to play alongside one another. In cooperative play, each child plays a different role in the group. In preschool, some play is under the guidance of the teacher in organized group activities with certain rules for the game. The children must comply with the rules of the game. Cooperative play can cultivate the spirit of collaboration with peers and teach respect for other children. Sharing ideas and interacting with other children improves children's ability to understand and fosters children's psychological development.



**Fig. 1** A student playing iPad in preschool (Source: from this study)



### **Establish Good Family Relationships**

Children need parental love and kindness to make them feel safe. Even subtle changes in a parent's feelings may affect a young child's psychological development. Thus, family harmony, mutual love, mutual respect, and mutual understanding are indispensable for a child's psychological health. For example, parents who are angry and impatient may make a child timid.

---

## **3 Modern Science and Technology in Early Education**

Many parents use the smartphones, iPads, and computers and allow their children to use technologies. Parents want their children to know and learn these technologies at an early age. They want their children to become more intelligent and more skilled. Figure 1 shows a student (5 years old) playing with an iPad in preschool.

Children's use of computers, mobile phones, and tablets such as iPads has both pros and cons (Johnson 2010). For example, children can use computers to learn drawing, music, reading, and many other subjects. The negative aspects of children's computer use include potential problems with eyesight, social interaction, and health. Excess screen time can put the brain's nerve center in a highly excited state, producing abnormally high levels of adrenaline. Parents should always supervise children in using computers and mobile phones.

Early education should be tailored to children's interests, and children must be able to understand the content. Age-appropriate pictures and toys will promote psychological development and the more children can understand, the more they are interested in learning.

---

## 4 Future Directions

Early childhood education has two parts. One is the education in the family, which is important because the family is a child's first community. It determines a child's living habits, emotional health, culture, worldview, and ethics. If the family provides a proper education and good examples, the child will have good morals and character. If a family lacks education and knowledge, the child may have a more difficult time.

The other part is preschool education, which is a part of social education. It is a systematic and scientific method of education, where there are steps and educational methods combining individual and collective learning. A preschool teaching program is based on the psychological development of children. In addition to teaching good health and life habits, it focuses on the development of intellect, morals, and social skills. Children learning to communicate, to share, and to understand the relationship between the self and the collective in group activities. They learn through play and experience the fun and happiness of childhood.

The psychological and physical development of children begins at birth, and each child has self-learning capabilities and capacity, which are the result of human brain function and conditioned reflex. To succeed, children need a good environment, comprehensive training, educational care, patient teachers and staff, and the cooperation of parents to acquire the abilities of life skills (eating, sleeping, toileting), knowledge (painting, singing, dancing, playing), observing the natural environment (sun, air, water, flowers, grass, trees), and understanding the social environment (nursery room, sleeping room, dinner room, bathroom) and play-ground activities (slippery slides, springboard, seesaw, balls), as well as the way children interact with others socially (politeness, cooperation).

Technology can be beneficial for children's psychological health development (► [Chap. 2, "Characteristics of Mobile Teaching and Learning"](#)), however, it also has disadvantages for early childhood development. Teachers should balance the use of tablets and smartphones during early childhood education.

---

## 5 Cross-References

► [Characteristics of Mobile Teaching and Learning](#)

---

## References

- Johnson, G.M. 2010. Internet use and child development: The techno-microsystem. *Australian Journal of Educational & Developmental Psychology* 10: 32–43.
- Johnson, G. M., & Pupilampu, P. (2008). A conceptual framework for understanding the effect of the Internet on child development: The ecological techno-subsystem. *Canadian Journal of Learning and Technology*, 34, 19–28
- Kearns, K. 2010. *Birth to Big School*. Pearson. Australia. 2nd Ed. ISBN: 9781442511415.
- Yu, L. 1993. *Children mental development health guidance (in Chinese)*, Nan Jing University Press, Nan Jing, ISBN 7-305-02429-5/R.98.