

INFANT AND TODDLER DEVELOPMENT (NWTC)



Infant and Toddler Development (NWTTC)

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Licensing

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CHAPTER OVERVIEW

1: Introduction to Child Development

Learning Objectives

After this chapter, you should be able to:

- Describe the principles that underlie development.
- Differentiate periods of human development.
- Evaluate issues in development.
- Distinguish the different methods of research.
- Explain what a theory is.
- Compare and contrast different theories of child development.

Welcome to Child Growth and Development. This text is a presentation of how and why children grow, develop, and learn. We will look at how we change physically over time from conception through adolescence. We examine cognitive change, or how our ability to think and remember changes over the first 20 years or so of life. And we will look at how our emotions, psychological state, and social relationships change throughout childhood and adolescence.¹

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1.1: Principles of Development

There are several underlying principles of development to keep in mind:

- Development is lifelong and change is apparent across the lifespan (although this text ends with adolescence). And early experiences affect later development.
- Development is multidirectional. We show gains in some areas of development while showing loss in other areas.
- Development is multidimensional. We change across three general domains/dimensions; physical, cognitive, and social and emotional.
 - The physical domain includes changes in height and weight, changes in gross and fine motor skills, sensory capabilities, the nervous system, as well as the propensity for disease and illness.
 - The cognitive domain encompasses the changes in intelligence, wisdom, perception, problem-solving, memory, and language.
 - The social and emotional domain (also referred to as psychosocial) focuses on changes in emotion, self-perception, and interpersonal relationships with families, peers, and friends.

All three domains influence each other. It is also important to note that a change in one domain may cascade and prompt changes in the other domains.

- Development is characterized by plasticity, which is our ability to change and that many of our characteristics are malleable. *Early experiences are important, but children are remarkably resilient (able to overcome adversity).*
- Development is multicontextual.² We are influenced by both nature (genetics) and nurture (the environment) - when and where we live and our actions, beliefs, and values are a response to circumstances surrounding us. The key here is to understand that behaviors, motivations, emotions, and choices are all part of a bigger picture.³

Now let's look at a framework for examining development.

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1.2: Periods of Development

Think about what periods of development that you think a course on Child Development would address. How many stages are on your list? Perhaps you have three: infancy, childhood, and teenagers. Developmentalists (those that study development) break this part of the life span into these five stages as follows:

- Prenatal Development (conception through birth)
- Infancy and Toddlerhood (birth through two years)
- Early Childhood (3 to 5 years)
- Middle Childhood (6 to 11 years)
- Adolescence (12 years to adulthood)

This list reflects unique aspects of the various stages of childhood and adolescence that will be explored in this book. So while both an 8-month-old and an 8-year-old are considered children, they have very different motor abilities, social relationships, and cognitive skills. Their nutritional needs are different and their primary psychological concerns are also distinctive.

Prenatal Development

Conception occurs and development begins. All of the major structures of the body are forming and the health of the mother is of primary concern. Understanding nutrition, teratogens (or environmental factors that can lead to birth defects), and labor and delivery are primary concerns.



Figure 1.2.1: A tiny embryo depicting some development of arms and legs, as well as facial features that are starting to show. (Embryo image by [lunar caustic](#) is licensed under [CC BY 2.0](#))

Infancy and Toddlerhood

The two years of life are ones of dramatic growth and change. A newborn, with a keen sense of hearing but very poor vision, is transformed into a walking, talking toddler within a relatively short period of time. Caregivers are also transformed from someone who manages feeding and sleep schedules to a constantly moving guide and safety inspector for a mobile, energetic child.



Figure 1.2.2: A swaddled newborn. (Swaddled image by [Han Myo Htwe](#) on [Unsplash](#))

Early Childhood

Early childhood is also referred to as the preschool years and consists of the years which follow toddlerhood and precede formal schooling. As a three to five-year-old, the child is busy learning language, is gaining a sense of self and greater independence, and is beginning to learn the workings of the physical world. This knowledge does not come quickly, however, and preschoolers may initially have interesting conceptions of size, time, space and distance such as fearing that they may go down the drain if they sit at the front of the bathtub or by demonstrating how long something will take by holding out their two index fingers several inches apart. A toddler's fierce determination to do something may give way to a four-year-old's sense of guilt for action that brings the disapproval of others.



Figure 1.2.3: Two young children playing in the Singapore Botanic Gardens (Playing image by [Alaric Sim](#) on [Unsplash](#))

Middle Childhood

The ages of six through eleven comprise middle childhood and much of what children experience at this age is connected to their involvement in the early grades of school. Now the world becomes one of learning and testing new academic skills and by assessing one's abilities and accomplishments by making comparisons between self and others. Schools compare students and make these comparisons public through team sports, test scores, and other forms of recognition. Growth rates slow down and children are able to refine their motor skills at this point in life. And children begin to learn about social relationships beyond the family through interaction with friends and fellow students.



Figure 1.2.4: Two children running down the street in Carenage, Trinidad, and Tobago (Image by [Wayne Lee-Sing](#) on [Unsplash](#))

Adolescence

Adolescence is a period of dramatic physical change marked by an overall physical growth spurt and sexual maturation, known as puberty. It is also a time of cognitive change as the adolescent begins to think of new possibilities and to consider abstract concepts such as love, fear, and freedom. Ironically, adolescents have a sense of invincibility that puts them at greater risk of dying from accidents or contracting sexually transmitted infections that can have lifelong consequences.⁸



Figure 1.2.5: Two smiling teenage women. (Teen image by [Matheus Ferrero](#) on [Unsplash](#))

There are some aspects of development that have been hotly debated. Let's explore these.

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1.3: Issues in Development

Nature and Nurture

Why are people the way they are? Are features such as height, weight, personality, being diabetic, etc. the result of heredity or environmental factors-or both? For decades, scholars have carried on the "nature/nurture" debate. For any particular feature, those on the side of Nature would argue that heredity plays the most important role in bringing about that feature. Those on the side of Nurture would argue that one's environment is most significant in shaping the way we are. This debate continues in all aspects of human development, and most scholars agree that there is a constant interplay between the two forces. It is difficult to isolate the root of any single behavior as a result solely of nature or nurture.

Continuity versus Discontinuity

Is human development best characterized as a slow, gradual process, or is it best viewed as one of the more abrupt changes? The answer to that question often depends on which developmental theorist you ask and what topic is being studied. The theories of Freud, Erikson, Piaget, and Kohlberg are called stage theories. Stage theories or discontinuous development assume that developmental change often occurs in distinct stages that are qualitatively different from each other, and in a set, universal sequence. At each stage of development, children and adults have different qualities and characteristics. Thus, stage theorists assume development is more discontinuous. Others, such as the behaviorists, Vygotsky, and information processing theorists, assume development is a more slow and gradual process known as continuous development. For instance, they would see the adult as not possessing new skills, but more advanced skills that were already present in some form in the child. Brain development and environmental experiences contribute to the acquisition of more developed skills.

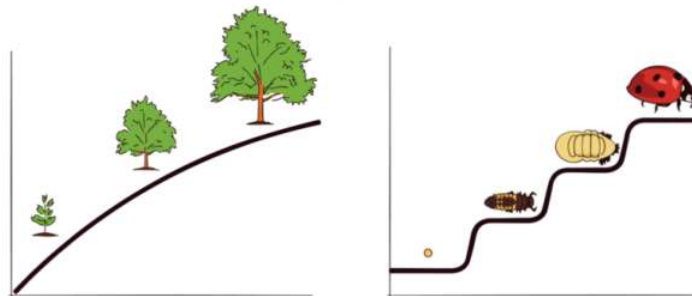


Figure 1.3.1: The graph to the left shows three stages in the continuous growth of a tree. The graph to the right shows four distinct stages of development in the life cycle of a ladybug. (Image by NOBA is licensed under CC BY-NC-SA 4.0)

Active versus Passive

How much do you play a role in your own developmental path? Are you at the whim of your genetic inheritance or the environment that surrounds you? Some theorists see humans as playing a much more active role in their own development. Piaget, for instance, believed that children actively explore their world and construct new ways of thinking to explain the things they experience. In contrast, many behaviorists view humans as being more passive in the developmental process.¹¹

How do we know so much about how we grow, develop, and learn? Let's look at how that data is gathered through research

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1.4: Research Methods

An important part of learning any science is having a basic knowledge of the techniques used in gathering information. The hallmark of scientific investigation is that of following a set of procedures designed to keep questioning or skepticism alive while describing, explaining, or testing any phenomenon. Some people are hesitant to trust academicians or researchers because they always seem to change their story. That, however, is exactly what science is all about; it involves continuously renewing our understanding of the subjects in question and an ongoing investigation of how and why events occur. Science is a vehicle for going on a never-ending journey. In the area of development, we have seen changes in recommendations for nutrition, in explanations of psychological states as people age, and in parenting advice. So think of learning about human development as a lifelong endeavor.

Take a moment to write down two things that you know about childhood. Now, how do you know? Chances are you know these things based on your own history (experiential reality) or based on what others have told you or cultural ideas (agreement reality) (Secombe and Warner, 2004). There are several problems with personal inquiry. Read the following sentence aloud:

Paris in the the spring

Are you sure that is what it said? Read it again:

Paris in the the spring

If you read it differently the second time (adding the second “the”) you just experienced one of the problems with personal inquiry; that is, the tendency to see what we believe. Our assumptions very often guide our perceptions, consequently, when we believe something, we tend to see it even if it is not there. This problem may just be a result of cognitive ‘blindness’ or it may be part of a more conscious attempt to support our own views. Confirmation bias is the tendency to look for evidence that we are right and in so doing, we ignore contradictory evidence. Popper suggests that the distinction between that which is scientific and that which is unscientific is that science is falsifiable; scientific inquiry involves attempts to reject or refute a theory or set of assumptions (Thornton, 2005). Theory that cannot be falsified is not scientific. And much of what we do in personal inquiry involves drawing conclusions based on what we have personally experienced or validating our own experience by discussing what we think is true with others who share the same views.

Science offers a more systematic way to make comparisons guard against bias.

Scientific Methods

One method of scientific investigation involves the following steps: 1. Determining a research question 2. Reviewing previous studies addressing the topic in question (known as a literature review) 3. Determining a method of gathering information 4. Conducting the study

5. Interpreting results 6. Drawing conclusions; stating limitations of the study and suggestions for future research 7. Making your findings available to others (both to share information and to have your work scrutinized by others)

Your findings can then be used by others as they explore the area of interest and through this process a literature or knowledge base is established. This model of scientific investigation presents research as a linear process guided by a specific research question. And it typically involves quantifying or using statistics to understand and report what has been studied. Many academic journals publish reports on studies conducted in this manner.

Another model of research referred to as qualitative research may involve steps such as these: 1. Begin with a broad area of interest 2. Gain entrance into a group to be researched 3. Gather field notes about the setting, the people, the structure, the activities or other areas of interest 4. Ask open ended, broad “grand tour” types of questions when interviewing subjects 5. Modify research questions as study continues 6. Note patterns or consistencies 7. Explore new areas deemed important by the people being observed 8. Report findings

In this type of research, theoretical ideas are “grounded” in the experiences of the participants. The researcher is the student and the people in the setting are the teachers as they inform the researcher of their world (Glazer & Strauss, 1967). Researchers are to be aware of their own biases and assumptions, acknowledge them and bracket them in efforts to keep them from limiting accuracy in reporting. Sometimes qualitative studies are used initially to explore a topic and more quantitative studies are used to test or explain what was first described.

Research Methods

Let's look more closely at some techniques, or research methods, used to describe, explain, or evaluate. Each of these designs has strengths and weaknesses and is sometimes used in combination with other designs within a single study.

Observational Studies

Observational studies involve watching and recording the actions of participants. This may take place in the natural setting, such as observing children at play at a park, or behind a one-way glass while children are at play in a laboratory playroom. The researcher may follow a checklist and record the frequency and duration of events (perhaps how many conflicts occur among 2-year-olds) or may observe and record as much as possible about an event (such as observing children in a classroom and capturing the details about the room design and what the children and teachers are doing and saying). In general, observational studies have the strength of allowing the researcher to see how people behave rather than relying on self-report. What people do and what they say they do are often very different. A major weakness of observational studies is that they do not allow the researcher to explain causal relationships. Yet, observational studies are useful and widely used when studying children. Children tend to change their behavior when they know they are being watched (known as the Hawthorne effect) and may not survey well.

Experiments

Experiments are designed to test hypotheses (or specific statements about the relationship between variables) in a controlled setting in efforts to explain how certain factors or events produce outcomes. A variable is anything that changes in value. Concepts are operationalized or transformed into variables in research, which means that the researcher must specify exactly what is going to be measured in the study.

Three conditions must be met in order to establish cause and effect. Experimental designs are useful in meeting these conditions. 1. The independent and dependent variables must be related. In other words, when one is altered, the other changes in response. (The independent variable is something altered or introduced by the researcher. The dependent variable is the outcome or the factor affected by the introduction of the independent variable. For example, if we are looking at the impact of exercise on stress levels, the independent variable would be exercise; the dependent variable would be stress.) 2. The cause must come before the effect. Experiments involve measuring subjects on the dependent variable before exposing them to the independent variable (establishing a baseline). So we would measure the subjects' level of stress before introducing exercise and then again after the exercise to see if there has been a change in stress levels. (Observational and survey research does not always allow us to look at the timing of these events, which makes understanding causality problematic with these designs.) 3. The cause must be isolated. The researcher must ensure that no outside, perhaps unknown variables are actually causing the effect we see. The experimental design helps make this possible. In an experiment, we would make sure that our subjects' diets were held constant throughout the exercise program. Otherwise, the diet might really be creating a change in stress level rather than exercise.

A basic experimental design involves beginning with a sample (or subset of a population) and randomly assigning subjects to one of two groups: the experimental group or the control group. The experimental group is the group that is going to be exposed to an independent variable or condition the researcher is introducing as a potential cause of an event. The control group is going to be used for comparison and is going to have the same experience as the experimental group but will not be exposed to the independent variable. After exposing the experimental group to the independent variable, the two groups are measured again to see if a change has occurred. If so, we are in a better position to suggest that the independent variable caused the change in the dependent variable.

The major advantage of the experimental design is that of helping to establish cause and effect relationships. A disadvantage of this design is the difficulty of translating much of what happens in a laboratory setting into real life.

Case Studies

Case studies involve exploring a single case or situation in great detail. Information may be gathered with the use of observation, interviews, testing, or other methods to uncover as much as possible about a person or situation. Case studies are helpful when investigating unusual situations such as brain trauma or children reared in isolation. And they are often used by clinicians who conduct case studies as part of their normal practice when gathering information about a client or patient coming in for treatment. Case studies can be used to explore areas about which little is known and can provide rich detail about situations or conditions.

However, the findings from case studies cannot be generalized or applied to larger populations; this is because cases are not randomly selected and no control group is used for comparison.

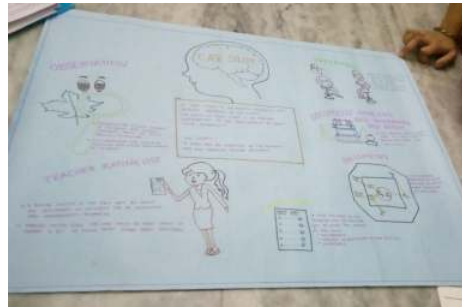


Figure 1.4.1: Illustrated poster from a classroom describing a case study. (Poster image by MaryGeorge is licensed under CC BY-SA 4.0)

Surveys

Surveys are familiar to most people because they are so widely used. Surveys enhance accessibility to subjects because they can be conducted in person, over the phone, through the mail, or online. A survey involves asking a standard set of questions to a group of subjects. In a highly structured survey, subjects are forced to choose from a response set such as “strongly disagree, disagree, undecided, agree, strongly agree”; or “0, 1-5, 6-10, etc.” This is known as the **Likert Scale**. Surveys are commonly used by sociologists, marketing researchers, political scientists, therapists, and others to gather information on many independent and dependent variables in a relatively short period of time. Surveys typically yield surface information on a wide variety of factors, but may not allow for in-depth understanding of human behavior.

Of course, surveys can be designed in a number of ways. They may include forced choice questions and semi-structured questions in which the researcher allows the respondent to describe or give details about certain events. One of the most difficult aspects of designing a good survey is wording questions in an unbiased way and asking the right questions so that respondents can give a clear response rather than choosing “undecided” each time. Knowing that 30% of respondents are undecided is of little use! So a lot of time and effort should be placed on the construction of survey items. One of the benefits of having forced choice items is that each response is coded so that the results can be quickly entered and analyzed using statistical software. Analysis takes much longer when respondents give lengthy responses that must be analyzed in a different way. Surveys are useful in examining stated values, attitudes, opinions, and reporting on practices. However, they are based on self-report or what people say they do rather than on observation and this can limit accuracy.

Developmental Designs

Developmental designs are techniques used in developmental research (and other areas as well). These techniques try to examine how age, cohort, gender, and social class impact development.

Longitudinal Research

Longitudinal research involves beginning with a group of people who may be of the same age and background and measuring them repeatedly over a long period of time. One of the benefits of this type of research is that people can be followed through time and be compared with them when they were younger.



Figure 1.4.2: A longitudinal research design. (Image by NOBA is licensed under CC BY-NC-SA 4.0)

A problem with this type of research is that it is very expensive and subjects may drop out over time. The Perry Preschool Project which began in 1962 is an example of a longitudinal study that continues to provide data on children’s development.

Cross-sectional Research

Cross-sectional research involves beginning with a sample that represents a cross-section of the population. Respondents who vary in age, gender, ethnicity, and social class might be asked to complete a survey about television program preferences or attitudes toward the use of the Internet. The attitudes of males and females could then be compared, as could attitudes based on age. In cross-sectional research, respondents are measured only once.

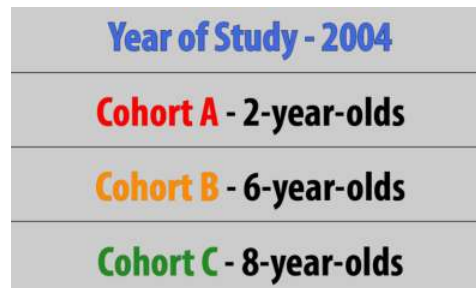


Figure 1.4.3: A cross-sectional research design. (Image by NOBA is licensed under CC BY-NC-SA 4.0)

This method is much less expensive than longitudinal research but does not allow the researcher to distinguish between the impact of age and the cohort effect. Different attitudes about the use of technology, for example, might not be altered by a person's biological age as much as their life experiences as members of a cohort.

Sequential Research

Sequential research involves combining aspects of the previous two techniques; beginning with a cross-sectional sample and measuring them through time.

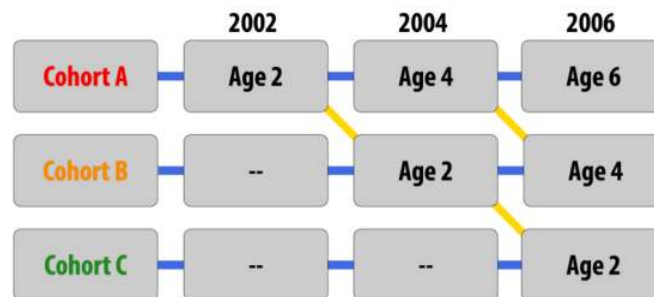


Figure 1.4.4: A sequential research design. (Image by NOBA is licensed under CC BY-NC-SA 4.0)

This is the perfect model for looking at age, gender, social class, and ethnicity. But the drawbacks of high costs and attrition are here as well.¹⁶

Table 1.4.1: Advantages and Disadvantages of Different Research Designs (Research Methods in Developmental Psychology by Angela Lukowski)

Type of Research Design	Advantages	Disadvantages
Longitudinal	- Examines changes within individuals over time - Provides a developmental analysis	- Expensive - Takes a long time - Participant attrition - Possibility of practice effects - Cannot examine cohort effects
Cross-sectional	- Examines changes between participants of different ages at the same point in time - Provides information on age-related change	- Cannot examine change over time - Cannot examine cohort effects
Sequential	- Examines changes within individuals over time - Examines changes between participants of different ages at the same point in time - Can be used to examine cohort effects	- May be expensive - Possibility of practice effects

Consent and Ethics in Research

Research should, as much as possible, be based on participants' freely volunteered informed consent. For minors, this also requires consent from their legal guardians. This implies a responsibility to explain fully and meaningfully to both the child and their guardians what the research is about and how it will be disseminated. Participants and their legal guardians should be aware of the research purpose and procedures, their right to refuse to participate; the extent to which confidentiality will be maintained; the potential uses to which the data might be put; the foreseeable risks and expected benefits; and that participants have the right to discontinue at any time.

But consent alone does not absolve the responsibility of researchers to anticipate and guard against potentially harmful consequences for participants.¹⁸ It is critical that researchers protect all rights of the participants including confidentiality.

Child development is a fascinating field of study – but care must be taken to ensure that researchers use appropriate methods to examine infant and child behavior, use the correct experimental design to answer their questions, and be aware of the special challenges that are part-and-parcel of developmental research. Hopefully, this information helped you develop an understanding of these various issues and to be ready to think more critically about research questions that interest you. There are so many interesting questions that remain to be examined by future generations of developmental scientists – maybe you will make one of the next big discoveries!¹⁹

Another really important framework to use when trying to understand children's development are theories of development. Let's explore what theories are and introduce you to some major theories in child development.

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1.5: Developmental Theories

What is a Theory?

Students sometimes feel intimidated by theory; even the phrase, “Now we are going to look at some theories...” is met with blank stares and other indications that the audience is now lost. But theories are valuable tools for understanding human behavior; in fact, they are proposed explanations for the “how” and “whys” of development. Have you ever wondered, “Why is my three year old so inquisitive?” or “Why are some fifth graders rejected by their classmates?” Theories can help explain these and other occurrences. Developmental theories offer explanations about how we develop, why we change over time and the kinds of influences that impact development.

A **theory** guides and helps us interpret research findings as well. It provides the researcher with a blueprint or model to be used to help piece together various studies. Think of theories as guidelines much like directions that come with an appliance or other object that requires assembly. The instructions can help one piece together smaller parts more easily than if trial and error are used.

Theories can be developed using induction in which a number of single cases are observed and after patterns or similarities are noted, the theorist develops ideas based on these examples. Established theories are then tested through research; however, not all theories are equally suited to scientific investigation. Some theories are difficult to test but are still useful in stimulating debate or providing concepts that have practical application. Keep in mind that theories are not facts; they are guidelines for investigation and practice, and they gain credibility through research that fails to disprove them.²⁰

Let’s take a look at some key theories in Child Development.

Sigmund Freud’s Psychosexual Theory

We begin with the often controversial figure, Sigmund Freud (1856-1939). Freud has been a very influential figure in the area of development; his view of development and psychopathology dominated the field of psychiatry until the growth of behaviorism in the 1950s. His assumptions that personality forms during the first few years of life and that the ways in which parents or other caregivers interact with children have a long-lasting impact on children’s emotional states have guided parents, educators, clinicians, and policy-makers for many years. We have only recently begun to recognize that early childhood experiences do not always result in certain personality traits or emotional states. There is a growing body of literature addressing resilience in children who come from harsh backgrounds and yet develop without damaging emotional scars (O’Grady and Metz, 1987). Freud has stimulated an enormous amount of research and generated many ideas. Agreeing with Freud’s theory in its entirety is hardly necessary for appreciating the contribution he has made to the field of development.

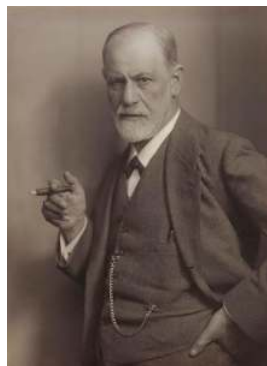


Figure 1.5.1: Sigmund Freud. (Freud image is in the public domain)

Freud’s theory of self suggests that there are three parts of the self.

- The **id** is the part of the self that is inborn. It responds to biological urges without pause and is guided by the principle of pleasure: if it feels good, it is the thing to do. A newborn is all id. The newborn cries when hungry, defecates when the urge strikes.
- The **ego** develops through interaction with others and is guided by logic or the reality principle. It has the ability to delay gratification. It knows that urges have to be managed. It mediates between the id and superego using logic and reality to calm the other parts of the self.

- The **superego** represents society's demands for its members. It is guided by a sense of guilt. Values, morals, and the conscience are all part of the superego.

The personality is thought to develop in response to the child's ability to learn to manage biological urges. Parenting is important here. If the parent is either overly punitive or lax, the child may not progress to the next stage. Here is a brief introduction to Freud's stages.

Table 1.5.1: Sigmund Freud's Psychosexual Theory

Name of Stage	Descriptions of Stage
Oral Stage	The oral stage lasts from birth until around age 2. The infant is all id. At this stage, all stimulation and comfort is focused on the mouth and is based on the reflex of sucking. Too much indulgence or too little stimulation may lead to fixation.
Anal Stage	The anal stage coincides with potty training or learning to manage biological urges. The ego is beginning to develop in this stage. Anal fixation may result in a person who is compulsively clean and organized or one who is sloppy and lacks self-control.
Phallic Stage	The phallic stage occurs in early childhood and marks the development of the superego and a sense of masculinity or femininity as culture dictates.
Latency	Latency occurs during middle childhood when a child's urges quiet down and friendships become the focus. The ego and superego can be refined as the child learns how to cooperate and negotiate with others.
Genital Stage	The genital stage begins with puberty and continues through adulthood. Now the preoccupation is that of sex and reproduction.

Strengths and Weaknesses of Freud's Theory

Freud's theory has been heavily criticized for several reasons. One is that it is very difficult to test scientifically. How can parenting in infancy be traced to personality in adulthood? Are there other variables that might better explain development? The theory is also considered to be sexist in suggesting that women who do not accept an inferior position in society are somehow psychologically flawed. Freud focuses on the darker side of human nature and suggests that much of what determines our actions is unknown to us. So why do we study Freud? As mentioned above, despite the criticisms, Freud's assumptions about the importance of early childhood experiences in shaping our psychological selves have found their way into child development, education, and parenting practices. Freud's theory has heuristic value in providing a framework from which to elaborate and modify subsequent theories of development. Many later theories, particularly behaviorism and humanism, were challenges to Freud's views.²²

Main Points to Note About Freud's Psychosexual Theory

Freud believed that:

- Development in the early years has a lasting impact.
- There are three parts of the self: the id, the ego, and the superego
- People go through five stages of psychosexual development: the oral stage, the anal stage, the phallic stage, latency, and the genital stage

We study Freud because his assumptions the importance of early childhood experience provide a framework for later theories (the both elaborated and contradicted/challenged his work).

Erik Erikson's Psychosocial Theory

Now, let's turn to a less controversial theorist, Erik Erikson. Erikson (1902-1994) suggested that our relationships and society's expectations motivate much of our behavior in his theory of psychosocial development. Erikson was a student of Freud's but emphasized the importance of the ego, or conscious thought, in determining our actions. In other words, he believed that we are not driven by unconscious urges. We know what motivates us and we consciously think about how to achieve our goals. He is considered the father of developmental psychology because his model gives us a guideline for the entire life span and suggests certain primary psychological and social concerns throughout life.



Figure 1.5.2: Erik Erikson. (Erikson image is in the public domain)

Erikson expanded on Freud's by emphasizing the importance of culture in parenting practices and motivations and adding three stages of adult development (Erikson, 1950; 1968).

He believed that we are aware of what motivates us throughout life and the ego has greater importance in guiding our actions than does the id. We make conscious choices in life and these choices focus on meeting certain social and cultural needs rather than purely biological ones. Humans are motivated, for instance, by the need to feel that the world is a trustworthy place, that we are capable individuals, that we can make a contribution to society, and that we have lived a meaningful life. These are all psychosocial problems.

Erikson divided the lifespan into eight stages. In each stage, we have a major psychosocial task to accomplish or crisis to overcome. Erikson believed that our personality continues to take shape throughout our lifespan as we face these challenges in living. Here is a brief overview of the eight stages:

Table 1.5.2: Erik Erikson's Psychosocial Theory

Name of Stage	Description of Stage
Trust vs. mistrust (0-1)	The infant must have basic needs met in a consistent way in order to feel that the world is a trustworthy place.
Autonomy vs. shame and doubt (1-2)	Mobile toddlers have newfound freedom they like to exercise and by being allowed to do so, they learn some basic independence.
Initiative vs. Guilt (3-5)	Preschoolers like to initiate activities and emphasize doing things "all by myself."
Industry vs. inferiority (6- 11)	School aged children focus on accomplishments and begin making comparisons between themselves and their classmates
Identity vs. role confusion (adolescence)	Teenagers are trying to gain a sense of identity as they experiment with various roles, beliefs, and ideas.
Intimacy vs. Isolation (young adulthood)	In our 20s and 30s we are making some of our first long-term commitments in intimate relationships.
Generativity vs. stagnation (middle adulthood)	The 40s through the early 60s we focus on being productive at work and home and are motivated by wanting to feel that we've made a contribution to society.
Integrity vs. Despair (late adulthood)	We look back on our lives and hope to like what we see-that we have lived well and have a sense of integrity because we lived according to our beliefs.

These eight stages form a foundation for discussions on emotional and social development during the life span. Keep in mind, however, that these stages or crises can occur more than once. For instance, a person may struggle with a lack of trust beyond infancy under certain circumstances. Erikson's theory has been criticized for focusing so heavily on stages and assuming that the completion of one stage is a prerequisite for the next crisis of development. His theory also focuses on the social expectations that are found in certain cultures, but not in all. For instance, the idea that adolescence is a time of searching for identity might translate well in the middle-class culture of the United States, but not as well in cultures where the transition into adulthood coincides with puberty through rites of passage and where adult roles offer fewer choices.²⁴

Main Points to Note About Erikson's Psychosocial Theory

Erikson was a student of Freud but focused on conscious thought.

- His stages of psychosocial development address the entire lifespan and suggest primary psychosocial crisis in some cultures that adults can use to understand how to support children's social and emotional development.
- The stages include: trust vs. mistrust, autonomy vs. shame and doubt, initiative vs. guilt, industry vs. inferiority, identity vs. role confusion, intimacy vs. isolation, generativity vs. stagnation, and integrity vs. despair.

Behaviorism

While Freud and Erikson looked at what was going on in the mind, behaviorism rejected any reference to mind and viewed overt and observable behavior as the proper subject matter of psychology. Through the scientific study of behavior, it was hoped that laws of learning could be derived that would promote the prediction and control of behavior.²⁵

Ivan Pavlov

Ivan Pavlov (1880-1937) was a Russian physiologist interested in studying digestion. As he recorded the amount of salivation his laboratory dogs produced as they ate, he noticed that they actually began to salivate before the food arrived as the researcher walked down the hall and toward the cage. "This," he thought, "is not natural!" One would expect a dog to automatically salivate when food hit their palate, but BEFORE the food comes? Of course, what had happened was . . . you tell me. That's right! The dogs knew that the food was coming because they had learned to associate the footsteps with the food. The key word here is "learned". A learned response is called a "conditioned" response.



Figure 1.5.3: Ivan Pavlov. (Pavlov image is in the public domain)

Pavlov began to experiment with this concept of **classical conditioning**. He began to ring a bell, for instance, prior to introducing the food. Sure enough, after making this connection several times, the dogs could be made to salivate to the sound of a bell. Once the bell had become an event to which the dogs had learned to salivate, it was called a **conditioned stimulus**. The act of salivating to a bell was a response that had also been learned, now termed in Pavlov's jargon, a conditioned response. Notice that the response, salivation, is the same whether it is conditioned or unconditioned (unlearned or natural). What changed is the stimulus to which the dog salivates. One is natural (unconditioned) and one is learned (conditioned).

Let's think about how classical conditioning is used on us. One of the most widespread applications of classical conditioning principles was brought to us by the psychologist, John B. Watson.

John B. Watson

John B. Watson (1878-1958) believed that most of our fears and other emotional responses are classically conditioned. He had gained a good deal of popularity in the 1920s with his expert advice on parenting offered to the public.



Figure 1.5.4: John B. Watson. (Watson image is in the public domain)

He tried to demonstrate the power of classical conditioning with his famous experiment with an 18-month-old boy named “Little Albert”. Watson sat Albert down and introduced a variety of seemingly scary objects to him: a burning piece of newspaper, a white rat, etc. But Albert remained curious and reached for all of these things. Watson knew that one of our only inborn fears is the fear of loud noises so he proceeded to make a loud noise each time he introduced one of Albert’s favorites, a white rat. After hearing the loud noise several times paired with the rat, Albert soon came to fear the rat and began to cry when it was introduced. Watson filmed this experiment for posterity and used it to demonstrate that he could help parents achieve any outcomes they desired, if they would only follow his advice. Watson wrote columns in newspapers and in magazines and gained a lot of popularity among parents eager to apply science to household order.

Operant conditioning, on the other hand, looks at the way the consequences of a behavior increase or decrease the likelihood of a behavior occurring again. So let’s look at this a bit more.

B.F. Skinner and Operant Conditioning

B. F. Skinner (1904-1990), who brought us the principles of operant conditioning, suggested that reinforcement is a more effective means of encouraging a behavior than is criticism or punishment. By focusing on strengthening desirable behavior, we have a greater impact than if we emphasize what is undesirable. Reinforcement is anything that an organism desires and is motivated to obtain.



Figure 1.5.5: B. F. Skinner. (Skinner image is in the public domain)

A **reinforcer** is something that encourages or promotes a behavior. Some things are natural rewards. They are considered intrinsic or primary because their value is easily understood. Think of what kinds of things babies or animals such as puppies find rewarding.

Extrinsic or secondary reinforcers are things that have a value not immediately understood. Their value is indirect. They can be traded in for what is ultimately desired.

The use of **positive reinforcement** involves adding something to a situation in order to encourage a behavior. For example, if I give a child a cookie for cleaning a room, the addition of the cookie makes cleaning more likely in the future. Think of ways in which you positively reinforce others.

Negative reinforcement occurs when taking something unpleasant away from a situation encourages behavior. For example, I have an alarm clock that makes a very unpleasant, loud sound when it goes off in the morning. As a result, I get up and turn it off. By removing the noise, I am reinforced for getting up. How do you negatively reinforce others?

Punishment is an effort to stop a behavior. It means to follow an action with something unpleasant or painful. Punishment is often less effective than reinforcement for several reasons. It doesn’t indicate the desired behavior, it may result in suppressing rather than stopping a behavior, (in other words, the person may not do what is being punished when you’re around, but may do it often when you leave), and a focus on punishment can result in not noticing when the person does well. Not all behaviors are learned

through association or reinforcement. Many of the things we do are learned by watching others. This is addressed in social learning theory.

Social Learning Theory

Albert Bandura (1925-) is a leading contributor to social learning theory. He calls our attention to the ways in which many of our actions are not learned through conditioning; rather, they are learned by watching others (1977). Young children frequently learn behaviors through imitation



Figure 1.5.6: Albert Bandura. (Bandura image by Albert Bandura is licensed under CC BY-SA 4.0)

Sometimes, particularly when we do not know what else to do, we learn by modeling or copying the behavior of others. A kindergartner on his or her first day of school might eagerly look at how others are acting and try to act the same way to fit in more quickly. Adolescents struggling with their identity rely heavily on their peers to act as role-models. Sometimes we do things because we've seen it pay off for someone else. They were operantly conditioned, but we engage in the behavior because we hope it will pay off for us as well. This is referred to as vicarious reinforcement (Bandura, Ross and Ross, 1963).

Bandura (1986) suggests that there is interplay between the environment and the individual. We are not just the product of our surroundings, rather we influence our surroundings. Parents not only influence their child's environment, perhaps intentionally through the use of reinforcement, etc., but children influence parents as well. Parents may respond differently with their first child than with their fourth. Perhaps they try to be the perfect parents with their firstborn, but by the time their last child comes along they have very different expectations both of themselves and their child. Our environment creates us and we create our environment.³⁰

Bandura and the Bobo Doll Experiment & Today's Children and the Media

Other social influences: TV or not TV? Bandura (et als. 1963) began a series of studies to look at the impact of television, particularly commercials, on the behavior of children. Are children more likely to act out aggressively when they see this behavior modeled? What if they see it being reinforced? Bandura began by conducting an experiment in which he showed children a film of a woman hitting an inflatable clown or "bobo" doll. Then the children were allowed in the room where they found the doll and immediately began to hit it. This was without any reinforcement whatsoever. Not only that, but they found new ways to behave aggressively. It's as if they learned an aggressive role.

Children view far more television today than in the 1960s; so much, in fact, that they have been referred to as Generation M (media). The amount of screen time varies by age. As of 2017, children 0-8 spend an average of 2 hours and 19 minutes. Children 8-12 years of age spend almost 6 hours a day on screen media. And 13- to 18-year-olds spend an average of just under 9 hours a day in entertainment media use.

The prevalence of violence, sexual content, and messages promoting foods high in fat and sugar in the media are certainly cause for concern and the subjects of ongoing research and policy review. Many children spend even more time on the computer viewing content from the internet. The amount of time spent connected to the internet continues to increase with the use of smartphones that essentially serve as mini-computers. And the ways children and adolescents interact with the media continues to change. The popularity of YouTube and the various social media platforms are examples of this. What might be the implications of this?³¹

Main Points to Note About Behaviorism

Behaviorists look at observable behavior and how it can be predicted and controlled.

- Pavlov experimented with classical conditioning, the process of conditioning a response to stimulus (the dog's salivating to the bell).
- Watson offered advice to parents to show them how classical conditioning can be used. His most famous experiment was conditioning Little Albert to fear a white rat.
- Skinner believed that reinforcing behavior is the most effective way of increasing desirable behavior. This is done through operant conditioning.
- Bandura noted that many behaviors are not learned through any type of conditioning, but rather through imitation. And he believed that people are not only influenced by their surroundings, but that they also have an impact on their surroundings.

Theories also explore cognitive development and how mental processes change over time.

Jean Piaget's Theory of Cognitive Development

Jean Piaget (1896-1980) is one of the most influential cognitive theorists. Piaget was inspired to explore children's ability to think and reason by watching his own children's development. He was one of the first to recognize and map out the ways in which children's thought differs from that of adults. His interest in this area began when he was asked to test the IQ of children and began to notice that there was a pattern in their wrong answers. He believed that children's intellectual skills change over time through maturation. Children of differing ages interpret the world differently.



Figure 1.5.7: Jean Piaget. (Piaget image is in the public domain)

Piaget believed our desire to understand the world comes from a need for cognitive **equilibrium**. This is an agreement or balance between what we sense in the outside world and what we know in our minds. If we experience something that we cannot understand, we try to restore the balance by either changing our thoughts or by altering the experience to fit into what we do understand. Perhaps you meet someone who is very different from anyone you know. How do you make sense of this person? You might use them to establish a new category of people in your mind or you might think about how they are similar to someone else.

A **schema** or schemes are categories of knowledge. They are like mental boxes of concepts. A child has to learn many concepts. They may have a scheme for "under" and "soft" or "running" and "sour". All of these are schema. Our efforts to understand the world around us lead us to develop new schema and to modify old ones.

One way to make sense of new experiences is to focus on how they are similar to what we already know. This is **assimilation**. So the person we meet who is very different may be understood as being "sort of like my brother" or "his voice sounds a lot like yours." Or a new food may be assimilated when we determine that it tastes like chicken!

Another way to make sense of the world is to change our mind. We can make a cognitive accommodation to this new experience by adding new schema. This food is unlike anything I've tasted before. I now have a new category of foods that are bitter-sweet in flavor, for instance. This is **accommodation**. Do you accommodate or assimilate more frequently? Children accommodate more frequently as they build new schema. Adults tend to look for similarity in their experience and assimilate. They may be less inclined to think "outside the box." Piaget suggested different ways of understanding that are associated with maturation. He divided this into four stages:

Table 1.5.3: Jean Piaget's Theory of Cognitive Development

Name of Stage	Description of Stage
Sensorimotor Stage	During the sensorimotor stage children rely on use of the senses and motor skills. From birth until about age 2, the infant knows by tasting, smelling, touching, hearing, and moving objects around. This is a real hands on type of knowledge.
Preoperational Stage	In the preoperational stage , children from ages 2 to 7, become able to think about the world using symbols. A symbol is something that stands for something else. The use of language, whether it is in the form of words or gestures, facilitates knowing and communicating about the world. This is the hallmark of preoperational intelligence and occurs in early childhood. However, these children are preoperational or pre-logical. They still do not understand how the physical world operates. They may, for instance, fear that they will go down the drain if they sit at the front of the bathtub, even though they are too big.
Concrete Operational	Children in the concrete operational stage, ages 7 to 11, develop the ability to think logically about the physical world. Middle childhood is a time of understanding concepts such as size, distance, and constancy of matter, and cause and effect relationships. A child knows that a scrambled egg is still an egg and that 8 ounces of water is still 8 ounces no matter what shape of glass contains it.
Formal Operational	During the formal operational stage children, at about age 12, acquire the ability to think logically about concrete and abstract events. The teenager who has reached this stage is able to consider possibilities and to contemplate ideas about situations that have never been directly encountered. More abstract understanding of religious ideas or morals or ethics and abstract principles such as freedom and dignity can be considered.

Criticisms of Piaget's Theory

Piaget has been criticized for overemphasizing the role that physical maturation plays in cognitive development and in underestimating the role that culture and interaction (or experience) plays in cognitive development. Looking across cultures reveals considerable variation in what children are able to do at various ages. Piaget may have underestimated what children are capable of given the right circumstances.³³

Main Points To Note About Piaget's Theory of Cognitive Development

Piaget, one of the most influential cognitive theorists, believed that

- Understanding is motivated by trying to balance what we sense in the world and what we know in our minds.
- Understanding is organized through creating categories of knowledge. When presented with new knowledge we may add new schema or modify existing ones.

Children's understanding of the world of the world changes as their cognitive skills mature through four stages: sensorimotor stage, preoperational stage, concrete operational stage, and formal operational stage.

Lev Vygotsky's Sociocultural Theory

Lev Vygotsky (1896-1934) was a Russian psychologist who wrote in the early 1900s but whose work was discovered in the United States in the 1960s but became more widely known in the 1980s. Vygotsky differed with Piaget in that he believed that a person not only has a set of abilities, but also a set of potential abilities that can be realized if given the proper guidance from others. His

sociocultural theory emphasizes the importance of culture and interaction in the development of cognitive abilities. He believed that through guided participation known as scaffolding, with a teacher or capable peer, a child can learn cognitive skills within a certain range known as the **zone of proximal development**.³⁴ His belief was that development occurred first through children's immediate social interactions, and then moved to the individual level as they began to internalize their learning.³⁵



Figure 1.5.8: Lev Vygotsky. (Image by The Vygotsky Project is licensed under [CC BY-SA 3.0](#))

Have you ever taught a child to perform a task? Maybe it was brushing their teeth or preparing food. Chances are you spoke to them and described what you were doing while you demonstrated the skill and let them work along with you all through the process. You gave them assistance when they seemed to need it, but once they knew what to do-you stood back and let them go. This is **scaffolding** and can be seen demonstrated throughout the world. This approach to teaching has also been adopted by educators. Rather than assessing students on what they are doing, they should be understood in terms of what they are capable of doing with the proper guidance. You can see how Vygotsky would be very popular with modern day educators.³⁷

Main Points to Note About Vygotsky's Sociocultural Theory

Vygotsky concentrated on the child's interactions with peers and adults. He believed that the child was an apprentice, learning through sensitive social interactions with more skilled peers and adults.

Comparing Piaget and Vygotsky

Vygotsky concentrated more on the child's immediate social and cultural environment and his or her interactions with adults and peers. While Piaget saw the child as actively discovering the world through individual interactions with it, Vygotsky saw the child as more of an apprentice, learning through a social environment of others who had more experience and were sensitive to the child's needs and abilities.³⁸

Like Vygotsky's, Bronfenbrenner looked at the social influences on learning and development.

Urie Bronfenbrenner's Ecological Systems Model

Urie Bronfenbrenner (1917-2005) offers us one of the most comprehensive theories of human development. Bronfenbrenner studied Freud, Erikson, Piaget, and learning theorists and believed that all of those theories could be enhanced by adding the dimension of context. What is being taught and how society interprets situations depends on who is involved in the life of a child and on when and where a child lives.



Figure 1.5.9: Urie Bronfenbrenner. (Image by Marco Vicente González is licensed under [CC BY-SA 4.0](#))

Bronfenbrenner's ecological systems model explains the direct and indirect influences on an individual's development.

Table 1.5.4: Urie Bronfenbrenner's Ecological Systems Model

Name of System	Description of System
Microsystems	Microsystems impact a child directly. These are the people with whom the child interacts such as parents, peers, and teachers. The relationship between individuals and those around them need to be considered. For example, to appreciate what is going on with a student in math, the relationship between the student and teacher should be known.
Mesosystems	Mesosystems are interactions between those surrounding the individual. The relationship between parents and schools, for example will indirectly affect the child.
Exosystem	Larger institutions such as the mass media or the healthcare system are referred to as the exosystem . These have an impact on families and peers and schools who operate under policies and regulations found in these institutions.
Macrosystems	We find cultural values and beliefs at the level of macrosystems . These larger ideals and expectations inform institutions that will ultimately impact the individual.
Chronosystem	All of this happens in an historical context referred to as the chronosystem . Cultural values change over time, as do policies of educational institutions or governments in certain political climates. Development occurs at a point in time.

For example, in order to understand a student in math, we can't simply look at that individual and what challenges they face directly with the subject. We have to look at the interactions that occur between teacher and child. Perhaps the teacher needs to make modifications as well. The teacher may be responding to regulations made by the school, such as new expectations for students in math or constraints on time that interfere with the teacher's ability to instruct. These new demands may be a response to national efforts to promote math and science deemed important by political leaders in response to relations with other countries at a particular time in history.

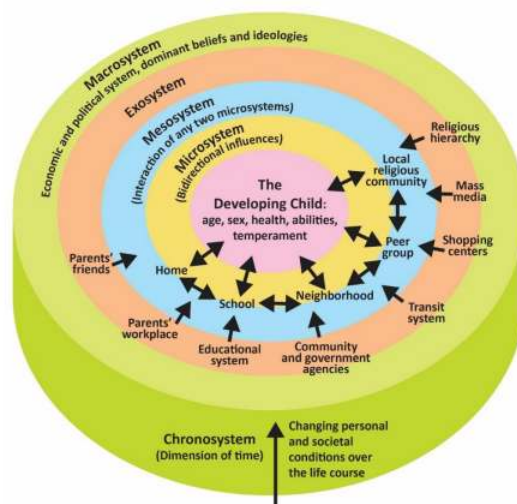


Figure 1.5.10: Bronfenbrenner's ecological systems theory. (Image by Ian Joslin is licensed under [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/))

Bronfenbrenner's ecological systems model challenges us to go beyond the individual if we want to understand human development and promote improvements.⁴¹

Main Points to Note About Bronfenbrenner's Ecological Model

After studying all of the prior theories, Bronfenbrenner added an important element of context to the discussion of influences on human development.

- He believed that the people involved in children's lives and when and where they live are important considerations.
- He created a model of nested systems that influence the child (and are influenced by the child) that include: microsystems, mesosystems, the exosystem, macrosystems, and chronosystems.

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1.S: Summary

In this chapter we looked at:

- underlying principles of development
- the five periods of development
- three issues in development
- Various methods of research
- important theories that help us understand development

Next, we are going to be examining where we all started with conception, heredity, and prenatal development.

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CHAPTER OVERVIEW

2: Conception, Heredity, and Prenatal Development

Learning Objectives

After this chapter, you should be able to:

1. Evaluate roles of nature and nurture in development.
2. Define genes and chromosomes.
3. Differentiate mitosis and meiosis.
4. Explain dominant and recessive patterns on inheritance.
5. List common genetic disorders and chromosomal abnormalities.
6. Describe changes that occur within each of the three periods of prenatal development.
7. Recognize the risks to prenatal development posed by exposure to teratogens.
8. Evaluate different types of prenatal assessment.

In this chapter, we will begin by examining some of the ways in which heredity helps to shape the way we are. We will look at what happens genetically during conception, and describe some known genetic and chromosomal disorders. Next we will consider what happens during prenatal development, including the impact of teratogens. We will also discuss the impact that both the mother and father have on the developing fetus.

[2.1: Heredity](#)

[2.2: Prenatal Development](#)

[2.S: Summary](#)

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2.1: Heredity

Nature and Nurture

Most scholars agree that there is a constant interplay between nature (heredity) and nurture (the environment). It is difficult to isolate the root of any single characteristic as a result solely of nature or nurture, and most scholars believe that even determining the extent to which nature or nurture impacts a human feature is difficult to answer. In fact, almost all human features are polygenic (a result of many genes) and multifactorial (a result of many factors, both genetic and environmental). It's as if one's genetic make-up sets up a range of possibilities, which may or may not be realized depending upon one's environmental experiences. For instance, a person might be genetically predisposed to develop diabetes, but the person's lifestyle may determine whether or not they actually develop the disease.

This bidirectional interplay between nature and nurture is the **epigenetic framework**, which suggests that the environment can affect the expression of genes just as genetic predispositions can impact a person's potentials. And environmental circumstances can trigger symptoms of a genetic disorder.²

Environment Correlations

Environment Correlations refer to the processes by which genetic factors contribute to variations in the environment (Plomin, DeFries, Knopik, & Neiderhiser, 2013). There are three types of genotype-environment correlations:

Passive genotype-environment correlation occurs when children passively inherit the genes and the environments their family provides. Certain behavioral characteristics, such as being athletically inclined, may run in families. The children have inherited both the genes that would enable success at these activities, and given the environmental encouragement to engage in these actions.



Figure 2.1.1: Two skiers. (Skiers image by Alexey Ruban on Unsplash)

Evocative genotype-environment correlation refers to how the social environment reacts to individuals based on their inherited characteristics. For example, whether one has a more outgoing or shy temperament will affect how he or she is treated by others.

Active genotype-environment correlation occurs when individuals seek out environments that support their genetic tendencies. This is also referred to as niche picking. For example, children who are musically inclined seek out music instruction and opportunities that facilitate their natural musical ability.

Conversely, **Genotype-Environment Interactions** involve genetic susceptibility to the environment. Adoption studies provide evidence for genotype-environment interactions. For example, the Early Growth and Development Study (Leve, Neiderhiser, Scaramella, & Reiss, 2010) followed 360 adopted children and their adopted and biological parents in a longitudinal study. Results have shown that children whose biological parents exhibited psychopathology, exhibited significantly fewer behavior problems when their adoptive parents used more structured parenting than unstructured. Additionally, elevated psychopathology in adoptive parents increased the risk for the children's development of behavior problems, but only when the biological parents' psychopathology was high. Consequently, the results show how environmental effects on behavior differ based on the genotype, especially stressful environments on genetically at-risk children. ⁴

Genes and Chromosomes

Now, let's look more closely at just nature. Nature refers to the contribution of genetics to one's development. The basic building block of the nature perspective is the gene. **Genes** are recipes for making proteins, while proteins influence the structure and

functions of cells. Genes are located on the chromosomes and there are an estimated 20,500 genes for humans, according to the Human Genome Project (NIH, 2015).

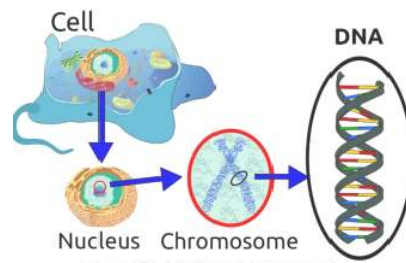


Figure 2.2 – DNA's location in the cell.⁵

Figure 2.1.2: DNA's location in the cell. (Image by Radio89 is licensed under CC BY-SA 3.0)

Normal human cells contain 46 chromosomes (or 23 pairs; one from each parent) in the nucleus of the cells. After conception, most cells of the body are created by a process called mitosis. **Mitosis** is defined as the cell's nucleus making an exact copy of all the chromosomes and splitting into two new cells.

However, the cells used in sexual reproduction, called the gametes (sperm or ova), are formed in a process called meiosis. In meiosis, the gamete's chromosomes duplicate, and then divide twice resulting in four cells containing only half the genetic material of the original gamete. Thus, each sperm and egg possesses only 23 chromosomes and combine to produce the normal 46.

Table 2.1 - Mitosis & Meiosis

Type of Cell Division	Explanation	Steps
Mitosis	All cells, except those used in sexual reproduction, are created by mitosis	Step 1. Chromosomes make a duplicate copy Step 2. Two identical cells are created
Meiosis	Cells used in sexual reproduction are created by meiosis	Step 1. Exchange of gene between the chromosomes (crossing over) Step 2. Chromosomes make a duplicate Step 3. First cell division Step 4. Second cell division

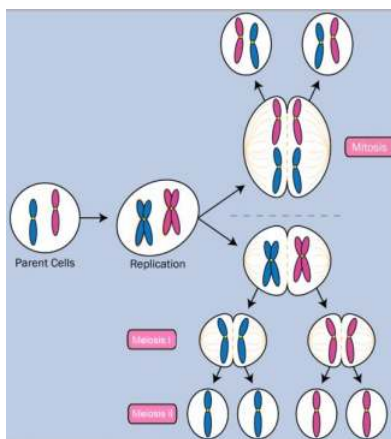


Figure 2.1.3: Mitosis and Meiosis. (Image by Community College Consortium for Bioscience Credentials is licensed under CC BY 3.0)

Given the amount of genes present and the unpredictability of the meiosis process, the likelihood of having offspring that are genetically identical (and not twins) is one in trillions (Gould & Keeton, 1997).

Of the 23 pairs of chromosomes created at conception, 22 pairs are similar in length. These are called **autosomes**. The remaining pair, or **sex chromosomes**, may differ in length. If a child receives the combination of XY, the child will be genetically male. If the child receives the combination XX, the child will be genetically female.⁸

Here is an image (called a karyogram) of what the 23 pairs of chromosomes look like. Notice the differences between the sex chromosomes in female (XX) and male (XY).

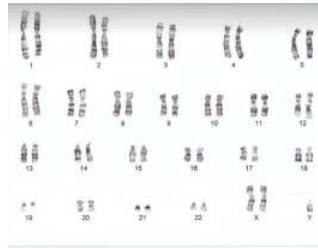


Figure 2.1.4: The 23 pairs of chromosomes. (Image by Nami-ja is in the public domain)

Genotypes and Phenotypes & Patterns on Inheritance

The word **genotype** refers to the sum total of all the genes a person inherits. The word **phenotype** refers to the features that are actually expressed. Look in the mirror. What do you see, your genotype or your phenotype? What determines whether or not genes are expressed? Because genes are inherited in pairs on the chromosomes, we may receive either the same version of a gene from our mother and father, that is, be **homozygous** for that characteristic the gene influences. If we receive a different version of the gene from each parent, that is referred to as **heterozygous**.

In the homozygous situation we will display that characteristic. It is in the heterozygous condition that it becomes clear that not all genes are created equal. Some genes are **dominant**, meaning they express themselves in the phenotype even when paired with a different version of the gene, while their silent partner is called recessive. **Recessive** genes express themselves only when paired with a similar version gene. Geneticists refer to different versions of a gene as alleles. Some dominant traits include having facial dimples, curly hair, normal vision, and dark hair. Some recessive traits include red hair, being nearsighted, and straight hair.

Most characteristics are not the result of a single gene; they are **polygenic**, meaning they are the result of several genes. In addition, the dominant and recessive patterns described above are usually not that simple either. Sometimes the dominant gene does not completely suppress the recessive gene; this is called incomplete dominance. 10

Genetic Disorders

Most of the known **genetic disorders** are dominant gene-linked; however, the vast majority of dominant gene linked disorders are not serious or debilitating. For example, the majority of those with Tourette's Syndrome suffer only minor tics from time to time and can easily control their symptoms. When dominant-gene linked diseases are serious, they do not tend to become symptomatic until later in life. Huntington's Disease is a dominant gene linked disorder that affects the nervous system and is fatal, but does not appear until midlife.

Recessive gene disorders, such as cystic fibrosis and sickle-cell anemia, are less common but may actually claim more lives because they are less likely to be detected as people are unaware that they are carriers of the disease.

Some genetic disorders are sex-linked; the defective gene is found on the X-chromosome. Males have only one X chromosome so are at greater risk for sex-linked disorders due to a recessive gene such as hemophilia, color-blindness, and baldness. For females to be affected by recessive genetic defects, they need to inherit the recessive gene on both X-chromosomes. But if the defective gene is dominant, females are equally at risk.

Here are tables of some genetic disorders:

Recessive Disorders (Homozygous): The individual inherits a gene change from both parents. If the gene is inherited from just one parent, the person is a carrier and does not have the condition.

Table 2.2 - Recessive Disorders (Homozygous)

Disorder	Description	Cases per Birth
Sickle Cell Disease (SCD)	A condition in which the red blood cells in the body are shaped like a sickle (like the letter C) and affect the ability of the blood to transport oxygen.	1 in 500 Black births 1 in 36,000 Hispanic births
Cystic Fibrosis (CF)	A condition that affects breathing and digestion due to thick mucus building up in the body, especially the lungs and digestive system. In CF, the mucus is thicker than normal and sticky.	1 in 3500
Phenylketonuria (PKU)	A metabolic disorder in which the individual cannot metabolize phenylalanine, an amino acid. Left untreated, intellectual deficits occur. PKU is easily detected and is treated with a special diet.	1 in 10,000
Tay Sachs Disease	Caused by an enzyme deficiency resulting in the accumulation of lipids in the nerves cells of the brain. This accumulation results in progressive damage to the cells and a decrease in cognitive and physical development. Death typically occurs by age five.	1 in 4000 1 in 30 American Jews is a carrier 1 in 20 French Canadians is a carrier
Albinism	When the individual lacks melanin and processes little to no pigment in the skin, hair, and eyes. Vision problems can also occur.	Fewer than 20,000 US cases per year

Autosomal Dominant Disorders (Heterozygous): In order to have the disorder, the individual only needs to inherit the gene change from one parent.

Table 2.3 - Autosomal Dominant Disorders (Heterozygous)

Disorder	Description	Cases per Birth
Huntington's Disease	A condition that affects the individual's nervous system. Nerve cells become damaged, causing various parts of the brain to deteriorate. The disease affects movement, behavior and cognition. It is fatal, and occurs at midlife.	1 in 10,000
Tourette Syndrome	A tic disorder which results in uncontrollable motor and vocal tics as well as body jerking	1 in 250
Achondroplasia	The most common form of disproportionate short stature. The individual has abnormal bone growth resulting in short stature, disproportionately short arms and legs, short fingers, a large head, and specific facial features.	1 in 15,000-40,000

Sex-Linked Disorders: When the X chromosome carries the mutated gene, the disorder is referred to as an X-linked disorder. Males are more affected than females because they possess only one X chromosome without an additional X chromosome to counter the harmful gene.

Table 2.4 - Sex-Linked Disorders

Disorder	Description	Cases per Birth
Fragile X Syndrome	Occurs when the body cannot make enough of a protein it needs for the brain to grow and problems with learning and behavior can occur. Fragile X syndrome is caused from an abnormality in the X chromosome, which then breaks. If a female has a fragile X, her second X chromosome usually is healthy, but males with fragile X don't have a second healthy X chromosome. This is why symptoms of Fragile X usually are more serious in males.	1 in 4000 males 1 in 8000 females
Hemophilia	Occurs when there are problems in blood clotting causing both internal and external bleeding.	1 in 10,000 males
Duchenne Muscular Dystrophy	A weakening of the muscles resulting in an inability to move, wasting away, and possible death.	1 in 3500 males

Chromosomal Abnormalities: A **chromosomal abnormality** occurs when a child inherits too many or too few chromosomes. The most common cause of chromosomal abnormalities is the age of the mother. As the mother ages, the ovum is more likely to suffer abnormalities due to longer term exposure to environmental factors. Consequently, some gametes do not divide evenly when they are forming. Therefore, some cells have more than 46 chromosomes. In fact, it is believed that close to half of all zygotes have an odd number of chromosomes. Most of these zygotes fail to develop and are spontaneously aborted by the mother's body. 14

Here is a table of some autosomal chromosomal disorders:

Autosomal Chromosome Disorders: The individual inherits too many or too few chromosomes.

Table 2.5 - Autosomal Chromosomal Disorders

Disorder	Description
Down Syndrome/Trisomy 21	Caused by an extra chromosome 21 and includes a combination of birth defects. Affected individuals have some degree of intellectual disability, characteristic facial features, often heart defects, and other health problems. The severity varies greatly among affected individuals.
Trisomy 9 Mosaicism	Caused by having an extra chromosome 9 in some cells. The severity of effects relates to the proportion of cells with extra chromosomes. The effects include fetal growth restriction resulting in low birth weight and multiple anomalies, including facial, cardiac, musculoskeletal, genital, kidney, and respiratory abnormalities.
Trisomy 13	Caused by an extra chromosome 13. Affected individuals have multiple birth defects and generally die in the first weeks or months of life.
Trisomy 18	Caused by an extra chromosome 18 and the affected individual also has multiple birth defects and early death.



Figure 2.1.5: Infant boy with Trisomy 9 Mosaicism. (Image by Ashley Onken used with permission)



Figure 2.1.6: Girl with XXX Syndrome. (Image is in the public domain)

When the abnormality is on 23rd pair, the result is a sex-linked chromosomal abnormality. This happens when a person has less than or more than two sex chromosomes. 18

Here is a table of some sex-linked chromosomal disorders:

Table 2.6 - Sex-Linked Chromosomal Disorders

Disorder	Description
Turner Syndrome (XO)	Caused when all or part of one of the X chromosomes is lost before or soon after conception due to a random event. The resulting zygote has an XO composition. Turner Syndrome affects cognitive functioning and sexual maturation in girls. Infertility and a short stature may be noted.
Klinefelter Syndrome (XXY)	Caused when an extra X chromosome is present in the cells of a male due to a random event. The Y chromosome stimulates the growth of male genitalia, but the additional X chromosome inhibits this development. The male can have some breast development, infertility, and low levels of testosterone.
XYY Syndrome	Caused when an extra Y chromosome is present in the cells of a male. There are few symptoms. They may include being taller than average, acne, and an increased risk of learning problems. The person is generally otherwise normal, including normal fertility.
Triple X Syndrome (XXX)	Caused when an extra X chromosome is present in the cells of a female. It may result in being taller than average, learning difficulties, decreased muscle tone, seizures, and kidney problems.

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2.2: Prenatal Development

Now we turn our attention to prenatal development which is divided into three periods: The germinal period, the embryonic period, and the fetal period. The following is an overview of some of the changes that take place during each period.

The Germinal Period

The **germinal period** (about 14 days in length) lasts from **conception** to implantation of the fertilized egg in the lining of the uterus. At ejaculation, millions of sperm are released into the vagina, but only a few reach the egg and typically only one fertilizes the egg. Once a single sperm has entered the wall of the egg, the wall becomes hard and prevents other sperm from entering. After the sperm has entered the egg, the tail of the sperm breaks off and the head of the sperm, containing the genetic information from the father, unites with the nucleus of the egg. It is typically fertilized in the top section of the fallopian tube and continues its journey to the uterus. As a result, a new cell is formed. This cell, containing the combined genetic information from both parents, is referred to as a **zygote**.



Figure 2.2.1: Sperm and ovum at conception. (Conception image is in the public domain)

During this time, the organism begins cell division through mitosis. After five days of mitosis, there are 100 cells, which is now called a blastocyst. The blastocyst consists of both an inner and an outer group of cells. The inner group of cells, or embryonic disk will become the embryo, while the outer group of cells, or trophoblast, becomes the support system that nourishes the developing organism. This stage ends when the blastocyst fully implants into the uterine wall (U.S. National Library of Medicine, 2015).

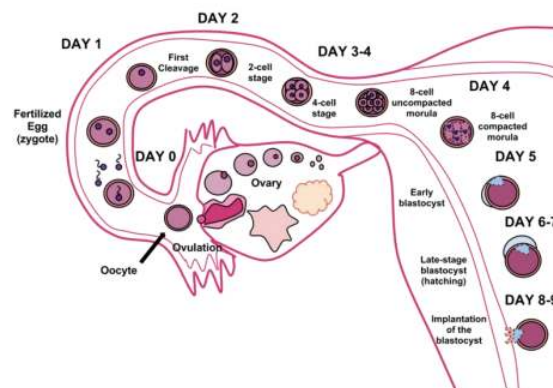


Figure 2.2.2: The cycle of fertilization. (Image by Ttrue12 is licensed under CC BY-SA 3.0)

Mitosis is a fragile process and fewer than one half of all zygotes survive beyond the first two weeks (Hall, 2004). Some of the reasons for this include: the egg and sperm do not join properly, thus their genetic material does not combine, there is too little or damaged genetic material, the zygote does not replicate, or the blastocyst does not implant into the uterine wall. The failure rate is higher for in vitro conceptions. The figure below illustrates the journey of the ova from its release to its fertilization, cell duplication, and implantation into the uterine lining. 22

The Embryonic Period

Starting the third week, the blastocyst has implanted in the uterine wall. Upon implantation this multi-cellular organism is called an **embryo**. Now blood vessels grow forming the placenta. The **placenta** is a structure connected to the uterus that provides nourishment and oxygen from the mother to the developing embryo via the umbilical cord.

During this period, cells continue to **differentiate**. Growth during prenatal development occurs in two major directions: from head to tail called **cephalocaudal development** and from the midline outward referred to as **proximodistal development**. This means

that those structures nearest the head develop before those nearest the feet and those structures nearest the torso develop before those away from the center of the body (such as hands and fingers). You will see that this pattern continues after birth.

The head develops in the fourth week and the precursor to the heart begins to pulse. In the early stages of the embryonic period, gills and a tail are apparent. However, by the end of this stage they disappear and the organism takes on a more human appearance.



Figure 2.2.3: A human embryo. (Image by Anatomist90 is licensed under [CC BY-SA 3.0](#))

About 20 percent of organisms fail during the embryonic period, usually due to gross chromosomal abnormalities, often before the mother even knows that she is pregnant. It is during this stage that the major structures of the body are taking form, making the embryonic period the time when the organism is most vulnerable to the greatest amount of damage if exposed to harmful substances. Prospective mothers are not often aware of the risks they introduce to the developing embryo during this time. The embryo is approximately 1 inch in length and weighs about 4 grams at the end of eight weeks. The embryo can move and respond to touch at this time. 24

The Fetal Period

From the ninth week until birth (which is forty weeks for a full-term pregnancy), the organism is referred to as a **fetus**. During this stage, the major structures are continuing to develop. By the third month, the fetus has all its body parts including external genitalia. The fetus is about 3 inches long and weighs about 28 grams. In the following weeks, the fetus will develop hair, nails, teeth and the excretory and digestive systems will continue to develop.



Figure 2.2.4: A human fetus. (Fetus image by [lunar caustic](#) is licensed under [CC BY-SA 2.0](#))

During the 4th - 6th months, the eyes become more sensitive to light and hearing develops. The respiratory system continues to develop, and reflexes such as sucking, swallowing and hiccupping, develop during the 5th month. Cycles of sleep and wakefulness are present at this time as well. The first chance of survival outside the womb, known as the age of viability is reached at about 24 weeks (Morgan, Goldenberg, & Schulkin, 2008). Many practitioners hesitate to resuscitate before 24 weeks. The majority of the neurons in the brain have developed by 24 weeks, although they are still rudimentary, and the glial or nurse cells that support neurons continue to grow. At 24 weeks the fetus can feel pain (Royal College of Obstetricians and Gynecologists, 1997).

Between the 7th - 9th months, the fetus is primarily preparing for birth. It is exercising its muscles and its lungs begin to expand and contract. The fetus gains about 5 pounds and 7 inches during this last trimester of pregnancy, and during the 8th month, a layer of fat develops under the skin. This layer of fat serves as insulation and helps the baby regulate body temperature after birth.

At around 36 weeks the fetus is almost ready for birth. It weighs about 6 pounds and is about 18.5 inches long. By week 37 all of the fetus's organ systems are developed enough that it could survive outside the mother's uterus without many of the risks associated with premature birth. The fetus continues to gain weight and grow in length until approximately 40 weeks. By then the fetus has very little room to move around and birth becomes imminent. The progression through the stages is shown in the following figure. 26



Figure 2.2.5: The development of a fetus. (Development image by CNX Psychology is licensed under CC BY 4.0)

Monozygotic and Dizygotic Twins

Monozygotic or identical twins occur when a fertilized egg splits apart in the first two weeks of development. The result is the creation of two separate, but genetically identical offspring. That is, they possess the same genotype and often the same phenotype. About one-third of twins are monozygotic twins.

Sometimes, however, two eggs or ova are released and fertilized by two separate sperm. The result is **dizygotic** or fraternal twins. These two individuals share the same amount of genetic material as would any two children from the same mother and father. In other words, they possess a different genotype and phenotype.

Older mothers are more likely to have dizygotic twins than are younger mothers, and couples who use fertility drugs are also more likely to give birth to dizygotic twins. 28



Figure 2.2.6: Monozygotic Twins (Image is in the public domain)



Figure 2.2.7: Dizygotic Twins (Image by Jennifer Paris used with permission)

Teratogens

Good prenatal care is essential to protect against maternal and fetal/infant mortality and birth complications. The embryo and fetus is most at risk for some of the most severe problems during the first three months of development. Unfortunately, this is a time at which many mothers are unaware that they are pregnant. Today, we know many of the factors that can jeopardize the health of the developing child. The study of factors that contribute to birth defects is called teratology. **Teratogens** are environmental factors that can contribute to birth defects, and include some maternal diseases, pollutants, drugs and alcohol.

Factors influencing prenatal risks: There are several considerations in determining the type and amount of damage that might result from exposure to a particular teratogen (Berger, 2005). These include:

- **The timing of the exposure:** Structures in the body are vulnerable to the most severe damage when they are forming. If a substance is introduced during a particular structure's critical period (time of development), the damage to that structure may be greater. For example, the ears and arms reach their critical periods at about 6 weeks after conception. If a mother exposes the embryo to certain substances during this period, the arms and ears may be malformed. (see figure below)
- **The amount of exposure:** Some substances are not harmful unless the amounts reach a certain level. The critical level depends in part on the size and metabolism of the mother.
- **The number of teratogens:** Fetuses exposed to multiple teratogens typically have more problems than those exposed to only one.
- **Genetics:** Genetic makeup also plays a role on the impact a particular teratogen might have on the child. This is suggested by fraternal twins exposed to the same prenatal environment, but they do not experience the same teratogenic effects. The genetic makeup of the mother can also have an effect; some mothers may be more resistant to teratogenic effects than others.
- **Being male or female:** Males are more likely to experience damage due to teratogens than are females. It is believed that the Y chromosome, which contains fewer genes than the X, may have an impact. 31

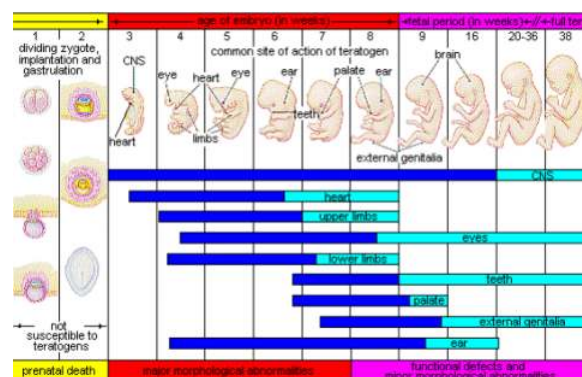


Figure 2.2.8: The development of an embryo into a fetus. (Embryo image by Laura Overstreet is licensed under CC BY-NC-SA 3.0)

There are four categories of teratogens:

1. **Physical teratogens:** These could be saunas, hot tubs, or infections that raise a pregnant woman's body temperature to 102 degrees Fahrenheit or higher. This is associated with neural tube defects, spontaneous abortions, and various cardiovascular abnormalities.
2. **Metabolic conditions affecting pregnant females:** Metabolic conditions are abnormalities in the chemical process of producing energy from food, and thereby affect the development and function of the body. If a pregnant woman is

malnourished, then her fetus likely lacks the nutrients essential for its development. These include: malnutrition, diabetes, and thyroid disorders.

3. **Infections:** Different maternal infections, including rubella virus, herpes simplex virus, and syphilis can cause congenital abnormalities in fetuses.
4. **Drugs and chemicals:** When pregnant females ingest or absorb these, they may cause a variety of different effects based on specific agent, amount of exposure, and timing. This category includes: radiation, heavy metals (including lead), insecticides and herbicides, prescription and over the counter drugs, illicit and recreational drugs, alcohol, cigarettes, nicotine, caffeine, and even some vitamins. 33

While there are many, many potential teratogens, the following tables look at the effects of some different types of teratogens. The risks of exposure vary based on lifestyle and health. The effects may vary greatly depending on the factors mentioned previously. Protection and prevention will vary based on the method of exposure.

Table 2.7: Drugs as Teratogens

Teratogen	Potential Effects
Caffeine	Moderate amounts of caffeine (200 mg or around 12 ounces of coffee) appear to be safe during pregnancy. Some studies have shown a link between higher amounts of caffeine and miscarriage and preterm birth. ³⁴
Tobacco	Tobacco use has been associated with low birth weight, placenta previa, preterm delivery, fetal growth restriction, sudden infant death syndrome, cleft lip or palate, and later health problems (such as high blood pressure and diabetes). ³⁵
Alcohol	There is no safe amount of alcohol a woman can drink while pregnant. Alcohol can slow down the baby's growth, affect the baby's brain, and cause birth defects, and may results in fetal alcohol spectrum disorder (FASD). The effects can be mild to severe. Children born with a severe form of FASD can have abnormal facial features, severe learning disabilities, behavioral problems, and other problems. ³⁶
Cocaine	Cocaine use has connected with low birth weight, stillbirths, spontaneous abortion, placental abruption, premature birth, miscarriage, and neonatal abstinence syndrome (fetal addiction leads the newborn to experiences withdrawal). ³⁷
Marijuana	No amount of marijuana has been proven safe to use during pregnancy. Heavy use has been associated with brain damage, premature birth, and stillbirth. ³⁸
Heroin	Using heroin during pregnancy can cause birth defects, placental abruption, premature birth, low birthweight, neonatal abstinence syndrome, still birth, and sudden infant death syndrome. ³⁹
Over-the-Counter (OTC) medication	Some OTC medications are safe to use during pregnancy and others may cause health problems during pregnancy. Pregnant women should consult their health care provider before using OTC medications. ⁴⁰
Prescription drugs	Some prescription drugs can cause birth defects that change the shape or function of one or more parts of the body that can affect overall health. Pregnant women should consult their health care provider before discontinuing or starting new medications. ⁴¹
Herbal or dietary supplements	Except for some vitamins, little is known about using herbal or dietary supplements while pregnant. Most often there are no good studies to show if the herb can cause harm to you or your baby. Also, some herbs that are safe when used in small amounts as food might be harmful when used in large amounts as medicines. ⁴²

Table 2.8: Environmental Teratogens

Teratogen	Potential Effects
Lead	Exposure to high levels of lead before and during pregnancy can lead to high blood pressure, problems with fetal brain and nervous system development, premature birth, low birthweight, and miscarriage. ⁴³
Mercury	Exposure to mercury in the womb can cause brain damage and hearing and vision problems. ⁴⁴
Radiation	Exposure to radiation during pregnancy (especially between 2 and 18 weeks of pregnancy) can slow growth, cause birth defects, affect brain development, cause cancer, and cause miscarriage. ⁴⁵
Solvents	These chemicals include degreasers, paint thinners, stain and varnish removers, paints, and more. Maternal inhalation of solvents can cause fetal exposure that may cause miscarriage, slow fetal growth, premature birth, and birth defects. ⁴⁶

Table 2.9: Maternal Infections as Teratogens

Teratogen	Potential Effects
Rubella	Congenital infection (becoming infected while in the womb) can damage the development of the eyes, ears, heart, and brain and result in deafness. ⁴⁷
Zika	Congenital infection can cause microcephaly and other severe brain abnormalities. ⁴⁸
Varicella (chicken pox)	Congenital infection can cause a severe form of the infection affecting the eyes, limbs, skin, and central nervous system. ⁴⁹
Sexually transmitted infections	Infections such as HIV, gonorrhea, syphilis, and chlamydia can be passed from the mother during pregnancy and/or delivery. ⁵⁰
Listeria	Pregnant women are more susceptible to this food-borne illness. Congenital infection can cause miscarriage, stillbirth, premature labor, and neonatal sepsis. ⁵¹

Table 2.10: Teratogens from Animals/Pets

Teratogen	Potential Effects
Toxoplasmosis	This parasite can be passed through cat feces and undercooked meat (especially pork, lamb, or deer meat). If the fetus is infected it can cause miscarriage, stillbirth, hydrocephalus, macro or microcephalus, vision issues, and damage to the nervous system. ⁵²
Lymphocytic choriomeningitis	This virus carried by rodents including mice, hamsters, and guinea pigs. If an infected mother passes it to her fetus it can cause issues with brain development, long-term neurological and/or visual impairment, and higher mortality rates after birth. ⁵³

Maternal Factors

There are additional factors that affect the outcome of pregnancy for both mother and child. Let's look at these next.



Figure 2.2.9: A pregnant woman relaxing in a tub. (Image by Thomas Pompernigg is licensed under CC BY-SA 2.0)

Mothers over 35

Most women over 35 who become pregnant are in good health and have healthy pregnancies. However, according to the March of Dimes (2016d), women over age 35 are more likely to have an increased risk of:

- Fertility problems
- High blood pressure
- Diabetes
- Miscarriages
- Placenta Previa
- Cesarean section
- Premature birth
- Stillbirth
- A baby with a genetic disorder or other birth defects

Because a woman is born with all her eggs, environmental teratogens can affect the quality of the eggs as women get older. Also, a woman's reproductive system ages which can adversely affect the pregnancy. Some women over 35 choose special prenatal screening tests, such as a maternal blood screening, to determine if there are any health risks for the baby.

Although there are medical concerns associated with having a child later in life, there are also many positive consequences to being a more mature parent. Older parents are more confident, less stressed, and typically married, providing family stability. Their children perform better on math and reading tests, and they are less prone to injuries or emotional troubles (Albert, 2013). Women who choose to wait are often well educated and lead healthy lives. According to Gregory (2007), older women are more stable, demonstrate a stronger family focus, possess greater self-confidence, and have more money. Having a child later in one's career equals overall higher wages. In fact, for every year a woman delays motherhood, she makes 9% more in lifetime earnings. Lastly, women who delay having children actually live longer.

Teenage Pregnancy

A teenage mother is at a greater risk for having pregnancy complications including anemia, and high blood pressure. These risks are even greater for those under age 15. Infants born to teenage mothers have a higher risk for being premature and having low birthweight or other serious health problems. Premature and low birthweight babies may have organs that are not fully developed which can result in breathing problems, bleeding in the brain, vision loss, serious intestinal problems, and higher likelihood of dying. Reasons for these health issues include that teenagers are the least likely of all age groups to get early and regular prenatal care and they may engage in negative behaviors including eating unhealthy food, smoking, drinking alcohol, and taking drugs.

Gestational Diabetes

Seven percent of pregnant women develop **gestational diabetes** (March of Dimes, 2015b). Diabetes is a condition where the body has too much glucose in the bloodstream.



Figure 2.16: A gestational diabetes kit. (Kit image by [Jessica Merz](#) is licensed under [CC BY 2.0](#))

Most pregnant women have their glucose level tested between 24 to 28 weeks of pregnancy. Gestational diabetes usually goes away after the mother gives birth, but it might indicate a risk for developing diabetes later in life. If untreated, gestational diabetes can cause premature birth, stillbirth, the baby having breathing problems at birth, jaundice, or low blood sugar. Babies born to mothers with gestational diabetes can also be considerably heavier (more than 9 pounds) making the labor and birth process more difficult. For expectant mothers, untreated gestational diabetes can cause preeclampsia (high blood pressure and signs that the liver and kidneys may not be working properly) discussed later in the chapter.

Risk factors for gestational diabetes include age (being over age 25), being overweight or gaining too much weight during pregnancy, family history of diabetes, having had gestational diabetes with a prior pregnancy, and race and ethnicity (African-American, Native American, Hispanic, Asian, or Pacific Islander have a higher risk). Eating healthy and maintaining a healthy weight during pregnancy can reduce the chance of gestational diabetes. Women who already have diabetes and become pregnant need to attend all their prenatal care visits, and follow the same advice as those for women with gestational diabetes as the risk of preeclampsia, premature birth, birth defects, and stillbirth are the same.

High Blood Pressure (Hypertension)

Hypertension is a condition in which the pressure against the wall of the arteries becomes too high. There are two types of high blood pressure during pregnancy, gestational and chronic. Gestational hypertension only occurs during pregnancy and goes away after birth. Chronic high blood pressure refers to women who already had hypertension before the pregnancy or to those who developed it during pregnancy and it did not go away after birth.



Figure 2.17: A woman having her blood pressure taken. (Image by [rawpixel](#) on [Unsplash](#))

According to the March of Dimes (2015c), about 8 in every 100 pregnant women have high blood pressure. High blood pressure during pregnancy can cause premature birth and low birth weight (under five and a half pounds), placental abruption, and mothers can develop preeclampsia.

Rh Disease

Rh is a protein found in the blood. Most people are Rh positive, meaning they have this protein. Some people are Rh negative, meaning this protein is absent. Mothers who are Rh negative are at risk of having a baby with a form of anemia called Rh disease (March of Dimes, 2009). A father who is Rh-positive and mother who is Rh-negative can conceive a baby who is Rh-positive. Some of the fetus's blood cells may get into the mother's bloodstream and her immune system is unable to recognize the Rh factor.

The immune system starts to produce antibodies to fight off what it thinks is a foreign invader. Once her body produces immunity, the antibodies can cross the placenta and start to destroy the red blood cells of the developing fetus. As this process takes time, often the first Rh positive baby is not harmed, but as the mother's body will continue to produce antibodies to the Rh factor across her lifetime, subsequent pregnancies can pose greater risk for an Rh positive baby. In the newborn, Rh disease can lead to jaundice, anemia, heart failure, brain damage and death.

Weight Gain during Pregnancy

According to March of Dimes (2016f), during pregnancy most women need only an additional 300 calories per day to aid in the growth of the fetus. Gaining too little or too much weight during pregnancy can be harmful. Women who gain too little may have a baby who is low-birth weight, while those who gain too much are likely to have a premature or large baby. There is also a greater risk for the mother developing preeclampsia and diabetes, which can cause further problems during the pregnancy.

The table below shows the healthy weight gain during pregnancy. Putting on the weight slowly is best. Mothers who are concerned about their weight gain should talk to their health care provider.

Table 2.10: Weight Gain during Pregnancy

If you were a healthy weight before pregnancy:	If you were underweight before pregnancy:	If you were overweight before pregnancy:	If you were obese before pregnancy:
- Gain 25-35 pounds 1-4 1/2 pounds in the 1st trimester 1 pound per week in the 2nd and 3rd trimesters	- Gain 28-30 pounds 1-4 1/2 pounds in the 1st trimester - A little more than 1 pound per week thereafter	- Gain 12-25 pounds 1-4 1/2 pounds in the 1st trimester - A little more than 1/2 pound per week in 2nd and 3rd trimesters	11-20 pounds 1-4 1/2 pounds in the 1st trimester - A little more than 1/2 pound per week in 2nd and 3rd trimesters

Mothers of twins or higher order multiples need to gain more in each category listed above.

Stress

Feeling stressed is common during pregnancy, but high levels of stress can cause complications including having a premature baby or a low-birthweight baby. Babies born early or too small are at an increased risk for health problems. Stress-related hormones may cause these complications by affecting a woman's immune systems resulting in an infection and premature birth. Additionally, some women deal with stress by smoking, drinking alcohol, or taking drugs, which can lead to problems in the pregnancy. High levels of stress in pregnancy have also been correlated with problems in the baby's brain development and immune system functioning, as well as childhood problems such as trouble paying attention and being afraid (March of Dimes, 2012b).

Depression

Depression is a significant medical condition in which feelings of sadness, worthlessness, guilt, and fatigue interfere with one's daily functioning. Depression can occur before, during, or after pregnancy, and 1 in 7 women are treated for depression sometime between the year before pregnancy and year after pregnancy (March of Dimes, 2015a). Women who have experienced depression previously are more likely to have depression during pregnancy. Consequences of depression include the baby being born premature, having a low birthweight, being more irritable, less active, less attentive, and having fewer facial expressions.

About 13% of pregnant women take an antidepressant during pregnancy. It is important that women taking antidepressants during pregnancy discuss the medication with a health care provider as some medications can cause harm to the developing organism.

Paternal Impact

The age of fathers at the time of conception is also an important factor in health risks for children. According to Nippoldt (2015), offspring of men over 40 faces an increased risk of miscarriages, autism, birth defects, achondroplasia (bone growth disorder) and schizophrenia. These increased health risks are thought to be due to accumulated chromosomal aberrations and mutations during the maturation of sperm cells in older men (Bray, Gunnell, & Smith, 2006). However, like older women, the overall risks are small.

In addition, men are more likely than women to work in occupations where hazardous chemicals, many of which have teratogenic effects or may cause genetic mutations, are used (Cordier, 2008). These may include petrochemicals, lead, and pesticides that can cause normal sperm and lead to miscarriages or diseases. Men are also more likely to be a source of second hand smoke for their developing offspring. As noted earlier, smoking by either the mother or around the mother can hinder prenatal development. 57



Figure 2.18: A USDA employee pouring hazardous chemicals into a storage container. (Image by USDA is in the public domain)

Prenatal Assessment

A number of assessments are suggested to women as part of their routine prenatal care to find conditions that may increase the risk of complications for the mother and fetus (Eisenberg, Murkoff, & Hathaway, 1996). These can include blood and urine analyses and screening and diagnostic tests for birth defects.



Figure 2.19: A woman receiving an ultrasound. (Image by MedicalPrudens is licensed under CC0 1.0)

Ultrasound is one of the main screening tests done in combination with blood tests. The ultrasound is a test in which sound waves are used to examine the fetus. There are two general types. Transvaginal ultrasounds are used in early pregnancy, while transabdominal ultrasounds are more common and used after 10 weeks of pregnancy (typically, 16 to 20 weeks).

Ultrasounds are used to check the fetus for defects or problems. It can also find out the age of the fetus, location of the placenta, fetal position, movement, breathing and heart rate, amount of amniotic fluid in the uterus, and number of fetuses. Most women have at least one ultrasound during pregnancy, but if problems are noted, additional ultrasounds may be recommended.

When diagnosis of a birth defect is necessary, ultrasounds help guide the more invasive diagnostic tests of amniocentesis and chorionic villus sampling. **Amniocentesis** is a procedure in which a needle is used to withdraw a small amount of amniotic fluid and cells from the sac surrounding the fetus and later tested.

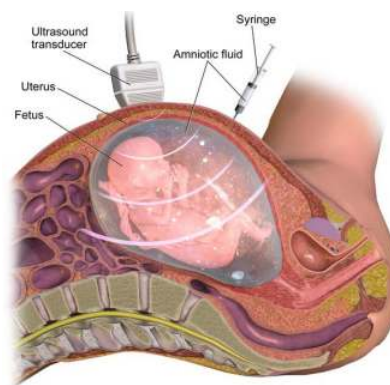


Figure 2.20: Amniocentesis. (Image by BruceBlaus is licensed under CC BY-SA 4.0)

Chorionic Villus Sampling is a procedure in which a small sample of cells is taken from the placenta and tested. Both amniocentesis and chorionic villus sampling have a risk of miscarriage, and consequently, they are not done routinely. 61

Complications of Pregnancy

There are a number of common side effects of pregnancy. Not everyone experiences all of these, nor to the same degree. And although they are considered "minor", this is not to say that these problems are not potentially very uncomfortable. These side

effects include nausea (particularly during the first 3-4 months of pregnancy as a result of higher levels of estrogen in the system), heartburn, gas, hemorrhoids, backache, leg cramps, insomnia, constipation, shortness of breath or varicose veins (as a result of carrying a heavy load on the abdomen). These are minor issues.

But there are also serious complications of pregnancy which can pose health risks to mother and child and that often require hospitalization.

Hyperemesis gravidarum is characterized by severe nausea, vomiting, weight loss, and possibly dehydration. Signs and symptoms may also include vomiting many times a day and feeling faint. The exact causes of hyperemesis gravidarum are unknown. Risk factors include the first pregnancy, multiple pregnancy, obesity, prior or family history of HG, trophoblastic disorder, and a history of eating disorders. Treatment includes drinking fluids and a bland diet. Medication, intravenous fluids, and hospitalization may be required. Hyperemesis gravidarum is estimated to affect 0.3–2.0% of pregnant women. Those affected have a low risk of miscarriage but a higher risk of premature birth.

Ectopic Pregnancy occurs when the zygote becomes attached to the fallopian tube before reaching the uterus. About 1 in 50 pregnancies in the United States are tubal pregnancies and this number has been increasing because of the higher rates of pelvic inflammatory disease and Chlamydia (Carroll, 2007). Abdominal pain, vaginal bleeding, nausea and fainting are symptoms of ectopic pregnancy.

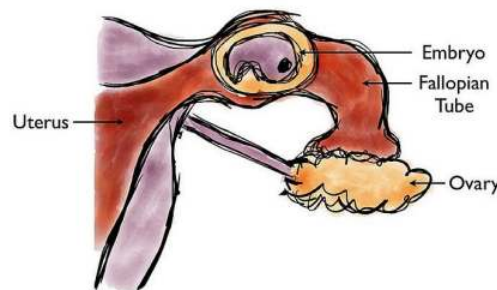


Figure 2.21: An ectopic pregnancy. (Image by Takatakakumi is licensed under [CC BY-SA 3.0](https://creativecommons.org/licenses/by-sa/3.0/))

Spontaneous abortion is experienced in an estimated 20-40 percent of undiagnosed pregnancies and in another 10 percent of diagnosed pregnancies. Usually the body aborts due to chromosomal abnormalities, and this typically happens before the 12th week of pregnancy. Cramping and bleeding result and normal periods return after several months. Some women are more likely to have repeated miscarriages due to chromosomal, amniotic, or hormonal problems, but miscarriage can also be a result of defective sperm (Carrell et. al., 2003).

Preeclampsia, also known as **Toxemia**, is characterized by a sharp rise in blood pressure, a leakage of protein into the urine as a result of kidney problems, and swelling of the hands, feet, and face during the third trimester of pregnancy. Preeclampsia is the most common complication of pregnancy. When preeclampsia causes seizures, the condition is known as eclampsia, which is the second leading cause of maternal death in the United States. Preeclampsia is also a leading cause of fetal complications, which include low birth weight, premature birth, and stillbirth. Treatment is typically bed rest and sometimes medication. If this treatment is ineffective, labor may be induced.

Maternal Mortality: Approximately 1000 women die in childbirth around the world each day (World Health Organization, 2010). Rates are highest in Sub-Saharan Africa and South Asia, although there has been a substantial decrease in these rates. The campaign to make childbirth safe for everyone has led to the development of clinics accessible to those living in more isolated areas and training more midwives to assist in childbirth.⁶³

Infertility and Building Families

Infertility

When a couple has failed to conceive a child in a year, they receive the diagnosis of infertility. Infertility affects about 10 to 15 percent of couples in the United States (Mayo Clinic, 2015). Male factors create infertility in about a third of the cases. For men, the most common cause is a lack of sperm production or low sperm production.

Female factors cause infertility in another third of cases. For women, one of the most common causes of infertility is the failure to ovulate. Another cause of infertility in women is Pelvic Inflammatory Disease (PID), which is an infection of a woman's reproductive organs (Carroll, 2007).

Both male and female factors contribute to the remainder of cases of infertility. 64

Options for Building Families

There are numerous options to pursue parenthood and building families. Let's briefly explore some of these.

Assisted Reproductive Technology Assisted reproductive technology (ART) is the technology used to achieve pregnancy in procedures such as fertility medication (to stimulate ovulation), surgical procedures, artificial insemination (IUI), in vitro fertilization (IVF) and surrogacy. These options are available for people who are experiencing infertility or cannot conceive children naturally (which also includes single parents, and gay/lesbian couples). 65

Intrauterine insemination: (IUI) as a type of artificial insemination involves the placement of sperm directly into the uterus at the time of ovulation, either in a natural menstrual cycle or following ovarian stimulation. 66

In vitro fertilization (IVF): IVF generally starts with stimulating the ovaries to increase egg production. Most fertility medications are agents that stimulate the development of follicles in the ovary. Examples are gonadotropins and gonadotropin releasing hormone. After stimulation, the physician surgically extracts one or more eggs from the ovary, and unites them with sperm in a laboratory setting, with the intent of producing one or more embryos. Fertilization takes place outside the body, and the fertilized egg is reinserted into the woman's reproductive tract, in a procedure called embryo transfer. 67



Figure 2.22: The IVF process. (Image by Manu5 is licensed under [CC BY-SA 4.0](https://creativecommons.org/licenses/by-sa/4.0/))

Donor Gametes & Embryos: People can also use sperm, ova (eggs), and embryos from donors in conjunction with ART. These donations take place through agencies and donor banks or between private individuals. In the U.S., donors can be compensated for their donations.

Surrogacy: In surrogacy, one woman (surrogate mother) carries a child for another person/s (commissioning person/couple), based on a legal agreement before conception requiring the child to be relinquished to the commissioning person/couple following birth. There are different types of surrogacy which relate to whether or not the ova used to conceive the child are her own (**traditional surrogacy**) or not (**gestational surrogacy**). 69

Adoption: People can also choose to pursue **adoption** to build their families (with or without experiencing infertility). Adoption can take place through the foster care system, privately, or through agencies. Adoptions can be domestic (within the U.S.) or international. And they can be open (with differing amounts of contact between biological/birth families and adoptive families) or closed.

Family Built with Surrogacy



Figure 2.23: This same-sex couple used a surrogate. (Photo by Daryn Crawford used with permission)

Family Built through Adoption



Figure 2.24: This single mother adopted her daughter. (Photo by Michaela Szidloski used with permission)

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2.S: Summary

In this chapter we looked at:

- Heredity, including genetic disorders and chromosomal abnormalities
- Conception
- The germinal, embryonic, and fetal stages of prenatal development
- Influences on prenatal development including teratogens and maternal and paternal factors
- Complications of pregnancy
- Infertility and options for building families

Now let's explore birth and the newborn baby.

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CHAPTER OVERVIEW

3: Birth and the Newborn

Learning Objectives

After this chapter, you should be able to:

- Compare and contrast different methods of childbirth preparation.
- Describe the stages of vaginal delivery.
- Explain why induction or Caesarean section may be necessary.
- Differentiate the common procedures for assessing the condition of the newborn.
- Examine problems newborns experience before, during, and after birth.

After around 266 days of developing inside the womb (for a full-term pregnancy), comes the arduous process of childbirth. After birth, newborns have to regulate their own body temperature, breathe for themselves, and take in all of their nutrition through feeding. Let's look at both the process of birth and some attributes of the newborn.

[3.1: Preparing for Childbirth](#)

[3.2: Childbirth](#)

[3.3: The Newborn](#)

[3.S: Summary](#)

Thumbnail: pixabay.com/photos/baby-sleeping-girl-784608/

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3.1: Preparing for Childbirth

Prepared childbirth refers to being not only in good physical condition to help provide a healthy environment for the baby to develop, but also helping individuals to prepare to accept their new roles as parents. Additionally, parents can receive information and training that will assist them for delivery and life with the baby. The more future parents can learn about childbirth and the newborn, the better prepared they will be for the adjustment they must make to a new life.

Approaches to Childbirth

There are many different approaches to childbirth that influence how expectant parents prepare. The following table describes a few of these:

Table 3.1.1: Approaches to Childbirth ([Lifespan Development: A Psychological Perspective](#) (page 59) by Martha Lally and Suzanne Valentine-French is licensed under [CC BY-NC-SA 3.0](#); [Lifespan Development - Module 3: Prenatal Development](#) by [Lumen Learning](#) references [Psyc 200 Lifespan Psychology](#) by Laura Overstreet, licensed under [CC BY 4.0](#))

Method	Description
The Lamaze Method	The emphasis of this method is on teaching the woman to be in control in the process of delivery. It includes learning muscle relaxation, breathing through contractions, having a focal point (usually a picture to look at) during contractions and having a support person who goes through the training process with the mother and serves as a coach during delivery.
The Leboyer Method	This method involves giving birth in a quiet, dimly lit room and allowing the newborn to lie on the mother's stomach with the umbilical cord intact for several minutes while being given a warm bath.
Dick-Read Method / Mongan Method / Hypnobirthing	This method comes from the suggestion that the fear of childbirth increases tension and makes the process of childbearing more painful. It emphasizes the use of relaxation and proper breathing with contractions as well as family support and education.
Bradley Method	"The Bradley Method focuses on preparing the mother for a natural childbirth coached by her partner. They learn techniques to reduce the perception of pain and stay relaxed. The emphasis is on being prepared for an unassisted vaginal birth without medication." 2
Alexander Technique	This is a technique that can be used during childbirth that involves training to stop habitual reactions to pain, such as tensing muscles and increase conscious awareness and control over posture and movement. This involves being able to move freely and stay upright during labor and using body positioning that is beneficial to the labor process.3
Waterbirth	Involves immersion in warm water. Proponents believe this method is safe and provides many benefits for both mother and infant, including pain relief and a less traumatic birth experience for the baby. However, critics argue that the procedure introduces unnecessary risks to the infant such as infection and water inhalation.4
Lotus Birth	Or umbilical cord nonseverance – UCNS, is the practice of leaving the umbilical cord uncut after childbirth so that the baby is left attached to the placenta until the cord naturally separates at the umbilicus. This usually occurs within 3–10 days after birth. The practice is performed mainly for spiritual purposes of the parents, including for the perceived spiritual connection between placenta and newborn.5
Silent Birth	Sometimes known as quiet birth, is a birthing procedure advised by L. Ron Hubbard and advocated by Scientologists in which "everyone attending the birth should refrain from spoken words as much as possible." 6
Medicated Childbirth	Health care providers can provide pain relief during labor with different types of medication, including epidurals, spinal blocks, combined spinal-epidurals, and systemic and local analgesia. There are benefits and side effects of each.7



Figure 3.1.1: Expectant parents in a childbirth preparation class. (Image by [liz.schrenk](#) is licensed under [CC BY-NC-ND 2.0](#))

Choosing Location of Childbirth & Who Will Deliver

The vast majority of births occur in a hospital setting. However, one percent of women choose to deliver at home (Martin, Hamilton, Osterman, Curtin, & Mathews, 2015). Women who are at low risk for birth complications can successfully deliver at home. More than half (67%) of home deliveries are by certified nurse midwives. Midwives are trained and licensed to assist in delivery and are far less expensive than the cost of a hospital delivery. However, because of the potential for a complication during the birth process, most medical professionals recommend that delivery take place in a hospital. In addition to home births, one-third of out-of-hospital births occur in freestanding clinics, birthing centers, in physician's offices, or other locations.

Contributors and Attributions

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3.2: Childbirth

Onset of Labor

Childbirth typically occurs within a week of a woman's due date, unless the woman is pregnant with more than one fetus, which usually causes her to go into labor early. As a pregnancy progresses into its final weeks, several physiological changes occur in response to hormones that trigger labor.

A common sign that labor is beginning is the so-called "bloody show." During pregnancy, a plug of mucus accumulates in the cervical canal, blocking the entrance to the uterus. Approximately 1–2 days prior to the onset of true labor, this plug loosens and is expelled, along with a small amount of blood.

As labor nears, the mother's pituitary gland produces oxytocin. This begins to stimulate stronger, more painful uterine contractions, which—in a positive feedback loop—stimulate the secretion of prostaglandins from fetal membranes. Like oxytocin, prostaglandins also enhance uterine contractile strength. The fetal pituitary gland also secretes oxytocin, which increases prostaglandins even further.

And the stretching of the cervix by a full-term fetus in the head-down position is regarded as a stimulant to uterine contractions. Combined, these stimulate true labor. 10

Stages of Birth for Vaginal Delivery

The First Stage

Uterine contractions signify that the first stage of labor has begun. These contractions may initially last about 30 seconds and be spaced 15 to 20 minutes apart. These increase in duration and frequency to more than a minute in length and about 3 to 4 minutes apart. Typically, doctors advise that they be called when contractions are coming about every 5 minutes. Some women experience false labor or Braxton-Hicks Contractions, especially with the first child. These may come and go. They tend to diminish when the mother begins walking around. Real labor pains tend to increase with walking. In one out of 8 pregnancies, the amniotic sac or water in which the fetus is suspended may break before labor begins. In such cases, the physician may induce labor with the use of medication if it does not begin on its own in order to reduce the risk of infection. Normally this sac does not rupture until the later stages of labor.

The first stage of labor is typically the longest. During this stage the cervix or opening to the uterus dilates to 10 centimeters or just under 4 inches. This may take around 12-16 hours for first children or about 6-9 hours for women who have previously given birth. Labor may also begin with a discharge of blood or amniotic fluid.

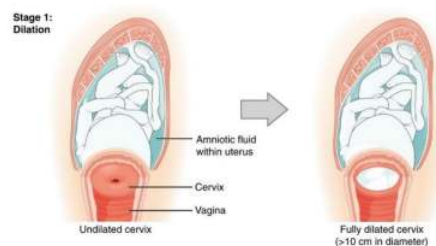


Figure 3.2.1: Early cervical dilation. (Dilation image by OpenStax is licensed under CC BY 3.0)

The Second Stage

The passage of the baby through the birth canal is the second stage of labor. This stage takes about 10-40 minutes. Contractions usually come about every 2-3 minutes. The mother pushes and relaxes as directed by the medical staff. Normally the head is delivered first. The baby is then rotated so that one shoulder can come through and then the other shoulder. The rest of the baby quickly passes through. At this stage, an episiotomy, or incision made in the tissue between the vaginal opening and anus, may be performed to avoid tearing the tissue of the back of the vaginal opening (Mayo Clinic, 2016). The baby's mouth and nose are suctioned out. The umbilical cord is clamped and cut. 12

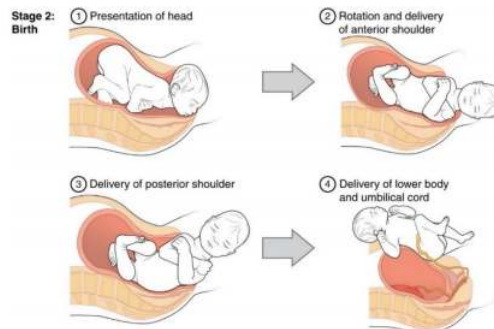


Figure 3.3 - Full dilation and expulsion of the newborn.¹³

Figure 3.2.2: Full dilation and expulsion of the newborn. (Delivery image by OpenStax is licensed under CC BY 3.0)

The Third Stage

The third and final stage of labor is relatively painless. During this stage, the placenta or afterbirth is delivered. This is typically within 20 minutes after delivery. If an episiotomy was performed it is stitched up during this stage. 14

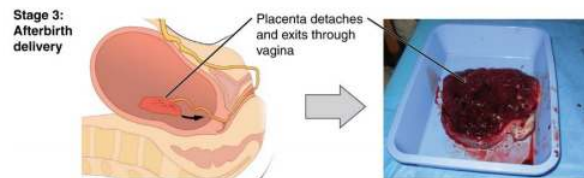


Figure 3.2.3: delivery of the placenta and associated fetal membranes. (Placenta image by OpenStax is licensed under CC BY 3.0)

Additional Considerations

More than 50% of women giving birth at hospitals use an epidural anesthesia during delivery (American Pregnancy Association, 2015). An epidural block is a regional analgesic that can be used during labor and alleviates most pain in the lower body without slowing labor. The epidural block can be used throughout labor and has little to no effect on the baby. Medication is injected into a small space outside the spinal cord in the lower back. It takes 10 to 20 minutes for the medication to take effect. An epidural block with stronger medications, such as anesthetics, can be used shortly before a Cesarean Section or if a vaginal birth requires the use of forceps or vacuum extraction. 16

Women giving birth can also receive other pain medications (although medications given through injection can have negative side effects on the baby). In emergency situations (such as the need for a C-section), women may be given general anesthesia. They can also choose not to utilize any pain medications. That is often referred to as **natural childbirth**.



Figure 3.2.4: Natural childbirth. (Birth image by U.S. Army Alaska is licensed under CC BY 2.0)

Women can also use alternate positions (including standing, squatting, being on hands and knees, and using a birthing stool) and laboring, and even delivering in tubs of warm water to help relieve the pain of childbirth.

Medical Interventions in Childbirth

Sometimes women cannot go into labor on their own and/or deliver vaginally. Let's look at induction of labor and Cesarean Sections.

Sometimes a baby's arrival may need to be induced before labor begins naturally. **Induction of labor** may be recommended for a variety of reasons when there is concern for the health of the mother or baby. For example:

- The mother is approaching two weeks beyond her due date and labor has not started naturally
- The mother's water has broken, but contractions have not begun
- There is an infection in the mother's uterus
- The baby has stopped growing at the expected pace
- There is not enough amniotic fluid surrounding the baby
- The placenta peels away, either partially or completely, from the inner wall of the uterus before delivery
- The mother has a medical condition that might put her or her baby at risk, such as high blood pressure or diabetes (Mayo Clinic, 2014).

A Cesarean Section (C-section) is surgery to deliver the baby by being removed through the mother's abdomen. In the United States, about one in three women have their babies delivered this way (Martin et al., 2015). Most C-sections are done when problems occur during delivery unexpectedly. These can include:

- Health problems in the mother
- Signs of distress in the baby
- Not enough room for the baby to go through the vagina
- The position of the baby, such as a breech presentation where the head is not in the downward position.



Figure 3.2.5: A woman receiving a C-section. (Image by [Tammra M](#) is licensed under [CC BY 2.0](#))



Figure 3.2.6: A baby being delivered by C-section. (Image by [Patricia Prudente](#) on [Unsplash](#))

C-sections are also more common among women carrying more than one baby. Although the surgery is relatively safe for mother and baby, it is considered major surgery and carries health risks. Additionally, it also takes longer to recover from a C-section than from vaginal birth. After healing, the incision may leave a weak spot in the wall of the uterus. This could cause problems with an attempted vaginal birth later. In the past, doctors were hesitant to allow a vaginal birth after a C-section. However, now more than half of women who have a C-section go on to have a vaginal birth later. 20 This is referred to as a **Vaginal Birth After Cesarean (VBAC)**.

Contributors and Attributions

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3.3: The Newborn



Figure 3.3.1: A new mother holding her newborn. (Newborn image by the U.S. Air Force is in the public domain)

Assessing the Newborn

The **Apgar assessment** is conducted one minute and five minutes after birth. This is a very quick way to assess the newborn's overall condition. Five measures are assessed: Heart rate, respiration, muscle tone (assessed by touching the baby's palm), reflex response (the Babinski reflex is tested), and color. A score of 0 to 2 is given on each feature examined. An Apgar of 5 or less is cause for concern. The second Apgar should indicate improvement with a higher score. 22

EVENT MEDICINE
EDUCATION PLANNING OPERATIONS

APGAR SCORE

SCORE	APPEARANCE	PULSE	GRIMACE	ACTIVITY	RESPIRATION
0	 Blue all over	 No pulse	 No response to stimulation	 No movement	 No respiration
1	 Blue extremities	 <100 beats/min	 Grimace on stimulation	 Some flexion	 Weak, irregular, slow
2	 No blue colouration	 >100 beats/min	 Cry on stimulation	 Flexed limbs that resist extension	 Strong cry

≥7 **NORMAL** 4-6 **LOW** ≤3 **CRITICAL**

More FREE resources at eventmedicinegroup.org

Figure 3.3.2: The Apgar assessment. (Apgar image by Event Medicine Group)

Another way to assess the condition of the newborn is the Neonatal Behavioral Assessment Scale (NBAS). The baby's motor development, muscle tone, and stress response are assessed. This tool has been used around the world to further assess the newborn, especially those with low Apgar scores, and to make comparisons of infants in different cultures (Brazelton & Nugent, 1995).

Newborns are also routinely screened for different conditions. Within the first 24 to 48 hours after birth, babies born in hospitals undergo a simple heel stick and a few drops of blood are collected on a special paper card. Providers test those dried blood spots for a variety of different congenital disorders, or conditions that are present when the baby is born. In California, newborns are now screened for 80 different genetic and congenital disorders.



Figure 3.3.3: A medical professional performing the heel stick test. (Image by the U.S. Air Force is in the public domain)

Newborns are also screened for hearing disorders and certain serious heart problems using methods other than dried blood spots. 25

Problems of the Newborn

Anoxia

Anoxia is a temporary lack of oxygen to the brain. Difficulty during delivery may lead to anoxia which can result in brain damage or in severe cases, death. Babies who suffer both low birth weight and anoxia are more likely to suffer learning disabilities later in life as well.

Low Birth Weight

A child is considered low birth weight if he or she weighs less than 5 pounds 8 ounces (2500 grams). About 8.2 percent of babies born in the United States are of low birth weight (Center for Disease Control, 2015a). Sixty-seven percent of these babies are also preterm.

A low birth weight baby has difficulty maintaining adequate body temperature because it lacks the fat that would otherwise provide insulation. Such a baby is also at more risk for infection. Very low birth weight babies (2 pounds or less) have an increased risk of developing cerebral palsy. Many causes of low birth weight are preventable with proper prenatal care.

Preterm

A newborn might also have a **low birth weight** if it is born at less than 37 weeks gestation, which qualifies it as a **preterm baby** (CDC, 2015c). Early birth can be triggered by anything that disrupts the mother's system. For instance, vaginal infections can lead to premature birth because such infection causes the mother to release anti-inflammatory chemicals which, in turn, can trigger contractions. Smoking and the use of other teratogens can lead to preterm birth. A significant consequence of preterm birth includes respiratory distress syndrome, which is characterized by weak and irregular breathing (see the image below). Premature babies often cannot yet regulate their own temperature or feed by nursing or bottle. They may struggle to regulate their heart rate effectively and may experience jaundice. They often require care in the Neonatal Intensive Care Unit (NICU) until they are as healthy as a full-term baby.



Figure 3.3.4: a premature baby on CPAP in the NICU. (Photo by Jennifer Paris used with permission)

Small-for-Date Infants

Infants that have birth weights that are below expectation based on their gestational age are referred to as **small-for-date**. These infants may be full term or preterm (see image below), but still weigh less than 90% of all babies of the same gestational age. This is a very serious situation for newborns as their growth was adversely affected. Regev et al. (2003) found that small-for-date infants died at rates more than four times higher than other infants.



Figure 3.3.5: This baby was born at 32 weeks and only weighed 2 pounds and 15 ounces. (Photo by Jennifer Paris used with permission)

Postmature

When babies are not born by 42 weeks gestation, or two weeks after their due date, they are considered overdue or **postmature**. There are some concerns about how long the placenta can function and most doctors will consider induction for overdue babies.

Stillborn

When a fetus (unborn baby) dies while still inside the mother (after 20-24 weeks gestation) or dies during delivery (childbirth). It is said that the delivered baby is stillborn. The causes of many stillbirths are unknown, even when special tests are done to learn the cause. Possible causes include: nicotine, alcohol, or drugs taken by the mother during pregnancy, physical trauma, radiation poisoning, Rh disease, and umbilical cord problems. The number of stillbirths in the United States is about 1 in 115 births, which is about 26,000 a year, or one every 20 minutes. 28

Characteristics of Newborns

Size

The average newborn in the United States weighs about 7.5 pounds and is about 20 inches in length. For the first few days of life, infants typically lose about 5 percent of their body weight as they eliminate waste and get used to feeding. This often goes unnoticed by most parents, but can be cause for concern for those who have a smaller infant. This weight loss is temporary, however, and is followed by a rapid period of growth.



Figure 3.3.6: A newborn being weighed. (Weighing image by Trei Brundrett is licensed under CC BY-SA 2.0)

Body Proportions

The head initially makes up about 50 percent of our entire length when we are developing in the womb. At birth, the head makes up about 25 percent of our length (think about how much of your length would be head if the proportions were still the same!).

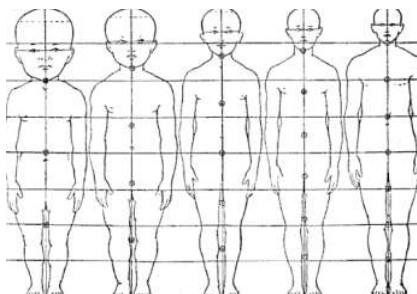


Figure 3.3.7: Body proportions from infancy to adulthood. (Image is in the public domain)

Brain Development

Some of the most dramatic physical change that occurs during this period is in the brain. At birth, the brain is about 25 percent its adult weight and this is not true for any other part of the body. While most of the brain's 100 to 200 billion neurons are present at birth, they are not fully mature. During the next several years dendrites or connections between neurons will undergo a period of transient exuberance or temporary dramatic growth. 31

Appearance at Birth

During labor and birth, the infant's skull changes shape to fit through the birth canal, sometimes causing the child to be born with a misshapen or elongated head. It will usually return to normal on its own within a few days or weeks.

Some newborns have a fine, downy body hair called lanugo. It may be particularly noticeable on the back, shoulders, forehead, ears and face of premature infants. Lanugo disappears within a few weeks. Likewise, not all infants are born with lush heads of hair. Some may be nearly bald while others may have very fine, almost invisible hair. Some babies are even born with a full head of hair. Amongst fair-skinned parents, this fine hair may be blond, even if the parents are not. The picture on the left shows lanugo on the shoulders of newborn twins.



Figure 3.3.8: Lanugo on the shoulder and back of twin girls. (Image is in the public domain)



Figure 3.3.9: A newborn baby covered in vernix. (Vernix image by Upsilon Andromedae is licensed under CC BY 2.0)

Immediately after birth, a newborn's skin is often grayish to dusky blue in color. As soon as the newborn begins to breathe, usually within a minute or two, the skin's color returns to its normal tone. Newborns are wet, covered in streaks of blood, and coated with a white substance known as **vernix**, which is thought to act as an antibacterial barrier, seen in the picture on the right.

The scalp may also be temporarily bruised or swollen, especially in hairless newborns, and the area around the eyes may be puffy.

The newborn may also have Mongolian spots (blue or blue black birthmark on the lower back), various other birthmarks, or peeling skin, particularly on the wrists, hands, ankles, and feet. 34

A newborn's genitals are enlarged and reddened, with male infants having an unusually large scrotum. The breasts may also be enlarged, even in male infants. This is caused by naturally-occurring maternal hormones and is a temporary condition.

The umbilical cord of a newborn is bluish-white in color. After birth, the umbilical cord is normally cut, leaving a 1–2 inch stub. The umbilical stub will dry out, shrivel, darken, and spontaneously fall off within about 3 weeks. Occasionally, hospitals may apply triple dye to the umbilical stub to prevent infection, which may temporarily color the stub and surrounding skin purple.



Figure 3.3.10: The clamping and cutting of a newborn's umbilical cord. (Cord image by NNethala is licensed under CC BY-SA 3.0)

Newborns lose many of the above physical characteristics quickly. Thus older babies look very different. While older babies are considered "cute," newborns can be "unattractive" by the same criteria and first time parents may need to be educated in this

regard. 36

Sleep

A newborn typically sleeps approximately 16.5 hours per 24-hour period. The infant sleeps in several periods throughout the day and night, which means they wake often throughout the day and night. (Salkind, 2005). 37



Figure 3.3.11: An older newborn baby. (Baby image by [brytny.com](#) on [Unsplash](#))

Reflexes

Newborns are equipped with a number of **reflexes**, which are involuntary movements in response to stimulation. Some of the more common reflexes, such as the sucking reflex and rooting reflex, are important to feeding. The grasping and stepping reflexes are eventually replaced by more voluntary behaviors. Within the first few months of life these reflexes disappear, while other reflexes, such as the eye-blink, swallowing, sneezing, gagging, and withdrawal reflex stay with us as they continue to serve important functions. 39

Sensory Capacities

Throughout much of history, the newborn was considered a passive, disorganized being who possessed minimal abilities. However, current research techniques have demonstrated just how developed the newborn is with especially organized sensory and perceptual abilities.

Vision

The womb is a dark environment void of visual stimulation. Consequently, vision is the most poorly developed sense at birth and time is needed to build those neural pathways between the eye and the brain. Newborns typically cannot see further than 8 to 16 inches away from their faces, and their visual acuity is about 20/400, which means that an infant can see something at 20 feet that an adult with normal vision could see at 400 feet. Thus, the world probably looks blurry to young infants.



Figure 3.3.12: A newborn gazing up at a parent. (Looking image is in the public domain)

Hearing

The infant's sense of hearing is very keen at birth, and the ability to hear is evidenced as soon as the 7th month of prenatal development. In fact, an infant can distinguish between very similar sounds as early as one month after birth and can distinguish between a familiar and unfamiliar voice even earlier. Infants are especially sensitive to the frequencies of sounds in human speech and prefer the exaggeration of infant-directed speech, which will be discussed later. Newborns also prefer their mother's voices over another female when speaking the same material (DeCasper & Fifer, 1980). Additionally, they will register in utero specific information heard from their mother's voice. 41

Early Hearing

DeCasper and Spence (1986) tested 16 infants whose mothers had previously read to them prenatally. The mothers read several passages to their fetuses, including the first 28 paragraphs of *The Cat in the Hat*, beginning when they were 7 months pregnant. The fetuses had been exposed to the stories on average of 67 times or 3.5 hours.

During the testing, the infants were able to choose between recordings of two stories, one of which was a story their mothers read to them while in the womb, based on how fast they sucked on their pacifiers. They showed a preference for the stories that their mothers read to them while in the womb. 42



Figure 3.3.13: A collection of children's books. (Image by kamil79 on pixabay)

Touch and Pain

Immediately after birth, a newborn is sensitive to touch and temperature, and is also highly sensitive to pain, responding with crying and cardiovascular responses (Balaban & Reisenauer, 2013). Newborns who are circumcised, which is the surgical removal of the foreskin of the penis, without anesthesia experience pain as demonstrated by increased blood pressure, increased heart rate, decreased oxygen in the blood, and a surge of stress hormones (United States National Library of Medicine, 2016). Research has demonstrated that infants who were circumcised without anesthesia experienced more pain and fear during routine childhood vaccines. Fortunately, many circumcisions are now done with the use of local anesthetics.

Taste and Smell

Studies of taste and smell demonstrate that babies respond with different facial expressions, suggesting that certain preferences are innate. Newborns can distinguish between sour, bitter, sweet, and salty flavors and show a preference for sweet flavors. Newborns also prefer the smell of their mothers. An infant only 6 days old is significantly more likely to turn toward its own mother's breast pad than to the breast pad of another baby's mother (Porter, Makin, Davis, & Christensen, 1992), and within hours of birth an infant also shows a preference for the face of its own mother (Bushnell, 2001; Bushnell, Sai, & Mullin, 1989).

Infants seem to be born with the ability to perceive the world in an intermodal way; that is, through stimulation from more than one sensory modality. For example, infants who sucked on a pacifier with a smooth surface preferred looking at visual models of a pacifier with a smooth surface. But those that were given a pacifier with a textured surface preferred to look at a visual model of a pacifier with a textured surface. 44



Figure 3.3.14: A baby sucking on a pacifier. (Image by Beeki is licensed under CC0 1.0)

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3.S: Summary

In this chapter we looked at:

- methods of childbirth preparation
- the process of childbirth (for both vaginal and Cesarean deliveries)
- assessing newborn health
- problems for the newborn
- characteristics of newborns (including appearance, reflexes, and perceptual abilities)

In the next three chapters we will explore the first three years of life more. Many rapid changes occur during these foundational years.

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CHAPTER OVERVIEW

4: Physical Development in Infancy and Toddlerhood

Learning Objectives

After this chapter, you should be able to:

1. Describe the physical changes that occur during the first two years of life.
2. Identify common infant reflexes.
3. Discuss the sleep needs during the first two years of life.
4. Summarize the sequence of both fine and gross motor skills.
5. Recognize the developing sensory capacities of infants and toddlers.
6. Explain how to meet the evolving nutritional needs of infants and toddlers.

Welcome to the story of development from infancy through toddlerhood; from birth until about two years of age. Researchers have given this part of the life span more attention than any other period, perhaps because changes during this time are so dramatic and so noticeable and perhaps because we have assumed that what happens during these years provides a foundation for one's life to come. However, it has been argued that the significance of development during these years has been overstated (Bruer, 1999). Nevertheless, this is the period of life that contemporary educators, healthcare providers, and parents have focused on most heavily. We will examine growth and nutrition during infancy, as well as other prominent physical changes that take place during this time.¹

[4.1: Rapid Physical Changes](#)

[4.2: Proportions of the Body](#)

[4.3: Reflexes](#)

[4.4: Gross Motor Skills](#)

[4.5: Fine Motor Skills](#)

[4.6: Sensory Capacities](#)

[4.7: Nutrition](#)

[4.8: Health](#)

[4.9: Sleep](#)

[4.S: Summary](#)

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4.1: Rapid Physical Changes

As mentioned in the previous chapter, the average newborn in the United States weighs about 7.5 pounds and is about 20 inches in length. After about a 5% weight loss in the first few days, there is a period of rapid growth. By the time an infant is 4 months old, it usually doubles in weight and by one year has tripled its birth weight. By age 2, the weight has quadrupled. The average length at one year is about 26-32 inches.³



Figure 4.1.1: An infant sleeping. (Image by Andres and Antoinette Ricardo used with permission)

Two hormones are very important to this growth process. The first is [Human Growth Hormone](#) (HGH) which influences all growth except that in the Central Nervous System (CNS). The hormone influencing growth in the CNS is called **Thyroid Stimulating Hormone**. Together these hormones influence the growth in early childhood.

Sleep is very important to the growth process as these hormones are released as children sleep each night. As a result, children need 11 to 14 hours of sleep from 2 to 6 years old. Parents may establish rituals, such as reading a story, taking a bath, brushing teeth, etc. to help children wind down and get the sleep they so desperately need.⁴

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4.2: Proportions of the Body

Another dramatic physical change that takes place in the first several years of life is the change in body proportions. The head initially makes up about 50 percent of our entire length when we are developing in the womb. At birth, the head makes up about 25 percent of our length (think about how much of your length would be head if the proportions were still the same!). By age 25 it comprises about 20 percent our length. Imagine now how difficult it must be to raise one's head during the first year of life! And indeed, if you have ever seen a 2 to 4 month old infant lying on the stomach trying to raise the head, you know how much of a challenge this is. The comparison in this graphic was originally introduced in the last chapter.

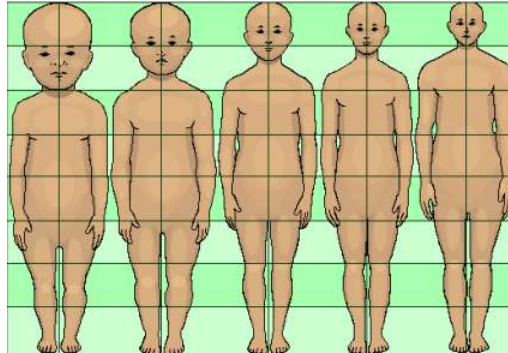


Figure 4.2.1: Shown from left to right: Human body proportions at birth, at 2 years, at 6 years, at 12 years, and at 19 years. (Image by Ephert is licensed under [CC BY-SA 4.0](#))

Some of the most dramatic physical change that occurs during this period is in the brain. At birth, the brain is about 25 percent its adult weight and this is not true for any other part of the body. By age 2, it is at 75 percent its adult weight, at 95 percent by age 6 and at 100 percent by age 7 years.

While most of the brain's 100 to 200 billion neurons are present at birth, they are not fully mature and during the next several years **dendrites** or connections between neurons will undergo a period of transient exuberance or temporary dramatic growth.

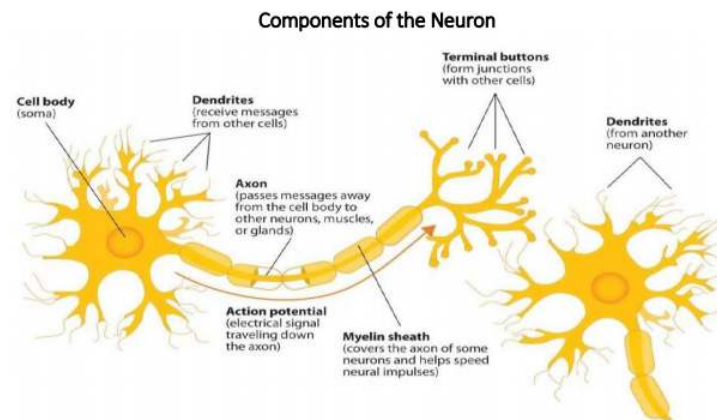


Figure 4.2.2: Components of the neuron. (Image by Martha Lally and Suzanne Valentine-French is licensed under [CC BY-NC-SA 3.0](#))

There is a proliferation of these dendrites during the first two years so that by age 2, a single neuron might have thousands of dendrites. After this dramatic increase, the neural pathways that are not used will be eliminated thereby making those that are used much stronger.⁸ Because of this proliferation of dendrites, by age two a single neuron might have thousands of dendrites.

Synaptogenesis, or the formation of connections between neurons, continues from the prenatal period forming thousands of new connections during infancy and toddlerhood. This period of rapid neural growth is referred to as **Synaptic Blooming**.⁹ This activity is occurring primarily in the cortex or the thin outer covering of the brain involved in voluntary activity and thinking.

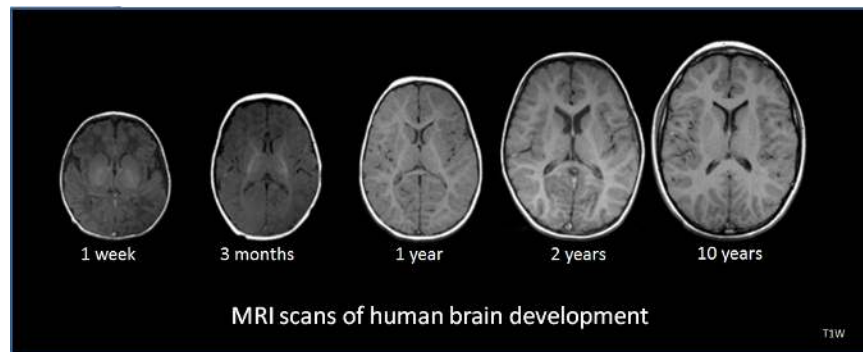


Figure 4.2.3: MRI scans of the human brain. (Image is in the public domain)

The prefrontal cortex that is located behind our forehead continues to grow and mature throughout childhood and experiences an additional growth spurt during adolescence. It is the last part of the brain to mature and will eventually comprise 85 percent of the brain's weight. Experience will shape which of these connections are maintained and which of these are lost. Ultimately, about 40 percent of these connections will be lost (Webb, Monk, and Nelson, 2001). As the prefrontal cortex matures, the child is increasingly able to regulate or control emotions, to plan activity, strategize, and have better judgment. Of course, this is not fully accomplished in infancy and toddlerhood but continues throughout childhood and adolescence.

Another major change occurring in the central nervous system is the development of myelin, a coating of fatty tissues around the axon of the neuron. Myelin helps insulate the nerve cell and speed the rate of transmission of impulses from one cell to another. This enhances the building of neural pathways and improves coordination and control of movement and thought processes. The development of myelin continues into adolescence but is most dramatic during the first several years of life.¹⁰

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4.3: Reflexes

Infants are equipped with a number of reflexes which are involuntary movements in response to stimulation. These include the sucking reflex (infants suck on objects that touch their lips automatically), the rooting reflex (which involves turning toward any object that touches the cheek), the palmar grasp (the infant will tightly grasp any object placed in its palm), and the dancing reflex (evident when the infant is held in a standing position and moves its feet up and down alternately as if dancing). These movements occur automatically and are signals that the infant is functioning well neurologically. Within the first several weeks of life these reflexes are replaced with voluntary movements or motor skills. 12

Infants and children grow and develop at a rapid pace during the first few years of life. The development of both gross and fine motor skills helps a child go from a completely dependent newborn to an independently functioning toddler in about a 3-year span. 13

Table 4.3.1: Some Common Infant Reflexes ([Lifespan Development: A Psychological Perspective](#) (page 74) by Martha Lally and Suzanne Valentine-French is licensed under [CC BY-NC-SA 3.0](#) (modified by Antoinette Ricardo))

Reflex	Description	Image	Reflex	Description	Image
Sucking	Suck on anything that touches the lips	 Figure 4.3.1 (Image is in the public domain)	Moro	A sudden noise or loss of support to the head and neck will cause infants to spread out their arms and legs then quickly contract the limbs inward	 Figure 4.3.2 (Image is in the public domain)
Rooting	Turning the head when the cheek is touched	 Figure 4.3.3 (Image is in the public domain)	Tonic Neck	When lying on the back with the head to one side infants will extend the arm and leg on that side while flexing the limbs on the opposite side (looks like a fencer pose).	 Figure 4.3.4 (Image by Samuel Finlayson is licensed under CC BY-SA 4.0)
Grasp	Fingers automatically grip anything that touches the palm of the hand	 Figure 4.3.5 (Image by Raul Luna is licensed under CC BY 2.0)	Stepping	Legs move in stepping like motion when feet touch a smooth surface	 Figure 4.3.6 (Image is in the public domain)
Babinski	The toes will fan out and curl when the sole of the foot is stroked from heel to toe	 Figure 4.3.7 (Image by Medicus of Borg is licensed under CC BY-SA 3.0)			

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4.4: Gross Motor Skills

Voluntary movements involve the use of large muscle groups and are typically large movements of the arms, legs, head, and torso. They are referred to as **gross motor skills** (or large motor skills). These skills begin to develop first. Examples include moving to bring the chin up when lying on the stomach, moving the chest up, rocking back and forth on hands and knees, and then crawling. But it also includes exploring an object with one's feet as many babies do as early as 8 weeks of age if seated in a carrier or other device that frees the hips. This may be easier than reaching for an object with the hands, which requires much more practice (Berk, 2007). And sometimes an infant will try to move toward an object while crawling and surprisingly move backward because of the greater amount of strength in the arms than in the legs! This also tends to lead infants to pull up on furniture, usually with the goal of reaching a desired object. Usually, this will also lead to taking steps and eventually walking. 22

Physical Gross Motor Milestones

As stated above, children grow very quickly and meet physical milestones rapidly in the first few years of life. The following is a table of the major **milestones** (behaviors or physical skills seen in infants and children as they grow and develop that typically occur within normal range) that occur in children during those first formative years. 23

Table 4.4.1: Gross Motor Milestones ([Developmental Milestones](#) by the [CDC](#) is in the public domain)

Typical Age	What Most Children Do by This Age
2 months	• Can hold head up and begins to push up when lying on tummy • Makes smoother movements with arms and legs
4 months	• Holds head steady, unsupported • Pushes down on legs when feet are on a hard surface • May be able to roll over from tummy to back • Brings hands to mouth • When lying on stomach, pushes up to elbows
6 months	• Rolls over in both directions (front to back, back to front) • Begins to sit without support • When standing, supports weight on legs and might bounce • Rocks back and forth, sometimes crawling backward before moving forward
9 months	• Stands, holding on • Can get into sitting position • Sits without support • Pulls to stand • Crawls
1 year	• Gets to a sitting position without help • Pulls up to stand, walks holding on to furniture (“cruising”) • May take a few steps without holding on • May stand alone
18 months	• Walks alone • May walk up steps and run • Pulls toys while walking • Can help undress self
2 years	• Stands on tiptoe • Kicks a ball • Begins to run • Climbs onto and down from furniture without help • Walks up and down stairs holding on • Throws ball overhand



Figure 4.4.1: An infant playing in the sand. (Image by Andres and Antoinette Ricardo used with permission)

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4.5: Fine Motor Skills

More exact movements of the feet, toes, hands, and fingers are referred to as **fine motor skills** (or small motor skills). These include the ability to reach and grasp an object in coordination with vision. Newborns cannot grasp objects voluntarily but do wave their arms toward objects of interest. At about 4 months of age, the infant is able to reach for an object, first with both arms and within a few weeks, with only one arm. Grasping an object involves the use of the fingers and palm, but no thumbs.



Figure 4.5.1: An infant feeding themselves. (Image by Matt Preston is licensed under CC BY-SA 2.0)

Use of the thumb comes at about 9 months of age when the infant is able to grasp an object using the forefinger and thumb. This is known as the **pincer grip**. This ability greatly enhances the ability to control and manipulate an object and infants take great delight in this newfound ability. They may spend hours picking up small objects from the floor and placing them in containers. And as those objects will often next go into the mouth, caregivers must be vigilant about keeping items small enough to be choking hazards out of reach of little fingers. By 9 months, an infant can also watch a moving object, reach for it as it approaches and grabs it. This is quite a complicated set of actions if we remember how difficult this would have been just a few months earlier. 26

Physical Fine Motor Milestones

While fine motor skills are slower to develop (in accordance with proximodistal development), pretty remarkable progress is made in fine motor development during the first two years. As stated above, in the first few years of life children go from having no intentional fine motor control to being able to manipulate objects to play and learn, as well as beginning to care of themselves. The following is a table of the major milestones in fine motor development.

Table 4.5.1: Fine Motor Milestones (Developmental Milestones by the CDC is in the public domain)

Typical Age	What Most Children Do by This Age
2 months	- Grasps reflexively - Does not reach for objects - Holds hands in fist
4 months	- Brings hands to mouth - Uses hands and eyes together, such as seeing a toy and reaching for it - Follows moving things with eyes from side to side - Can hold a toy with whole hand (palmar grasp) and shake it and swing at dangling toys
6 months	- Reaches with both arms - Brings things to mouth - Begins to pass things from one hand to the other
9 months	- Puts things in mouth - Moves things smoothly from one hand to the other - Picks up things between thumb and index finger (pincer grip)
1 year	- Reaches with one hand - Bangs two things together - Puts things in a container, takes things out of a container - Lets things go without help - Pokes with index (pointer) finger
18 months	- Scribbles on own - Can help undress herself - Drinks from a cup - Eats with a spoon with some accuracy - Stacks 2-4 objects
2 years	- Builds towers of 4 or more blocks - Might use one hand more than the other - Makes copies of straight lines and circles - Enjoys pouring and filling - Unbuttons large buttons - Unzips large zippers - Drinks and feeds self with more accuracy

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4.6: Sensory Capacities

Throughout much of history, the newborn was considered a passive, disorganized being who possessed minimal abilities. William James, an early psychologist, had described the newborn's world as "a blooming, buzzing confusion," (Shaffer, 1985). However, current research techniques have demonstrated just how developed the newborn is with especially organized sensory and perceptual abilities.

Vision

The womb is a dark environment void of visual stimulation. Consequently, vision is the most poorly developed sense at birth and time is needed to build those neural pathways between the eye and the brain. Newborns typically cannot see further than 8 to 16 inches away from their faces (which is about the distance from the newborn's face to the mother/caregiver when an infant is breastfeeding/bottle-feeding). Their visual acuity is about 20/400, which means that an infant can see something at 20 feet that an adult with normal vision could see at 400 feet. Thus, the world probably looks blurry to young infants. Because of their poor visual acuity, they look longer at checkerboards with fewer large squares than with many small squares. Infants' thresholds for seeing a visual pattern are higher than adults'. Thus, toys for infants are sometimes manufactured with black and white patterns rather than pastel colors because the higher contrast between black and white makes the pattern more visible to the immature visual system. By about 6 months, infants' visual acuity improves and approximates adult 20/25 acuity.



Figure 4.6.1: An infant looking up at the person feeding them. (Image by Ben_Kerckx on Pixabay)

When viewing a person's face, newborns do not look at the eyes the way adults do; rather, they tend to look at the chin - a less detailed part of the face. However, by 2 or 3 months, they will seek more detail when exploring an object visually and begin showing preferences for unusual images over familiar ones, for patterns over solids, for faces over patterns, and for three-dimensional objects over flat images. Newborns have difficulty distinguishing between colors, but within a few months, they are able to discriminate between colors as well as adults do. Sensitivity to binocular depth cues, which require inputs from both eyes, is evident by about 3 months and continues to develop during the first 6 months. By 6 months, the infant can perceive depth perception in pictures as well (Sen, Yonas, & Knill, 2001). Infants who have experience crawling and exploring will pay greater attention to visual cues of depth and modify their actions accordingly (Berk, 2007).

Hearing

The infant's sense of hearing is very keen at birth, and the ability to hear is evident as soon as the 7th month of prenatal development. In fact, an infant can distinguish between very similar sounds as early as one month after birth and can distinguish between a familiar and unfamiliar voice even earlier. Infants are especially sensitive to the frequencies of sounds in human speech and prefer the exaggeration of infant-directed speech, which will be discussed later. Additionally, infants are innately ready to respond to the sounds of any language, but some of this ability will be lost by 7 or 8 months as the infant becomes familiar with the sounds of a particular language and less sensitive to sounds that are part of an unfamiliar language.

Newborns also prefer their mother's voices over another female when speaking the same material (DeCasper & Fifer, 1980). Additionally, they will register in utero specific information heard from their mother's voice. You may remember the Cat in the Hat study featured in the last chapter that illustrates this.

Touch and Pain

Immediately after birth, a newborn is sensitive to touch and temperature, and is also highly sensitive to pain, responding with crying and cardiovascular responses (Balaban & Reisenauer, 2013). Newborns who are **circumcised**, which is the surgical removal

of the foreskin of the penis, without anesthesia experience pain as demonstrated by increased blood pressure, increased heart rate, decreased oxygen in the blood, and a surge of stress hormones (United States National Library of Medicine, 2016). Research has demonstrated that infants who were circumcised without anesthesia experienced more pain and fear during routine childhood vaccines. Fortunately, local painkillers are now used during many circumcision.

Taste and Smell

Studies of taste and smell demonstrate that babies respond with different facial expressions, suggesting that certain preferences are innate. Newborns can distinguish between sour, bitter, sweet, and salty flavors and show a preference for sweet flavors. Newborns also prefer the smell of their mothers. An infant only 6 days old is significantly more likely to turn toward its own mother's breast pad than to the breast pad of another baby's mother (Porter, Makin, Davis, & Christensen, 1992), and within hours of birth, an infant also shows a preference for the face of its own mother (Bushnell, 2001; Bushnell, Sai, & Mullin, 1989).

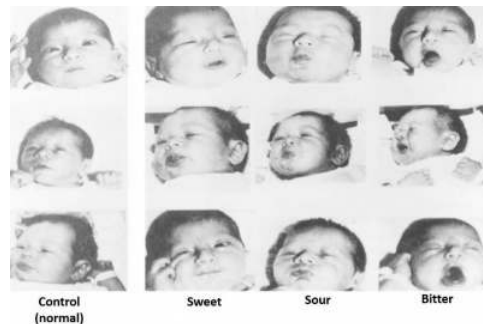


Figure 4.6.2: The responses of infants to different tastes. (Image by Alice Vilela and CC BY 4.0)

Infants seem to be born with the ability to perceive the world in an intermodal way; that is, through stimulation from more than one sensory modality. For example, infants who sucked on a pacifier with either a smooth or textured surface preferred to look at a corresponding (smooth or textured) visual model of the pacifier. By 4 months, infants can match lip movements with speech sounds and can match other audiovisual events. Although sensory development emphasizes the afferent processes used to take in information from the environment, these sensory processes can be affected by the infant's developing motor abilities. Reaching, crawling, and other actions allow the infant to see, touch, and organize his or her experiences in new ways. 30

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4.7: Nutrition

Nutritional needs change with age. Let's examine how caregivers should nourish children during the first years of life and some risks to nutrition that they should be aware of.

Breastfeeding

Breast milk is considered the ideal diet for newborns. **Colostrum**, the first breast milk produced during pregnancy and just after birth has been described as “liquid gold” (United States Department of Health and Human Services (USDHHS), 2011). It is very rich in nutrients and antibodies. Breast milk changes by the third to fifth day after birth, becoming much thinner, but containing just the right amount of fat, sugar, water, and proteins to support overall physical and neurological development. For most babies, breast milk is also easier to digest than formula. Formula fed infants experience more diarrhea and upset stomachs. The absence of antibodies in formula often results in a higher rate of ear infections and respiratory infections. Children who are breastfed have lower rates of childhood leukemia, asthma, obesity, type 1 and 2 diabetes, and a lower risk of SIDS. The USDHHS recommends that mothers breastfeed their infants until at least 6 months of age and that breast milk be used in the diet throughout the first year or two.



Figure 4.7.1: A nurse helping a new mother to breastfeed. (Breastfeeding image by the [Military Health System](#) is in the public domain)

Maternal Benefits of Breastfeeding

Several recent studies have reported that it is not just babies that benefit from breastfeeding. Breastfeeding stimulates contractions in the mother's uterus to help it regain its normal size, and women who breastfeed are more likely to space their pregnancies further apart. Mothers who breastfeed are at lower risk of developing breast cancer (Islami et al., 2015), especially among higher risk racial and ethnic groups (Islami et al., 2015; Redondo et al., 2012). Women who breastfeed have lower rates of ovarian cancer (Titus-Ernstoff, Rees, Terry, & Cramer, 2010), reduced risk for developing Type 2 diabetes (Schwarz et al., 2010; Gunderson, et al., 2015), and rheumatoid arthritis (Karlson, Mandl, Hankinson, & Grodstein, 2004). In most studies these benefits have been seen in women who breastfeed longer than 6 months.

Challenges to Breastfeeding

However, most mothers who breastfeed in the United States stop breastfeeding at about 6-8 weeks, often in order to return to work outside the home (USDHHS, 2011). Mothers can certainly continue to provide breast milk to their babies by expressing and freezing the milk to be bottle-fed at a later time or by being available to their infants at feeding time. However, some mothers find that after the initial encouragement they receive in the hospital to breastfeed, the outside world is less supportive of such efforts. Some workplaces support breastfeeding mothers by providing flexible schedules and welcoming infants, but many do not. In addition, not all women may be able to breastfeed. Women with HIV are routinely discouraged from breastfeeding as the infection may pass to the infant. Similarly, women who are taking certain medications or undergoing radiation treatment may be told not to breastfeed (USDHHS, 2011).

Cost of Breastfeeding

In addition to the nutritional benefits of breastfeeding, breast milk does not have to be purchased. Anyone who has priced formula recently can appreciate this added incentive to breastfeeding. Prices for a year's worth of formula and feeding supplies can cost well over \$1,500 (USDHHS, 2011).

But there are also those who challenge the belief that breast milk is free. For breastmilk to be completely beneficial for infants the mother's life choices will ultimately affect the quality of the nutrition an infant will receive. Let's consider the nutritional intake of the mother. Breastfeeding will both limit some food and drink choices as well as necessitate an increased intake of healthier options. A simple trip down the supermarket aisles will show you that nutritious and healthier options can be more expensive than some of the cheaper more processed options. A large variety of vegetable and fruits must be consumed, accompanied by the right proportions and amounts of the whole grains, dairy products, and fat food groups. Additionally, it is also encouraged for breastfeeding mothers to take vitamins regularly. That raises the question of how free breastfeeding truly is.

A Historic Look at Breastfeeding

The use of wet nurses, or lactating women hired to nurse others' infants, during the middle ages eventually declined and mothers increasingly breastfed their own infants in the late 1800s. In the early part of the 20th century, breastfeeding began to go through another decline. By the 1950s, it was practiced less frequently as formula began to be viewed as superior to breast milk.

In the late 1960s and 1970s, greater emphasis began to be placed on natural childbirth and breastfeeding and the benefits of breastfeeding were more widely publicized. Gradually rates of breastfeeding began to climb, particularly among middle-class educated mothers who received the strongest messages to breastfeed.

Today, women receive consultation from lactation specialists before being discharged from the hospital to ensure that they are informed of the benefits of breastfeeding and given support and encouragement to get their infants to get used to taking the breast. This does not always happen immediately and first time mothers, especially, can become upset or discouraged. In this case, lactation specialists and nursing staff can encourage the mother to keep trying until baby and mother are comfortable with the feeding. 33

Alternatives to Breastfeeding

There are many reasons that mothers struggle to breastfeed or should not breastfeed, including: low milk supply, previous breast surgeries, illicit drug use, medications, infectious disease, and inverted nipples. Other mothers choose not to breastfeed. Some reasons for this include: lack of personal comfort with nursing, the time commitment of nursing, inadequate or unhealthy diet, and wanting more convenience and flexibility with who and when an infant can be fed. For these mothers and infants, formula is available. Besides breast milk, infant formula is the only other milk product that the medical community considers nutritionally acceptable for infants under the age of one year (as opposed to cow's milk, goat's milk, or follow-on formula). It can be used in addition to breastfeeding (supplementing) or as an alternative to breastmilk.

The most commonly used infant formulas contain purified cow's milk whey and casein as a protein source, a blend of vegetable oils as a fat source, lactose as a carbohydrate source, a vitamin-mineral mix, and other ingredients depending on the manufacturer. In addition, there are infant formulas which use soybeans as a protein source in place of cow's milk (mostly in the United States and Great Britain) and formulas which use protein hydrolysed into its component amino acids for infants who are allergic to other proteins³⁴.



Figure 4.7.2: A father bottle-feeding his infant. (Bottle-feeding image by Ilya Haykinson is licensed under CC BY-SA 2.0)

One early argument given to promote the practice of breastfeeding was that it promoted bonding and healthy emotional development for infants. However, this does not seem to be the case. Breastfed and bottle-fed infants adjust equally well emotionally (Ferguson & Woodward, 1999). This is good news for mothers who may be unable to breastfeed for a variety of reasons and for fathers who might feel left out.

When, What, and How to Introduce Solid Foods

The American Academy of Pediatrics recommends children be introduced to foods other than breast milk or infant formula when they are about 6 months old. Every child is different. Here are some signs that show that an infant is ready for foods other than breast milk or infant formula:

- Child can sit with little or no support.
- Child has good head control.
- Child opens his or her mouth and leans forward when food is offered.

How Should Foods Be Introduced?

The American Academy of Pediatrics says that for most children, foods do not need to be given in a certain order. Children can begin eating solid foods at about 6 months old. By the time they are 7 or 8 months old, children can eat a variety of foods from different food groups. These foods include infant cereals, meat or other proteins, fruits, vegetables, grains, yogurts and cheeses, and more.

If feeding infant cereals, it is important to offer a variety of fortified infant cereals such as oat, barley, and multi-grain instead of only rice cereal. The Food and Drug Administration does not recommend only providing infant rice cereal because there is a risk for children to be exposed to arsenic.

Children should be allowed to try one food at a time at first and there should be 3 to 5 days before another food is introduced. This helps caregivers see if the child has any problems with that food, such as food allergies.



Figure 4.7.3: A baby being fed solid food. (Image by Ben_Kerckx on Pixabay)

The eight most common allergenic foods are milk, eggs, fish, shellfish, tree nuts, peanuts, wheat, and soybeans. It is no longer recommended that caregivers delay introducing these foods to all children, but if there is a family history of food allergies, the child's doctor or nurse should be consulted. 37

It may take numerous attempts before a child gains a taste for it. So caregivers should not give up if a food is refused on the first offering.

USDA Infant Meal Patterns

The United States Department of Agriculture Food and Nutrition Service provides the following guidance for the day time feeding of infants and toddlers.

Table 4.7.1: Infant Meal Patterns ([Infant Meals](#) by the [USDA](#) is in the public domain)

Meal	0-5 months	6-11 months
Breakfast	4-6 fluid ounces breastmilk or formula	6-8 fluid ounces breastmilk or formula 0-4 tablespoons infant cereal, meat, fish, poultry, whole eggs, cooked dry beans or peas; or 0-2 ounces cheese; or 0-4 ounces (volume) cottage cheese; or 0-4 ounces yogurt; or a combination* 0-2 tablespoons vegetable, fruit, or both*
Lunch or Supper	4-6 fluid ounces breastmilk or formula	6-8 fluid ounces breastmilk or formula 0-4 tablespoons infant cereal, meat, fish, poultry, whole eggs, cooked dry beans or peas; or 0-2 ounces cheese; or 0-4 ounces (volume) cottage cheese; or 0-4 ounces yogurt; or a combination* 0-2 tablespoons vegetable, fruit, or both*
Snack	4-6 fluid ounces breastmilk or formula	2-4 fluid ounces breastmilk or formula 0-1/2 bread slice; or 0-2 crackers; or 0-4 tablespoons infant cereal or ready-to-eat cereal* 0-2 tablespoons vegetable, fruit, or both*

*Required when infant is developmentally ready. All serving sizes are minimum quantities of the food components that are required to be served.

Table 4.7.2: Meal Patterns for Children (1-2 years) ([Child and Adult Meals](#) by the [USDA](#) is in the public domain)

Meal	Ages 1-2
Breakfast	1/2 cup milk 1/4 cup vegetables, fruit, or both 1/2 ounce equivalent grains
Lunch or Supper	1/2 cup milk 1-ounce meat or meat alternative 1/8 cup vegetables 1/8 cup fruits 1/2 ounce equivalent of grains
Snack	Select two of the following: 1/2 cup of milk 1/2 ounce meat or meat alternative 1/2 cup vegetables 1/2 cup fruit 1/2 ounce equivalent of grains

Note: All serving sizes are minimum quantities of the food components that are required to be served.

Child Malnutrition

There can be serious effects for children when there are deficiencies in their nutrition. Let's explore a few types of nutritional concerns.

Wasting

Children in developing countries and countries experiencing the harsh conditions of war are at risk for two major types of malnutrition, also referred to as wasting. Infantile **marasmus** refers to starvation due to a lack of calories and protein. Children who do not receive adequate nutrition lose fat and muscle until their bodies can no longer function. Babies who are breastfed are much less at risk of malnutrition than those who are bottle-fed.

After weaning, children who have diets deficient in protein may experience **kwashiorkor** or the "disease of the displaced child," often occurring after another child has been born and taken over breastfeeding. This results in a loss of appetite and swelling of the

abdomen as the body begins to break down the vital organs as a source of protein.

Around the world the rates of wasting have been dropping. However, according to the World Health Organization and UNICEF, in 2014 there were 50 million children under the age of five that experienced these forms of wasting, and 16 million were severely wasted (UNICEF, 2015). Worldwide, these figures indicate that nearly 1 child in every 13 suffers from some form of wasting. The majority of these children live in Asia (34.3 million) and Africa (13.9 million). Wasting can occur as a result of severe food shortages, regional diets that lack certain proteins and vitamins, or infectious diseases that inhibit appetite (Latham, 1997).



Figure 4.7.4: A child suffering from wasting. (Image by the CDC is in the public domain)

The consequences of wasting depend on how late in the progression of the disease parents and guardians seek medical treatment for their children. Unfortunately, in some cultures families do not seek treatment early, and as a result by the time a child is hospitalized the child often dies within the first three days after admission (Latham, 1997). Several studies have reported long-term cognitive effects of early malnutrition (Galler & Ramsey, 1989; Galler, Ramsey, Salt & Archer, 1987; Richardson, 1980), even when home environments were controlled (Galler, Ramsey, Morley, Archer & Salt, 1990). Lower IQ scores (Galler et al., 1987), poor attention (Galler & Ramsey, 1989), and behavioral issues in the classroom (Galler et al., 1990) have been reported in children with a history of serious malnutrition in the first few years of life. 41

Milk Anemia

Milk Anemia in the United States: About 9 million children in the United States are malnourished (Children's Welfare, 1998). More still suffer from milk anemia, a condition in which milk consumption leads to a lack of iron in the diet. This can be due to the practice of giving toddlers milk as a pacifier-when resting, when riding, when waking, and so on. Appetite declines somewhat during toddlerhood and a small amount of milk (especially with added chocolate syrup) can easily satisfy a child's appetite for many hours. The calcium in milk interferes with the absorption of iron in the diet as well. Many preschools and daycare centers give toddlers a drink after they have finished their meal in order to prevent spoiling their appetites. 42

Failure to Thrive

Failure to thrive (FTT) occurs in children whose nutritional intake is insufficient for supporting normal growth and weight gain. FTT typically presents before two years of age, when growth rates are highest. Parents may express concern about picky eating habits, poor weight gain, or smaller size compared relative to peers of similar age. Physicians often identify FTT during routine office visits, when a child's growth parameters are not tracking appropriately on growth curves.

FTT can be caused by physical or mental issues within the child (such as errors of metabolism, acid reflux, anemia, diarrhea, Cystic fibrosis, Crohn's disease, celiac disease, cleft palate, tongue tie, milk allergies, hyperthyroidism, congenital heart disease, etc.) It can also be caused by caregiver's actions (environmental), including inability to produce enough breastmilk, inadequate food supply, providing an insufficient number of feedings, and neglect. These causes may also co-exist. For instance, a child who is not getting sufficient nutrition may act content so that caregivers do not offer feedings of sufficient frequency or volume, and a child with severe acid reflux who appears to be in pain while eating may make a caregiver hesitant to offer sufficient feedings. 43

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4.8: Health

Infants depend on the adults that care for them to promote and protect their health. The following section addresses common physical conditions that can affect infants, the danger of shaking babies, and the importance of immunizations.

Common Physical Conditions and Issues during Infancy

Some physical conditions and issues are very common during infancy. Many are normal, and the infant's caregivers can deal with them if they occur. Mostly, it is a matter of the caregivers learning about what is normal for their infant and getting comfortable with the new routine in the household. New parents and caregivers often have questions about the following:

- Bowel Movements
- Colic
- Diaper Rash
- Spitting Up/Vomiting
- Teething
- Urination
- Jaundice

Bowel Movements

Infants' bowel movements go through many changes in color and consistency, even within the first few days after birth. While the color, consistency, and frequency of stool will vary, hard or dry stools may indicate dehydration and increased frequency of watery stools may indicate diarrhea.



Figure 4.8.1: An infant getting their diaper changed. (Infant image by Kevin Phillips is licensed under CC BY 2.0)

Colic

Many infants are fussy in the evenings, but if the crying does not stop and gets worse throughout the day or night, it may be caused by colic. According to the American Academy of Pediatrics, about one-fifth of all infants develop colic, usually starting between 2 and 4 weeks of age. They may cry inconsolably or scream, extend or pull up their legs, and pass gas. Their stomachs may be enlarged. The crying spells can occur anytime, although they often get worse in the early evening.

The colic will likely improve or disappear by the age of 3 or 4 months. There is no definite explanation for why some infants get colic. Health care providers can help ensure there is no medical reason behind the crying.

Some infants seem to be soothed by being held, rocked, or wrapped snugly in a blanket. Some like a pacifier.



Figure 4.8.2: A father holding a crying infant. (Father image by David D is licensed under CC BY 2.0)

Shaken Baby Syndrome

Here is a PSA from the Center for Disease Control (CDC) *The crying. The late-night feedings. The diaper changes. The exhaustion. If you've ever been around a baby who won't stop crying, you know there's potential to get frustrated. Focus on calming yourself and understand that you may not be able to calm your baby. It's not your fault or your baby's.*⁴⁶

It's normal for healthy babies to cry and some babies cry much more than others. And they cannot always be consoled and caregivers can feel pushed to the limit. When caregivers lose control and shake a baby it can have devastating effects.

Shaken Baby Syndrome (SBS) is a severe form of physical child abuse. SBS may be caused from vigorously shaking an infant by the shoulders, arms, or legs. The “whiplash” effect can cause intracranial (within the brain) or intraocular (within the eyes) bleeding. Often there is no obvious external head trauma. Still, children with SBS may display some outward signs:

- Change in sleeping pattern or inability to be awakened
- Confused, restless, or agitated state
- Convulsions or seizures
- Loss of energy or motivation
- Slurred speech
- Uncontrollable crying
- Inability to be consoled
- Inability to nurse or eat

SBS can result in death, mental retardation or developmental delays, paralysis, severe motor dysfunction, spasticity, blindness, and seizures.

Who's at Risk? Small children are especially vulnerable to this type of abuse. Their heads are large in comparison to their bodies, and their neck muscles are weak. Children under one year of age are at highest risk, but SBS has been reported in children up to five years of age. Shaking often occurs in response to a baby crying or having a toilet-training accident. The perpetrator tends to be male and is primarily the biological father or the mother's boyfriend or partner. Caregivers are responsible for about 9%-21% of cases. The explanation typically provided by the caregiver—“I was playing with the baby”—does not begin to account for the severity of trauma. Many times there is also a history of child abuse.

Can It Be Prevented? SBS is completely preventable. However, it is not known whether educational efforts will effectively prevent this type of abuse. Home visitation programs are shown to prevent child abuse in general. Because the child's father or the mother's partner often causes SBS, they should be included in home visitation programs. Home visits bring community resources to families in their homes. Health professionals provide information, healthcare, psychological support, and other services that can help people to be more effective parents and care-givers.

The Bottom Line

- Shaking a baby can cause death or permanent brain damage. It can result in life-long disability.
- Healthy strategies for dealing with a crying baby include:
 - finding the reason for the crying
 - checking for signs of illness or discomfort, such as diaper rash, teething, tight clothing;
 - feeding or burping;
 - soothing the baby by rubbing its back; gently rocking; offering a pacifier;
 - singing or talking;
 - taking a walk using a stroller or a drive in a properly-secured car seat;
 - or calling the doctor if sickness is suspected
- All babies cry. Caregivers often feel overwhelmed by a crying baby. Calling a friend, relative, or neighbor for support or assistance lets the caregiver take a break from the situation. If immediate support is not available, the caregiver could place the baby in a crib (making sure the baby is safe), close the door, and check on the baby every five minutes.⁴⁷



Figure 4.8.3: Medical professionals caring for an infant. (Medical image by the U.S. Air Force is in the public domain)

Abusive Head Trauma Shaken baby syndrome is part abusive head trauma (AHT), severe form of physical child abuse that results in an injury to the brain of a child. This is important to note because:

- Abusive head trauma is a leading cause of physical child abuse deaths in children under 5 in the United States.
- Abusive head trauma accounts for approximately one third of all child maltreatment deaths.
- The most common trigger for abusive head trauma is inconsolable crying.
- Babies less than one year old are at greatest risk of injury from abusive head trauma.⁴⁹

Teething

Although newborns usually have no visible teeth, baby teeth begin to appear generally about 6 months after birth. During the first few years, all 20 baby teeth will push through the gums, and most children will have their full set of these teeth in place by age 3.

An infant's front four teeth usually appear first, at about 6 months of age, although some children don't get their first tooth until 12-14 months. As their teeth break through the gums, some infants become fussy, and irritable; lose their appetite; or drool more than usual.

The FDA does not recommend gum-numbing medications with an ingredient called benzocaine because they can cause a potentially fatal condition in young children. Safe forms of relief include a chilled teething ring or gently rubbing the child's gums with a clean finger.

Spitting Up/Vomiting

Spitting up is a common occurrence for young infants and is usually not a sign of a more serious problem. But if an infant is not gaining weight or shows other signs of illness, a health care provider should be consulted.



Figure 4.8.4: A father holding his baby with a cloth protecting his shoulder from spit-up. (Image by Colin is licensed under CC BY 2.0)

Urination

Infants urinate as often as every 1 to 3 hours or as infrequently as every 4 to 6 hours. In case of sickness or if the weather is very hot, urine output might drop by half and still be normal. If an infant shows any signs of distress while urinating or if any blood is found in a wet diaper medical care should be sought.

Diaper Rash

A rash on the skin covered by a diaper is quite common. It is usually caused by irritation of the skin from being in contact with stool and urine. It can get worse during bouts of diarrhea. Diaper rash usually can be prevented by frequent diaper changes.

Jaundice

Jaundice can cause an infant's skin, eyes, and mouth to turn a yellowish color. The yellow color is caused by a buildup of bilirubin, a substance that is produced in the body during the normal process of breaking down old red blood cells and forming new ones.

Normally the liver removes bilirubin from the body. But, for many infants, in the first few days after birth, the liver is not yet working at its full power. As a result, the level of bilirubin in the blood gets too high, causing the infant's color to become slightly yellow—this is jaundice. Although jaundice is common and usually not serious, in some cases, high levels of bilirubin could cause brain injury. All infants with jaundice need to be seen by a health care provider. Many infants need no treatment. Their livers start to catch up quickly and begin to remove bilirubin normally, usually within a few days after birth. For some infants, health care providers prescribe phototherapy—a treatment using a special lamp—to help break down the bilirubin in their bodies.



Figure 4.8.5: An infant receiving treatment for jaundice. (Image by Andres and Antoinette Ricardo used with permission)

Protecting Health through Immunization

One way we can protect a child's health (and those around them) is through immunization. The vaccines (given through injection) may hurt a little...but the diseases they can prevent can hurt a lot more! Immunization shots, or vaccinations, are essential. They protect against things like measles, mumps, rubella, hepatitis B, polio, diphtheria, tetanus and pertussis (whooping cough). Immunizations are important for adults as well as for children. Here's why.

The immune system helps the human body fight germs by producing substances to combat them. Once it does, the immune system “remembers” the germ and can fight it again. Vaccines contain germs that have been killed or weakened. When given to a healthy person, the vaccine triggers the immune system to respond and thus build immunity.

Before vaccines, people became immune only by actually getting a disease and surviving it. Immunizations are an easier and less risky way to become immune.

Vaccines are the best defense we have against serious, preventable, and sometimes deadly contagious diseases. Vaccines are some of the safest medical products available, but like any other medical product, there may be risks. Accurate information about the value of vaccines as well as their possible side effects helps people to make informed decisions about vaccination.



Figure 4.8.6: A nurse giving an infant vaccinations. (Image by Maria Immaculata Hospital is licensed under [CC BY-SA 4.0](https://creativecommons.org/licenses/by-sa/4.0/))

Potential Side Effects

Vaccines, like all medical products, may cause side effects in some people. Most of these side effects are minor, such as redness or swelling at the injection site. Read further to learn about possible side effects from vaccines.

Any vaccine can cause side effects. For the most part these are minor (for example, a sore arm or low-grade fever) and go away within a few days.⁵³ Serious side effects after vaccination, such as severe allergic reaction, are very rare.⁵⁴

Remember, vaccines are continually monitored for safety, and like any medication, vaccines can cause side effects. However, a decision not to immunize a child also involves risk and could put the child and others who come into contact with him or her at risk

of contracting a potentially deadly disease.

How Well Do Vaccines Work?

Vaccines work really well. No medicine is perfect, of course, but most childhood vaccines produce immunity about 90–100% of the time.

What about the argument made by some people that vaccines don't work that well . . . that diseases would be going away on their own because of better hygiene or sanitation, even if there were no vaccines?

That simply isn't true. Certainly better hygiene and sanitation can help prevent the spread of disease, but the germs that cause disease will still be around, and as long as they are they will continue to make people sick.

All vaccines must be licensed (approved) by the Food and Drug Administration (FDA) before being used in the United States, and a vaccine must go through extensive testing to show that it works and that it is safe before the FDA will approve it. Among these tests are clinical trials, which compare groups of people who get a vaccine with groups of people who get a control. A vaccine is approved only if FDA makes the determination that it is safe and effective for its intended use.

If you look at the history of any vaccine-preventable disease, you will virtually always see that the number of cases of disease starts to drop when a vaccine is licensed. Vaccines are the most effective tool we have to prevent infectious diseases.

Opposition to Vaccines

In 2010, a pertussis (whooping cough) outbreak in California sickened 9,143 people and resulted in 10 infant deaths: the worst outbreak in 63 years (Centers for Disease Control 2011b). Researchers, suspecting that the primary cause of the outbreak was the waning strength of pertussis vaccines in older children, recommended a booster vaccination for 11–12-year-olds and also for pregnant women (Zacharyczuk 2011). Pertussis most serious for babies; one in five needs to be hospitalized, and since they are too young for the vaccine themselves, it is crucial that people around them be immunized (Centers for Disease Control 2011b). Several states, including California, have been requiring the pertussis booster for older children in recent years with the hope of staving off another outbreak.

But what about people who do not want their children to have this vaccine, or any other? That question is at the heart of a debate that has been simmering for years. Vaccines are biological preparations that improve immunity against a certain disease. Vaccines have contributed to the eradication and weakening of numerous infectious diseases, including smallpox, polio, mumps, chicken pox, and meningitis.



Figure 4.8.7: These two young children contracted polio. (Image by the CDC is in the public domain)

However, many people express concern about potential negative side effects from vaccines. These concerns range from fears about overloading the child's immune system to controversial reports about devastating side effects of the vaccines.⁵⁶

Although children continue to get several vaccines up to their second birthday, these vaccines do not overload the immune system. Every day, an infant's healthy immune system successfully fights off thousands of antigens – the parts of germs that cause their immune system to respond. Even if your child receives several vaccines in one day, vaccines contain only a tiny amount of antigens compared to the antigens your baby encounters every day.

This is the case even if your child receives combination vaccines. Combination vaccines take two or more vaccines that could be given individually and put them into one shot. Children get the same protection as they do from individual vaccines given separately—but with fewer shots.⁵⁷

One misapprehension is that the vaccine itself might cause the disease it is supposed to be immunizing against.⁵⁸ Vaccines help develop immunity by imitating an infection, but this “imitation” infection does not cause illness. Instead it causes the immune system to develop the same response as it does to a real infection so the body can recognize and fight the vaccine-preventable disease in the future. Sometimes, after getting a vaccine, the imitation infection can cause minor symptoms, such as fever. Such minor symptoms are normal and should be expected as the body builds immunity.⁵⁹

Another commonly circulated concern is that vaccinations, specifically the MMR vaccine (MMR stands for measles, mumps, and rubella), are linked to autism. The autism connection has been particularly controversial. In 1998, a British physician named Andrew Wakefield published a study in Great Britain’s *Lancet* magazine that linked the MMR vaccine to autism. The report received a lot of media attention, resulting in British immunization rates decreasing from 91 percent in 1997 to almost 80 percent by 2003, accompanied by a subsequent rise in measles cases (Devlin 2008). A prolonged investigation by the *British Medical Journal* proved that not only was the link in the study nonexistent, but that Dr. Wakefield had falsified data in order to support his claims (CNN 2011). Dr. Wakefield was discredited and stripped of his license, but the doubt still lingers in many parents’ minds.

In the United States, many parents still believe in the now discredited MMR-autism link and refuse to vaccinate their children. Other parents choose not to vaccinate for various reasons like religious or health beliefs. In one instance, a boy whose parents opted not to vaccinate returned home to the U.S. after a trip abroad; no one yet knew he was infected with measles.

The boy exposed 839 people to the disease and caused 11 additional cases of measles, all in other unvaccinated children, including one infant who had to be hospitalized.



Figure 4.8.8: A baby with measles (Measles image by CDC Global is licensed under CC BY 2.0)

According to a study published in *Pediatrics* (2010), the outbreak cost the public sector \$10,376 per diagnosed case. The study further showed that the intentional non-vaccination of those infected occurred in students from private schools, public charter schools, and public schools in upper-socioeconomic areas (Sugerman et al. 2010).⁶¹

The Immunization Schedule

On-time vaccination throughout childhood is essential because it helps provide immunity before children are exposed to potentially life-threatening diseases. Vaccines are tested to ensure that they are safe and effective for children to receive at the recommended ages.⁶² Fully vaccinated children in the U.S. are protected against sixteen potentially harmful diseases. Vaccine-preventable diseases can be very serious, may require hospitalization, or even be deadly — especially in infants and young children.⁶³

Here is the schedule from the CDC to ensure a child is fully vaccinated:

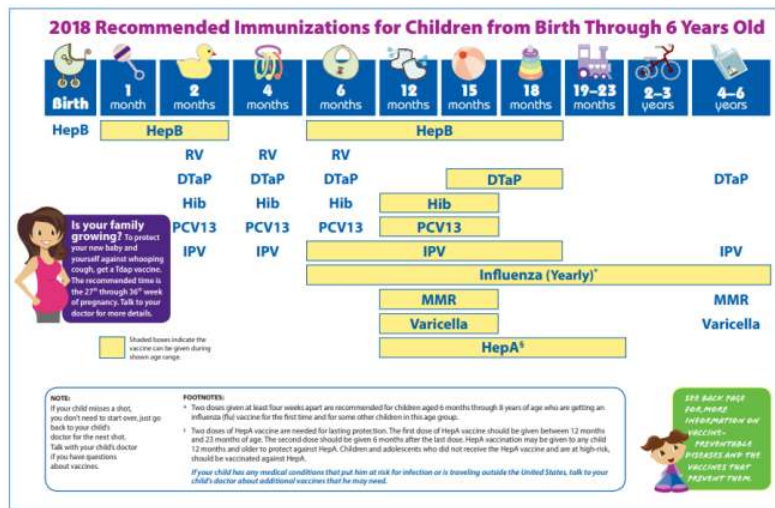


Figure 4.8.9: Immunization schedule. (Image by the CDC is in the public domain)

Vaccine-Preventable Diseases and the Vaccines that Prevent Them

Disease	Vaccine	Disease spread by	Disease symptoms	Disease complications
Chickenpox	Varicella vaccine protects against chickenpox.	Air, direct contact	Rash, tiredness, headache, fever	Infected blisters, bleeding disorders, encephalitis (brain swelling), pneumonia (infection in the lungs)
Diphtheria	DTaP ^a vaccine protects against diphtheria.	Air, direct contact	Sore throat, mild fever, weakness, swollen glands in neck	Swelling of the heart muscle, heart failure, coma, paralysis, death
Hib	Hib vaccine protects against Haemophilus influenzae type b.	Air, direct contact	May be no symptoms unless bacteria enter the blood	Meningitis (infection of the covering around the brain and spinal cord), intellectual disability, epiglottitis (life-threatening infection that can block the windpipe and lead to serious breathing problems), pneumonia (infection in the lungs), death
Hepatitis A	HepA vaccine protects against hepatitis A.	Direct contact, contaminated food or water	May be no symptoms; fever, stomach pain, loss of appetite, fatigue, vomiting, jaundice (yellowing of skin and eyes), dark urine	Liver failure, arthralgia (joint pain), kidney, pancreatic, and blood disorders
Hepatitis B	HepB vaccine protects against hepatitis B.	Contact with blood or body fluids	May be no symptoms; fever, headache, weakness, vomiting, jaundice (yellowing of skin and eyes), joint pain	Chronic liver infection, liver failure, liver cancer
Influenza (Flu)	Flu vaccine protects against influenza.	Air, direct contact	Fever, muscle pain, sore throat, cough, extreme fatigue	Pneumonia (infection in the lungs)
Measles	MMR ^{**} vaccine protects against measles.	Air, direct contact	Rash, fever, cough, runny nose, pinkeye	Encephalitis (brain swelling), pneumonia (infection in the lungs), death
Mumps	MMR ^{**} vaccine protects against mumps.	Air, direct contact	Swollen salivary glands (under the jaw), fever, headache, tiredness, muscle pain	Meningitis (infection of the covering around the brain and spinal cord), encephalitis (brain swelling), inflammation of testicles or ovaries, deafness
Pertussis	DTaP ^a vaccine protects against pertussis (whooping cough).	Air, direct contact	Severe cough, runny nose, apnea (a pause in breathing in infants)	Pneumonia (infection in the lungs), death
Polio	IPV vaccine protects against polio.	Air, direct contact, through the mouth	May be no symptoms, sore throat, fever, nausea, headache	Paralysis, death
Pneumococcal	PCV13 vaccine protects against pneumococcus.	Air, direct contact	May be no symptoms, pneumonia (infection in the lungs)	Bacteremia (blood infection), meningitis (infection of the covering around the brain and spinal cord), death
Rotavirus	RV vaccine protects against rotavirus.	Through the mouth	Diarrhea, fever, vomiting	Severe diarrhea, dehydration
Rubella	MMR ^{**} vaccine protects against rubella.	Air, direct contact	Children infected with rubella virus sometimes have a rash, fever, swollen lymph nodes	Very serious in pregnant women—can lead to miscarriage, stillbirth, premature delivery, birth defects
Tetanus	DTaP ^a vaccine protects against tetanus.	Exposure through cuts in skin	Stiffness in neck and abdominal muscles, difficulty swallowing, muscle spasms, fever	Broken bones, breathing difficulty, death

^a DTaP^a combines protection against diphtheria, tetanus, and pertussis.
^{**} MMR^{**} combines protection against measles, mumps, and rubella.

Last updated August 2018 - CDC/16121-A

Figure 4.8.10: Vaccine-Preventable Diseases. (Image by the CDC is in the public domain)

Safety

There are different risks to infant safety. According to the CDC, nonfatal injury rates varied by age group.

- Nonfatal suffocation rates were highest for those less than 1 year of age.
- Rates for fires or burns, and drowning were highest for children 4 years and younger.
- Children 1 to 4 years of age had the highest rates of nonfatal falls and poisoning.

And the leading causes of injury death also differed by age group.

- For children less than 1 year of age, two-thirds of injury deaths were due to suffocation.
- Drowning was the leading cause of injury or death for those 1 to 4 years of age.66

Car Seat Safety

Motor vehicle injuries are a leading cause of death among children in the United States. But many of these deaths can be prevented.

- In the United States, 723 children ages 12 years and younger died as occupants in motor vehicle crashes during 2016, and more than 128,000 were injured in 2016.

- One CDC study found that, in one year, more than 618,000 children ages 0-12 rode in vehicles without the use of a child safety seat or booster seat or a seat belt at least some of the time.
- Of the children ages 12 years and younger who died in a crash in 2016 (for which restraint use was known), 35% were not buckled up.⁶⁷

Buckling children in age- and size-appropriate car seats, booster seats, and seat belts reduces the risk of serious and fatal injuries:

- Car seat use reduces the risk of injury in a crash by 71-82% for children when compared to seat belt use alone.
- Booster seat use reduces the risk for serious injury by 45% for children aged 4–8 years when compared with seat belt use alone.
- For older children and adults, seat belt use reduces the risk of death and serious injury by approximately half.⁶⁸

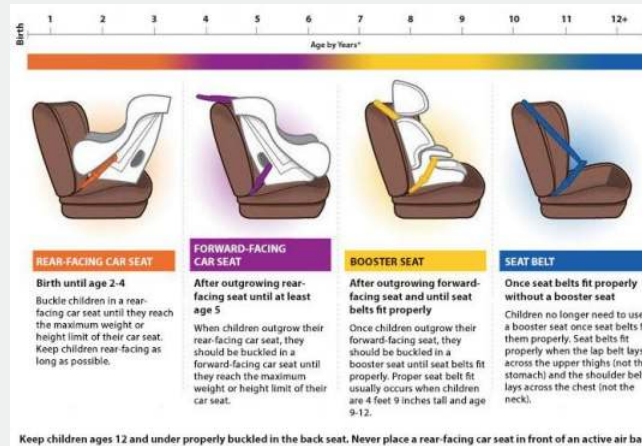


Figure 4.8.11: The different types of car seats based on age. (Car seat image by the CDC is in the public domain)

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4.9: Sleep

A newborn typically sleeps approximately 16.5 hours per 24-hour period. This is usually polyphasic sleep in that the infant is accumulating the 16.5 hours over several sleep periods throughout the day (Salkind, 2005). The infant is averaging 15 hours per 24-hour period by one month, and 14 hours by 6 months. By the time children turn two, they are averaging closer to 10 hours per 24 hours. Additionally, the average newborn will spend close to 50% of the sleep time in the Rapid Eye Movement (REM) phase, which decreases to 25% to 30% in childhood.⁷⁰

Sudden Infant Death Syndrome and Safe Sleep

Sudden Infant Death Syndrome (SIDS) is identified when the death of a healthy infant occurs suddenly and unexpectedly, and medical and forensic investigation findings (including an autopsy) are inconclusive. SIDS is the leading cause of death in infants 1 to 12 months old, and approximately 1,500 infants died of SIDS in 2013 (CDC, 2015). Because SIDS is diagnosed when no other cause of death can be determined, possible causes of SIDS are regularly researched. One leading hypothesis suggests that infants who die from SIDS have abnormalities in the area of the brainstem responsible for regulating breathing (Weekes-Shackelford & Shackelford, 2005).⁷¹



Figure 4.9.1: A baby sleeping safely. (Image by the U.S. Department of Health and Human Services is in the public domain)

Risk Factors Babies are at higher risk for SIDS if they:

- Sleep on their stomachs
- Sleep on soft surfaces, such as an adult mattress, couch, or chair or under soft coverings
- Sleep on or under soft or loose bedding
- Get too hot during sleep.
- Are exposed to cigarette smoke in the womb or in their environment, such as at home, in the car, in the bedroom, or other areas
- Sleep in an adult bed with parents, other children, or pets; this situation is especially dangerous if:
 - The adult smokes, has recently had alcohol, or is tired.
 - The baby is covered by a blanket or quilt.
 - The baby sleeps with more than one bed-sharer.
 - The baby is younger than 11 to 14 weeks of age.

Reducing the Risks There have been dramatic improvements in reducing baby deaths during sleep since the 1990s, when recommendations were introduced to place babies on their back for sleep. However, since the late 1990s, declines have slowed.

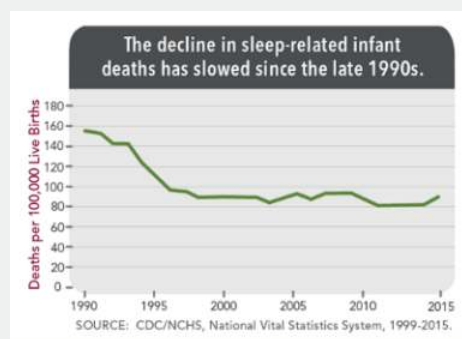


Figure 4.9.2: A graph showing the decline in sleep-related infant deaths. (Graph image by the CDC is in the public domain)

In 2012, the Back to Sleep campaign became the Safe to Sleep campaign. Safe to Sleep aims to educate all caregivers about SIDS and safe sleep practices. Current recommendations to reduce the risk of SIDS and other sleep-related causes of infant

death:

- Always place baby on his or her back to sleep (for naps and at night).
- Use a firm and flat surface.
- Use only a tight fitting sheet on the sleep surface; no other bedding or soft items in the sleep area.
- Breastfeed.
- Share your room with a baby, but on a separate surface designed for infants (not your bed).
- Do not put soft objects, toys, crib bumpers, or loose bedding under, over, or anywhere near baby's sleep area.
- Do no smoke during pregnancy or allow smoking around baby.
- Consider giving baby a pacifier.
- Do not let baby get too hot during sleep.
- Get regular health care (including vaccines).
- Avoid products that go against safe sleep recommendations, especially those that claim to prevent or reduce the risk of SIDS.
- Do not use heart or breathing monitors to reduce the risk of SIDS. 74

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4.S: Summary

In this chapter we looked at:

- Physical changes during the first two years
- Some common infant reflexes
- How fine and gross motor skills develop
- Sensory capacities during the first two years
- Health and safety for infants and toddlers
- The sleep needs during the first two years and ways to reduce the risk of SIDS

In the next chapter we are going to be taking a closer look at theories that help us explain the cognitive and language development during infancy and toddlerhood.

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CHAPTER OVERVIEW

5: Cognitive Development in Infancy and Toddlerhood

Learning Objectives

After this chapter, you should be able to:

1. Describe the substages of the Piaget's sensorimotor stage.
2. Explain how the social environment affects cognitive development according to Vygotsky's theory.
3. Discuss the progression of language development during the first two years.
4. Compare the theories of language development.
5. Define classical and operant conditioning.
6. Summarize the different types of memory

In an effort to better understand the large spectrum of cognition that infants and toddlers go through, it is important to analyze and comprehend various theories that relate to their growth and development. This chapter will take a look at the following theorists: Piaget, Vygotsky, Chomsky, Skinner, Pavlov, Watson, Bandura, and Bronfenbrenner.

[5.1: Piaget](#)

[5.2: Vygotsky](#)

[5.3: Cognitive Milestones](#)

[5.4: Language Development](#)

[5.5: Theories of Cognitive Development, Learning, and Memory](#)

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[5.S: Summary](#)

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5.1: Piaget

Jean Piaget is the most noted theorist when it comes to children's cognitive development. He believed that children's cognition develops in stages. He explained this growth in the following stages:

1. Sensory Motor Stage (Birth through 2 years old)
2. Preoperational Stage (2-7 years old)
3. Concrete Operational Stage (7-11 years old)
4. Formal Operational Stage (12 years old- adulthood)

In this cognitive chapter we will focus on his first stage which occurs in infancy.¹

Piaget and Sensorimotor Intelligence

Piaget describes intelligence in infancy as **sensorimotor** or based on direct, physical contact. Infants taste, feel, pound, push, hear, and move in order to experience the world. Let's explore the transition infants make from responding to the external world reflexively as newborns to solving problems using mental strategies as two years old.

Table 5.1.1: Substages of Piaget's Sensorimotor Stage²

Substage	Age	Description
Substage One: Simple Reflexes	Birth to 1 month	This active learning begins with automatic movements or reflexes. A ball comes into contact with an infant's cheek and is automatically sucked on and licked.
Substage Two: Primary Circular Reactions	1 to 4 months	The infant begins to discriminate between objects and adjust responses accordingly as reflexes are replaced with voluntary movements. An infant may accidentally engage in a behavior and find it interesting such as making a vocalization. This interest motivates trying to do it again and helps the infant learn a new behavior that originally occurred by chance. At first, most actions have to do with the body, but in months to come, will be directed more toward objects.
Substage Three: Secondary Circular Reactions	4 to 8 months	The infant becomes more and more actively engaged in the outside world and takes delight in being able to make things happen. Repeated motion brings particular interest as the infant is able to bang two lids together from the cupboard when seated on the kitchen floor.
Substage Four: Coordination of circular reactions	8 to 12 months	The infant can engage in behaviors that others perform and anticipate upcoming events. Perhaps because of continued maturation of the prefrontal cortex, the infant becomes capable of having a thought and carrying out a planned, goal-directed activity such as seeking a toy that has rolled under the couch. The object continues to exist in the infant's mind even when out of sight and the infant now is capable of making attempts to retrieve it.
Substage Five: Tertiary Circular Reactions	12 to 18 months	The infant more actively engages in experimentation to learn about the physical world. Gravity is learned by pouring water from a cup or pushing bowls from high chairs. The caregiver tries to help the child by picking it up again and placing it on the tray. And what happens? Another experiment! The child pushes it off the tray again causing it to fall and the caregiver to pick it up again!
Substage Six: Internalization of Schemes and Early Representational thought	18 months to 2 years	The child is now able to solve problems using mental strategies, to remember something heard days before and repeat it, to engage in pretend play, and to find objects that have been moved even when

Substage	Age	Description
		out of sight. Take for instance, the child who is upstairs in a room with the door closed, supposedly taking a nap. The doorknob has a safety device on it that makes it impossible for the child to turn the knob. After trying several times in vain to push the door or turn the doorknob, the child carries out a mental strategy learned from prior experience to get the door opened-he knocks on the door! The child is now better equipped with mental strategies for problem- solving.



Figure 5.1.1: An infant sitting in a highchair. (Image by [holycalamity](#) is licensed under [CC BY-SA 2.0](#))

Evaluating Piaget's Sensorimotor Stage

Piaget opened up a new way of looking at infants with his view that their main task is to coordinate their sensory impressions with their motor activity. However, the infant's cognitive world is not as neatly packaged as Piaget portrayed it, and some of Piaget's explanations for the cause of change are debated. In the past several decades, sophisticated experimental techniques have been devised to study infants, and there have been a large number of research studies on infant development. Much of the new research suggests that Piaget's view of sensorimotor development needs to be modified (Baillargeon, 2014; Brooks & Meltzoff, 2014; Johnson & Hannon, 2015).

Object Permanence

One necessary modification would be to when children develop object permanence. Infants seem to be able to recognize that objects have permanence at much younger ages than Piaget proposed (even as young as 3.5 months of age).

The A-not-B Error

The data does not always support Piaget's claim that certain processes are crucial in transitions from one stage to the next. For example, in Piaget's theory, an important feature in the progression into substage 4, coordination of secondary circular reactions, is an infant's inclination to search for a hidden object in a familiar location rather than to look for the object in a new location. Thus, if a toy is hidden twice, initially at location A and subsequently at location B, 8- to 12-month-old infants search correctly at location A initially. But when the toy is subsequently hidden at location B, they make the mistake of continuing to search for it at location A. **A-not-B error** is the term used to describe this common mistake. Older infants are less likely to make the A-not-B error because their concept of object permanence is more complete.

Researchers have found, however, that the A-not-B error does not show up consistently (Sophian, 1985). The evidence indicates that A-not-B errors are sensitive to the delay between hiding the object at B and the infant's attempt to find it (Diamond, 1985). Thus, the A-not-B error might be due to a failure in memory. Another explanation is that infants tend to repeat a previous motor behavior (Clearfield & others, 2006; Smith, 1999).

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5.2: Vygotsky

Development is Determined By Environmental Factors

Piaget set the tone for much of current-day research but his theory has also received a great deal of criticism. Many believe that Piaget ignored the huge influence that society and culture have in shaping a child's development. At a similar time, another researcher named Lev Vygotsky (1896–1934) had come to similar conclusions as Piaget about children's development, in thinking that children learned about the world through physical interaction with it. However, where Piaget felt that children moved naturally through different stages of development, based on biological predispositions and their own individual interactions with the world, Vygotsky claimed that adult or peer intervention was a much more important part of the developmental process.

Vygotsky concentrated more on the child's immediate social and cultural environment and his or her interactions with adults and peers. He argued that development occurred first through children's immediate social interactions, and then moved to the individual level as they began to internalize their learning. While Piaget saw the child as actively discovering the world through individual interactions with it, Vygotsky saw the child as more of an apprentice, learning through a social environment of others who had more experience and were sensitive to the child's needs and abilities. 4



Figure 5.2.1: An adult playing Legos with a child. (Image by Tabeajaichhalt on Pixabay)

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5.3: Cognitive Milestones

Children are actively learning about the world as they perceive it from the time they are in the womb. Here is a table of some of the cognitive milestones infants and toddlers typically develop.

Table 5.3.1: Cognitive Milestones ([Developmental Milestones](#) by the [CDC](#) is in the public domain)

Typical Age	What Most Children Do by This Age
2 months	• Pays attention to faces • Begins to follow things with eyes and recognize people at a distance • Begins to act bored (cries, fussy) if activity doesn't change
4 months	• Lets you know if she is happy or sad • Responds to affection • Reaches for toy with one hand • Uses hands and eyes together, such as seeing a toy and reaching for it • Follows moving things with eyes from side to side • Watches faces closely • Recognizes familiar people and things at a distance
6 months	• Looks around at things nearby • Brings things to mouth • Shows curiosity about things and tries to get things that are out of reach • Begins to pass things from one hand to the other
9 months	• Watches the path of something as it falls • Looks for things he sees you hide • Plays peek-a-boo • Puts things in mouth • Moves things smoothly from one hand to the other • Picks up things like cereal o's between thumb and index finger
1 year	• Explores things in different ways, like shaking, banging, throwing • Finds hidden things easily • Looks at the right picture or thing when it's named • Copies gestures • Starts to use things correctly; for example, drinks from a cup, brushes hair • Bangs two things together • Puts things in a container, takes things out of a container • Lets things go without help • Pokes with index (pointer) finger • Follows simple directions like "pick up the toy"
18 months	• Knows what ordinary things are for; for example, telephone, brush, spoon • Points to get the attention of others • Shows interest in a doll or stuffed animal by pretending to feed • Points to one body part • Scribbles on own • Can follow 1-step verbal commands without any gestures; for example, sits when you say "sit down"
2 years	• Finds things even when hidden under two or three covers • Begins to sort shapes and colors • Completes sentences and rhymes in familiar books • Plays simple make-believe games • Builds towers of 4 or more blocks

Typical Age	What Most Children Do by This Age
	• Might use one hand more than the other • Follows two-step instructions such as “Pick up your shoes and put them in the closet.” • Names items in a picture book such as a cat, bird, or dog

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5.4: Language Development

Do newborns communicate? Absolutely! However, they do not communicate with the use of language. Instead, they communicate their thoughts and needs with body posture (being relaxed or still), gestures, cries, and facial expressions. A person who spends adequate time with an infant can learn which cries indicate pain and which ones indicate hunger, discomfort, or frustration as well as translate their vocalizations, movements, gestures and facial expressions.



Figure 5.4.1: An infant looking up at the camera. (Image by Andres and Antoinette Ricardo used with permission)

Stages of Language Development

1. **Intentional Vocalizations:** Cooing and taking turns: Infants begin to vocalize and repeat vocalizations within the first couple of months of life. That gurgling, musical vocalization called cooing can serve as a source of entertainment to an infant who has been laid down for a nap or seated in a carrier on a car ride. Cooing serves as practice for vocalization as well as the infant hears the sound of his or her own voice and tries to repeat sounds that are entertaining. Infants also begin to learn the pace and pause of conversation as they alternate their vocalization with that of someone else and then take their turn again when the other person's vocalization has stopped. Cooing initially involves making vowel sounds like "oooo". Later, consonants are added to vocalizations such as "nanananana".
2. **Babbling and gesturing:** At about four to six months of age, infants begin making even more elaborate vocalizations that include the sounds required for any language. Guttural sounds, clicks, consonants, and vowel sounds stand ready to equip the child with the ability to repeat whatever sounds are characteristic of the language heard. Eventually, these sounds will no longer be used as the infant grows more accustomed to a particular language. Deaf babies also use gestures to communicate wants, reactions, and feelings. Because gesturing seems to be easier than vocalization for some toddlers, sign language is sometimes taught to enhance one's ability to communicate by making use of the ease of gesturing. The rhythm and pattern of language is used when deaf babies sign just as it is when hearing babies babble.
3. **Understanding:** At around ten months of age, the infant can understand more than he or she can say. You may have experienced this phenomenon as well if you have ever tried to learn a second language. You may have been able to follow a conversation more easily than to contribute to it.
4. **Holophrastic speech:** Children begin using their first words at about 12 or 13 months of age and may use partial words to convey thoughts at even younger ages. These one word expressions are referred to as holophrastic speech. For example, the child may say "ju" for the word "juice" and use this sound when referring to a bottle. The listener must interpret the meaning of the holophrase and when this is someone who has spent time with the child, interpretation is not too difficult. They know that "ju" means "juice" which means the baby wants some milk! But, someone who has not been around the child will have trouble knowing what is meant. Imagine the parent who to a friend exclaims, "Ezra's talking all the time now!" The friend hears only "ju da ga" which, the parent explains, means "I want some milk when I go with Daddy."



Figure 5.4.2: Two children playing with toys. (Image by the U.S. Air Force is in the public domain)

5. Underextension: A child who learns that a word stands for an object may initially think that the word can be used for only that particular object. Only the family's Irish Setter is a "doggie". This is referred to as underextension. More often, however, a child may think that a label applies to all objects that are similar to the original object. In overextension all animals become "doggies", for example.

6. First words and cultural influences: First words if the child is using English tend to be nouns. The child labels objects such as cup or ball. In a verb-friendly language such as Chinese, however, children may learn more verbs. This may also be due to the different emphasis given to objects based on culture. Chinese children may be taught to notice action and relationship between objects while children from the United States may be taught to name an object and its qualities (color, texture, size, etc.). These differences can be seen when comparing interpretations of art by older students from China and the United States.

7. Vocabulary growth spurt: One year olds typically have a vocabulary of about 50 words. But by the time they become toddlers, they have a vocabulary of about 200 words and begin putting those words together in telegraphic speech (I think of it now as 'text message' speech because texting is more common and is similar in that text messages typically only include the minimal amount of words to convey the message).

8. Two word sentences and telegraphic speech: Words are soon combined and 18 month old toddlers can express themselves further by using expressions such as "baby bye- bye" or "doggie pretty". Words needed to convey messages are used, but the articles and other parts of speech necessary for grammatical correctness are not yet used. These expressions sound like a telegraph (or perhaps a better analogy today would be that they read like a text message) where unnecessary words are not used. "Give baby ball" is used rather than "Give the baby the ball." Or a text message of "Send money now!" rather than "Dear Mother. I really need some money to take care of my expenses."9



Figure 5.4.3: A toddler playing with a toy telephone. (Telephone image by Salim Virji is licensed under CC BY-SA 2.0)

Language Milestones

In the first two years of life, children go from communicating by crying to being able to express themselves with words. Here is a table of common language milestones for infants and toddlers.

Table 5.4.1: Language Milestones (Developmental Milestones by the CDC is in the public domain)

Typical Age	What Most Children Do By This Age
2 months	• Coos, makes gurgling sounds • Turns head toward sounds
4 months	• Begins to babble • Babbles with expression and copies sounds he hears • Cries in different ways to show hunger, pain, or being tired
6 months	• Responds to sounds by making sounds • Strings vowels together when babbling (“ah,” “eh,” “oh”) and likes taking turns with parent while making sounds • Responds to own name • Makes sounds to show joy and displeasure • Begins to say consonant sounds (jabbering with “m,” “b”)
9 months	• Understands “no” • Makes a lot of different sounds like “mamamama” and “bababababa” • Copies sounds and gestures of others • Uses fingers to point at things
1 year	• Responds to simple spoken requests • Uses simple gestures, like shaking head “no” or waving “bye-bye” • Makes sounds with changes in tone (sounds more like speech) • Says “mama” and “dada” and exclamations like “uh-oh!” • Tries to say words you say
18 months	• Says several single words • Says and shakes head now • Points to show others what is wanted
2 years	• Points to things or pictures when they are named • Knows names of familiar people and body parts • Says sentences with 2 to 4 words • Follows simple instructions • Repeats words overheard in conversation • Points to things in a book

Child-Directed Speech

Why is a horse a “horsie”? Have you ever wondered why adults tend to use “baby talk” or that sing-song type of intonation and exaggeration used when talking to children? This represents a universal tendency and is known as **child-directed speech** or parentheses (historically referred to as motherese). It involves exaggerating the vowel and consonant sounds, using a high-pitched voice, and delivering the phrase with great facial expression. Why is this done? It may be in order to clearly articulate the sounds of a word so that the child can hear the sounds involved. Or it may be because when this type of speech is used, the infant pays more attention to the speaker and this sets up a pattern of interaction in which the speaker and listener are in tuned with one another.¹²

Theories of Language Development

The following two theories of language development represent two extremes in the level of interaction required for language to occur (Berk, 2007).

Chomsky and the Language Acquisition Device

The view known as **nativism** advocated by Noam Chomsky suggests that infants are equipped with a neurological construct referred to as the **language acquisition device** or LAD that makes infants ready for language. Language develops as long as the

infant is exposed to it. No teaching, training, or reinforcement is required for language to develop.

Social Pragmatics

Another view emphasizes the child's active engagement in learning language out of a need to communicate. The child seeks information, memorizes terms, imitates the speech heard from others and learns to conceptualize using words as language is acquired. Many would argue that all three of these dynamics foster the acquisition of language (Berger, 2004)¹³

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5.5: Theories of Cognitive Development, Learning, and Memory

Pavlov

Ivan Pavlov (1880-1937) was a Russian physiologist interested in studying digestion. As he recorded the amount of salivation his laboratory dogs produced as they ate, he noticed that they actually began to salivate before the food arrived as the researcher walked down the hall and toward the cage. The dogs knew that the food was coming because they had learned to associate the footsteps with the food. The keyword here is “learned”. A learned response is called a “conditioned” response.

Pavlov began to experiment with this “psychic” reflex. He began to ring a bell, for instance, prior to introducing the food. Sure enough, after making this connection several times, the dogs could be made to salivate to the sound of a bell. Once the bell had become an event to which the dogs had learned to salivate, it was called a conditioned stimulus. The act of salivating to a bell was a response that had also been learned, now termed in Pavlov’s jargon, a conditioned response.

Notice that the response, salivation, is the same whether it is conditioned or unconditioned (unlearned or natural). What changed is the stimulus to which the dog salivates. One is natural (unconditioned) and one is learned (conditioned).

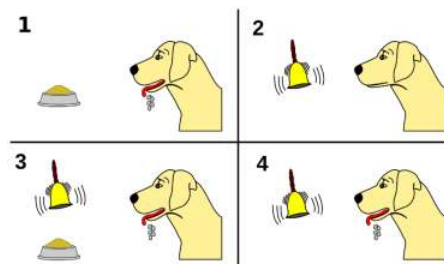


Figure 5.5.1: Pavlov’s experiments with dogs and conditioning. (Pavlov image by Maxxi² is licensed under CC BY-SA 4.0)

Let’s think about how classical conditioning is used on us. One of the most widespread applications of classical conditioning principles was brought to us by the psychologist, John B. Watson.¹⁵

Classical Conditioning

Classical conditioning is a form of learning whereby a **conditioned stimulus** (CS) becomes associated with an unrelated **unconditioned stimulus** (US), in order to produce a behavioral response known as a **conditioned response** (CR). The conditioned response is the learned response to the previously neutral stimulus. The unconditioned stimulus is usually a biologically significant stimulus such as food or pain that elicits an **unconditioned response** (UR) from the start. The conditioned stimulus is usually neutral and produces no particular response at first, but after conditioning, it elicits the conditioned response.

If we look at Pavlov’s experiment, we can identify these four factors at work:

- The unconditioned response was the salivation of dogs in response to seeing or smelling their food.
- The unconditioned stimulus was the sight or smell of the food itself.
- The conditioned stimulus was the ringing of the bell. During conditioning, every time the animal was given food, the bell was rung. This was repeated during several trials. After some time, the dog learned to associate the ringing of the bell with food and to respond by salivating. After the conditioning period was finished, the dog would respond by salivating when the bell was rung, even when the unconditioned stimulus (the food) was absent.
- The conditioned response, therefore, was the salivation of the dogs in response to the conditioned stimulus (the ringing of the bell).¹⁶

Neurological Response to Conditioning

Consider how the conditioned response occurs in the brain. When a dog sees food, the visual and olfactory stimuli send information to the brain through their respective neural pathways, ultimately activating the salivary glands to secrete saliva. This reaction is a natural biological process as saliva aids in the digestion of food. When a dog hears a buzzer and at the same time sees food, the auditory stimuli activates the associated neural pathways. However, since these pathways are being activated at the same time as

the other neural pathways, there are weak synapse reactions that occur between the auditory stimuli and the behavioral response. Over time, these synapses are strengthened so that it only takes the sound of a buzzer to activate the pathway leading to salivation.

Operant Conditioning

Operant conditioning is a theory of behaviorism, a learning perspective that focuses on changes in an individual's observable behaviors. In **operant conditioning theory**, new or continued behaviors are impacted by new or continued consequences. Research regarding this principle of learning was first studied by Edward L. Thorndike in the late 1800's, then brought to popularity by B.F. Skinner in the mid-1900's. Much of this research informs current practices in human behavior and interaction.

Skinner's Research

Thorndike's initial research was highly influential on another psychologist, B.F. Skinner. Almost half a century after Thorndike's first publication of the principles of operant conditioning, Skinner attempted to prove an extension to this theory—that all behaviors were in some way a result of operant conditioning. Skinner theorized that if a behavior is followed by reinforcement, that behavior is more likely to be repeated, but if it is followed by punishment, it is less likely to be repeated. He also believed that this learned association could end, or become extinct if the reinforcement or punishment was removed.

To prove this, he placed rats in a box with a lever that when tapped would release a pellet of food. Over time, the amount of time it took for the rat to find the lever and press it became shorter and shorter until finally, the rat would spend most of its time near the lever eating. This behavior became less consistent when the relationship between the lever and the food was compromised. This basic theory of operant conditioning is still used by psychologists, scientists, and educators today.

Shaping, Reinforcement Principles, and Schedules of Reinforcement

Operant conditioning can be viewed as a process of action and consequence. Skinner used this basic principle to study the possible scope and scale of the influence of operant conditioning on animal behavior. His experiments used shaping, reinforcement, and reinforcement schedules in order to prove the importance of the relationship that animals form between behaviors and results.

All of these practices concern the setup of an experiment. **Shaping** is the conditioning paradigm of an experiment. The form of the experiment in successive trials is gradually changed to elicit a desired target behavior. This is accomplished through reinforcement, or reward, of the segments of the target behavior, and can be tested using a large variety of actions and rewards. The experiments were taken a step further to include different schedules of reinforcement that become more complicated as the trials continued. By testing different reinforcement schedules, Skinner learned valuable information about the best ways to encourage a specific behavior, or the most effective ways to create a long-lasting behavior. Much of this research has been replicated on humans, and now informs practices in various environments of human behavior.¹⁷

Positive and Negative Reinforcement

Sometimes, adding something to the situation is reinforcing as in the cases we described above with cookies, praise and money. **Positive reinforcement** involves adding something to the situation in order to encourage a behavior. Other times, taking something away from a situation can be reinforcing. For example, the loud, annoying buzzer on your alarm clock encourages you to get up so that you can turn it off and get rid of the noise. Children whine in order to get their parents to do something and often, parents give in just to stop the whining. In these instances, negative reinforcement has been used.

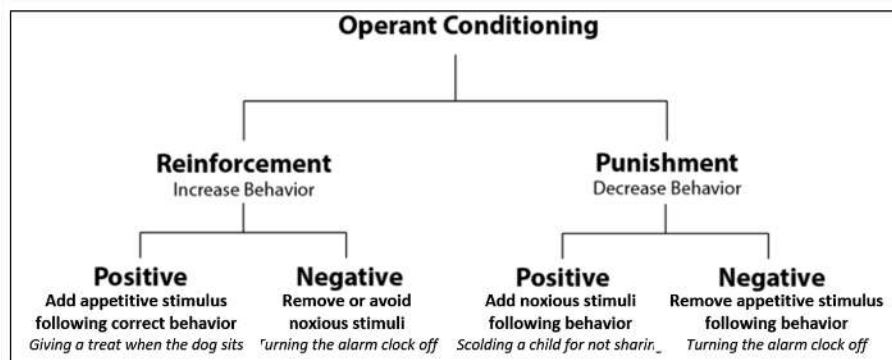


Figure 5.5.2: Reinforcement in operant conditioning. (Image by Curtis Neveu is licensed under CC BY-SA 3.0 and Modified from source image)

Operant conditioning tends to work best if you focus on trying to encourage a behavior or move a person into the direction you want them to go rather than telling them what not to do. **Reinforcers** are used to encourage a behavior; punishers are used to stop behavior. A **punisher** is anything that follows an act and decreases the chance it will reoccur. But often a punished behavior doesn't really go away. It is just suppressed and may reoccur whenever the threat of punishment is removed. For example, a child may not cuss around you because you've washed his mouth out with soap, but he may cuss around his friends. Or a motorist may only slow down when the trooper is on the side of the freeway. Another problem with punishment is that when a person focuses on punishment, they may find it hard to see what the other does right or well. And punishment is stigmatizing; when punished, some start to see themselves as bad and give up trying to change.

Reinforcement can occur in a predictable way, such as after every desired action is performed, or intermittently, after the behavior is performed a number of times or the first time it is performed after a certain amount of time. The schedule of reinforcement has an impact on how long a behavior continues after reinforcement is discontinued. So a parent who has rewarded a child's actions each time may find that the child gives up very quickly if a reward is not immediately forthcoming. Think about the kinds of behaviors that may be learned through classical and operant conditioning. But sometimes very complex behaviors are learned quickly and without direct reinforcement. Bandura's Social Learning covered later in the chapter explains how.¹⁹

Watson and Behaviorism

Another theorist who added to the spectrum of the behavioral movement was John B. Watson. Watson believed that most of our fears and other emotional responses are classically conditioned. He had gained a good deal of popularity in the 1920s with his expert advice on parenting offered to the public. He believed that parents could be taught to help shape their children's behavior and tried to demonstrate the power of classical conditioning with his famous experiment with an 18 month old boy named "Little Albert". Watson sat Albert down and introduced a variety of seemingly scary objects to him: a burning piece of newspaper, a white rat, etc. But Albert remained curious and reached for all of these things. Watson knew that one of our only inborn fears is the fear of loud noises so he proceeded to make a loud noise each time he introduced one of Albert's favorites, a white rat. After hearing the loud noise several times paired with the rat, Albert soon came to fear the rat and began to cry when it was introduced.

Watson filmed this experiment for posterity and used it to demonstrate that he could help parents achieve any outcomes they desired, if they would only follow his advice. Watson wrote columns in newspapers and in magazines and gained a lot of popularity among parents eager to apply science to household order. Parenting advice was not the legacy Watson left us, however. Where he really made his impact was in advertising. After Watson left academia, he went into the world of business and showed companies how to tie something that brings about a natural positive feeling to their products to enhance sales. Thus the union of sex and advertising!²⁰ Sometimes we do things because we've seen it pay off for someone else. They were operantly conditioned, but we engage in the behavior because we hope it will pay off for us as well. This is referred to as vicarious reinforcement (Bandura, Ross and Ross, 1963).



Figure 5.5.3: A photograph taken during Little Albert research. (Image is in the public domain)

Do parents socialize children or do children socialize parents?

Bandura (1986) suggests that there is interplay between the environment and the individual. We are not just the product of our surroundings, rather we influence our surroundings. There is interplay between our personality and the way we interpret events and how they influence us. This concept is called reciprocal determinism. An example of this might be the interplay between parents and children. Parents not only influence their child's environment, perhaps intentionally through the use of reinforcement, etc., but children influence parents as well. Parents may respond differently with their first child than with their fourth. Perhaps they try to be the perfect parents with their firstborn, but by the time their last child comes along they have very different expectations both of themselves and their child. Our environment creates us and we create our environment.



Figure 5.5.4: A smiling infant playing with toys. (Image by OmarMedinaFilms on Pixabay)

Social Learning Theory

Albert Bandura is a leading contributor to **social learning theory**. He calls our attention to the ways in which many of our actions are not learned through conditioning; rather, they are learned by watching others (1977). Young children frequently learn behaviors through imitation. Sometimes, particularly when we do not know what else to do, we learn by modeling or copying the behavior of others. A new employee, on his or her first day of a new job might eagerly look at how others are acting and try to act the same way to fit in more quickly. Adolescents struggling with their identity rely heavily on their peers to act as role-models. Newly married couples often rely on roles they may have learned from their parents and begin to act in ways they did not while dating and then wonder why their relationship has changed.

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5.6: Memory and Attention

If we want to remember something tomorrow, we have to consolidate it into long-term memory today. **Long-term memory** is the final, semi-permanent stage of memory. Unlike sensory and short-term memory, long-term memory has a theoretically infinite capacity, and information can remain there indefinitely. Long-term memory has also been called reference memory, because an individual must refer to the information in long-term memory when performing almost any task. Long-term memory can be broken down into two categories: explicit and implicit memory.

Explicit Memory

Explicit memory, also known as conscious or **declarative memory**, involves memory of facts, concepts, and events that require conscious recall of the information. In other words, the individual must actively think about retrieving the information from memory. This type of information is explicitly stored and retrieved—hence its name. Explicit memory can be further subdivided into **semantic memory**, which concerns facts, and episodic memory, which concerns primarily personal or autobiographical information.

Episodic Memory

Episodic memory is used for more contextualized memories. They are generally memories of specific moments, or episodes, in one's life. As such, they include sensations and emotions associated with the event, in addition to the who, what, where, and when of what happened. An example of an episodic memory would be recalling your family's trip to the beach. Autobiographical memory (memory for particular events in one's own life) is generally viewed as either equivalent to, or a subset of, episodic memory. One specific type of autobiographical memory is a flashbulb memory, which is a highly detailed, exceptionally vivid "snapshot" of the moment and circumstances in which a piece of surprising and consequential (or emotionally arousing) news was heard. For example, many people remember exactly where they were and what they were doing when they heard of the terrorist attacks on September 11, 2001. This is because it is a flashbulb memory.

Semantic and episodic memory are closely related; memory for facts can be enhanced with episodic memories associated with the fact, and vice versa. For example, the answer to the factual question "Are all apples red?" might be recalled by remembering the time you saw someone eating a green apple. Likewise, semantic memories about certain topics, such as football, can contribute to more detailed episodic memories of a particular personal event, like watching a football game. A person that barely knows the rules of football will remember the various plays and outcomes of the game in much less detail than a football expert.

Implicit Memory

In contrast to explicit (conscious) memory, **implicit** (also called "unconscious" or "procedural") **memory** involves procedures for completing actions. These actions develop with practice over time. Athletic skills are one example of implicit memory. You learn the fundamentals of a sport, practice them over and over, and then they flow naturally during a game. Rehearsing for a dance or musical performance is another example of implicit memory. Everyday examples include remembering how to tie your shoes, drive a car, or ride a bicycle. These memories are accessed without conscious awareness—they are automatically translated into actions without us even realizing it. As such, they can often be difficult to teach or explain to other people. Implicit memories differ from the semantic scripts described above in that they are usually actions that involve movement and motor coordination, whereas scripts tend to emphasize social norms or behaviors.



Figure 5.6.1: A toddler walking. (Image on [Public Domain Pictures](#))

Short-Term Memory Storage

Short-term memory is the ability to hold information for a short duration of time (on the order of seconds). In the process of encoding, information enters the brain and can be quickly forgotten if it is not stored further in the short-term memory. George A. Miller suggested that the capacity of short-term memory storage is approximately seven items plus or minus two, but modern researchers are showing that this can vary depending on variables like the stored items' phonological properties. When several elements (such as digits, words, or pictures) are held in short-term memory simultaneously, their representations compete with each other for recall, or degrade each other. Thereby, new content gradually pushes out older content, unless the older content is actively protected against interference by rehearsal or by directing attention to it.

Information in the short-term memory is readily accessible, but for only a short time. It continuously decays, so in the absence of rehearsal (keeping information in short-term memory by mentally repeating it) it can be forgotten.

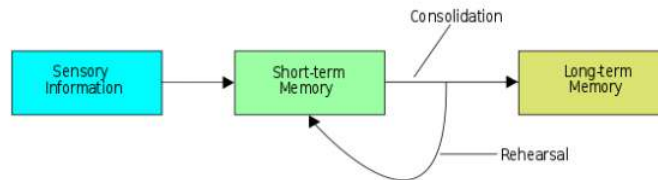


Figure 5.6.2: Diagram of the memory storage process. (Image by Wikipedia is licensed under [CC BY-SA 3.0](#))

Long-Term Memory Storage

In contrast to short-term memory, **long-term memory** is the ability to hold semantic information for a prolonged period of time. Items stored in short-term memory move to long-term memory through rehearsal, processing, and use. The capacity of long-term memory storage is much greater than that of short-term memory, and perhaps unlimited. However, the duration of long-term memories is not permanent; unless a memory is occasionally recalled, it may fail to be recalled on later occasions. This is known as forgetting.

Long-term memory storage can be affected by traumatic brain injury or lesions. Amnesia, a deficit in memory, can be caused by brain damage. Anterograde amnesia is the inability to store new memories; retrograde amnesia is the inability to retrieve old memories. These types of amnesia indicate that memory does have a storage process.²⁵

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5.S: Summary

In this chapter we looked at:

- Piaget's sensorimotor stage.
- The impact of the social environment on children's learning.
- The progression and theories of language development.
- Classical and operant conditioning and systems of reinforcement.
- The types of memory and how they work together.

In the following chapter, we will finish looking at the first two years of life by examining social and emotional development, including temperament and attachment.

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CHAPTER OVERVIEW

6: Social and Emotional Development in Infancy and Toddlerhood

Learning Objectives

After this chapter, you should be able to:

1. Classify types of temperament.
2. Discuss the roles of culture and gender in socialization.
3. Describe the sequence of emotional development during the first two years.
4. Compare different theories of attachment and attachment styles.
5. Explain Erikson's stage of trust versus mistrust.
6. Contrast child care options for families.

While temperament is determined by genetics and emotions develop through maturation, the early interactions we have with the adults that care for us as infants and toddlers are very important for healthy emotional development. Let's examine some of the important interactions and milestones in social and emotional development during the first two years of life.

[6.1: Temperament](#)

[6.2: Personality](#)

[6.3: Infant Emotions](#)

[6.4: Social Emotional Milestones](#)

[6.5: Forming Attachments](#)

[6.6: Child Care](#)

[6.S: Summary](#)

Thumbnail: www.pexels.com/photo/baby-touching-woman-s-face-1257110/

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6.1: Temperament

Perhaps you have spent time with a number of infants. How were they alike? How did they differ? How do you compare with your siblings or other children you have known well? You may have noticed that some seemed to be in a better mood than others and that some were more sensitive to noise or more easily distracted than others. These differences may be attributed to temperament. Temperament is the innate characteristics of the infant, including mood, activity level, and emotional reactivity, noticeable soon after birth.

In a 1956 landmark study, Chess and Thomas (1996) evaluated 141 children's temperament based on parental interviews. Referred to as the New York Longitudinal Study, infants were assessed on 10 dimensions of temperament including:

- activity level
- rhythmicity (regularity of biological functions)
- approach/withdrawal (how children deal with new things)
- adaptability to situations
- intensity of reactions
- threshold of responsiveness (how intense a stimulus has to be for the child to react)
- quality of mood
- distractibility
- attention span
- persistence

Based on the infants' behavioral profiles, they were categorized into three general types of temperament:

Table 6.1.1: Types of Temperament

Type	Percentage	Description
Easy	40%	• Able to quickly adapt to routine and new situations • Remains calm • Easy to soothe • Usually in positive mood
Difficult	10%	• Reacts negatively to new situations • Has trouble adapting to routine • Usually negative in mood • Cries frequently
Slow-to-warm- up	15%	• Low activity level • Adjusts slowly to new situations • Often negative in mood

As can be seen the percentages do not equal 100% as some children were not able to be placed neatly into one of the categories. Think about how each type of child should be approached to improve interactions with them. An easy child requires less intervention, but still has needs that must not be overlooked. A slow-to-warm-up child may need to be given advance warning if new people or situations are going to be introduced. A child with a difficult temperament may need to be given extra time to burn off their energy.

A caregiver's ability to work well and accurately read the child will enjoy a **goodness-of-fit**, meaning their styles match and communication and interaction can flow. Parents who recognize each child's temperament and accept it, will nurture more effective interactions with the child and encourage more adaptive functioning.¹



Figure 6.1.1: This adventurous child's parents provide a good “fit” to her temperament. (Image is licensed under [CC0 1.0](#))

Parenting is Bidirectional

Not only do parents affect their children, children influence their parents. A child's characteristics, such as temperament, affect parenting behaviors and roles. For example, an infant with an easy temperament may enable parents to feel more effective, as they are easily able to soothe the child and elicit smiling and cooing. On the other hand, a cranky or fussy infant elicits fewer positive reactions from his or her parents and may result in parents feeling less effective in the parenting role (Eisenberg et al., 2008). Over time, parents of more difficult children may become more punitive and less patient with their children (Clark, Kochanska, & Ready, 2000; Eisenberg et al., 1999; Kiff, Lengua, & Zalewski, 2011). Parents who have a fussy, difficult child are less satisfied with their marriages and have greater challenges in balancing work and family roles (Hyde, Else-Quest, & Goldsmith, 2004). Thus, child temperament is one of the child characteristics that influences how parents behave with their children.

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6.2: Personality

Temperament does not change dramatically as we grow up, but we may learn how to work around and manage our temperamental qualities. Temperament may be one of the things about us that stays the same throughout development. In contrast, **personality**, defined as an individual's consistent pattern of feeling, thinking, and behaving, is the result of the continuous interplay between biological disposition and experience.

Personality also develops from temperament in other ways (Thompson, Winer, & Goodvin, 2010). As children mature biologically, temperamental characteristics emerge and change over time. A newborn is not capable of much self-control, but as brain-based capacities for self-control advance, temperamental changes in self-regulation become more apparent. For example, a newborn who cries frequently doesn't necessarily have a grumpy personality; over time, with sufficient parental support and increased sense of security, the child might be less likely to cry.

In addition, personality is made up of many other features besides temperament. Children's developing self-concept, their motivations to achieve or to socialize, their values and goals, their coping styles, their sense of responsibility and conscientiousness, as well as many other qualities are encompassed into personality. These qualities are influenced by biological dispositions, but even more by the child's experiences with others, particularly in close relationships, that guide the growth of individual characteristics. Indeed, personality development begins with the biological foundations of temperament but becomes increasingly elaborated, extended, and refined over time. The newborn that parents gazed upon thus becomes an adult with a personality of depth and nuance. 3

Culture and Personality

The term **culture** refers to all of the beliefs, customs, ideas, behaviors, and traditions of a particular society that are passed through generations. Culture is transmitted to people through language as well as through the modeling of behavior, and it defines which traits and behaviors are considered important, desirable, or undesirable.

Within a culture there are norms and behavioral expectations. These cultural norms can dictate which personality traits are considered important. The researcher Gordon Allport considered culture to be an important influence on traits and defined common traits as those that are recognized within a culture. These traits may vary from culture to culture based on differing values, needs, and beliefs. Positive and negative traits can be determined by cultural expectations: what is considered a positive trait in one culture may be considered negative in another, thus resulting in different expressions of personality across cultures.



Figure 6.2.1: A family from a non-Western culture. (Image by Theodor Goutas on Unsplash)

Considering cultural influences on personality is important because Western ideas and theories are not necessarily applicable to other cultures (Benet-Martinez & Oishi, 2008). There is a great deal of evidence that the strength of personality traits varies across cultures, and this is especially true when comparing individualist cultures (such as European, North American, and Australian cultures) and collectivist cultures (such as Asian, African, and South American cultures). People who live in **individualist cultures** tend to believe that independence, competition, and personal achievement are important. In contrast, people who live in **collectivist cultures** tend to value social harmony, respectfulness, and group needs over individual needs. These values influence personality in different but substantial ways; for example, Yang (2006) found that people in individualist cultures displayed more personally-oriented personality traits, whereas people in collectivist cultures displayed more socially-oriented personality traits. 5

Gender and Personality

In much the same manner that cultural norms can influence personality and behavior, gender norms (the behaviors that males and females are expected to conform to in a given society) can also influence personality by emphasizing different traits between different genders.



Figure 6.2.2: A female infant wearing stereotypically feminine clothing and accessories. (Image by Abdullah Shakoor on Pixabay)



Figure 6.2.3: A male infant wearing stereotypically masculine clothing. (Image is licensed under CC0 1.0)

Ideas of appropriate behavior for each gender (masculine and feminine) vary among cultures and tend to change over time. For example, aggression and assertiveness have historically been emphasized as positive masculine personality traits in the United States. Meanwhile, submissiveness and caretaking have historically been held as ideal feminine traits. While many **gender roles** remain the same, others change over time. In 1938, for example, only 1 out of 5 Americans agreed that a married woman should earn money in industry and business. By 1996, however, 4 out of 5 Americans approved of women working in these fields. This type of attitude change has been accompanied by behavioral shifts that coincide with changes in trait expectations and shifts in personal identity for men and women. 8

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6.3: Infant Emotions

At birth, infants exhibit two emotional responses: attraction and withdrawal. They show attraction to pleasant situations that bring comfort, stimulation, and pleasure, and they withdraw from unpleasant stimulation such as bitter flavors or physical discomfort. At around two months, infants exhibit social engagement in the form of social smiling as they respond with smiles to those who engage their positive attention (Lavelli & Fogel, 2005).

Social smiling becomes more stable and organized as infants learn to use their smiles to engage their parents in interactions. Pleasure is expressed as laughter at 3 to 5 months of age, and displeasure becomes more specific as fear, sadness, or anger between ages 6 and 8 months.

Anger is often the reaction to being prevented from obtaining a goal, such as a toy being removed (Braungart-Rieker, Hill-Soderlund, & Karrass, 2010). In contrast, sadness is typically the response when infants are deprived of a caregiver (Papousek, 2007). Fear is often associated with the presence of a stranger, known as **stranger wariness**, or the departure of significant others known as **separation anxiety**. Both appear sometime between 6 and 15 months after object permanence has been acquired. Further, there is some indication that infants may experience jealousy as young as 6 months of age (Hart & Carrington, 2002).



Figure 6.3.1: An infant making an angry facial expression. (Angry image by Brytny.com on Unsplash)

Emotions are often divided into two general categories: **Basic emotions** (primary emotions), such as interest, happiness, anger, fear, surprise, sadness and disgust, which appear first, and **self-conscious emotions** (secondary emotions), such as envy, pride, shame, guilt, doubt, and embarrassment. Unlike primary emotions, secondary emotions appear as children start to develop a self-concept, and require social instruction on when to feel such emotions. The situations in which children learn self-conscious emotions varies from culture to culture. Individualistic cultures teach us to feel pride in personal accomplishments, while in more collective cultures children are taught to not call attention to themselves, unless you wish to feel embarrassed for doing so (Akimoto & Sanbinmatsu, 1999).

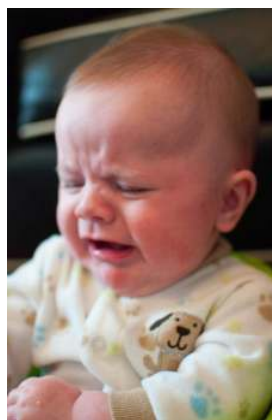


Figure 6.3.2: An infant making a sad facial expression (Sad image by acheron0 is licensed under CC BY 2.0)

Facial expressions of emotion are important regulators of social interaction. In the developmental literature, this concept has been investigated under the concept of **social referencing**; that is, the process whereby infants seek out information from others to

clarify a situation and then use that information to act (Klinnert, Campos, & Sorce, 1983). To date, the strongest demonstration of social referencing comes from work on the visual cliff. In the first study to investigate this concept, Campos and colleagues (Sorce, Emde, Campos, & Klinnert, 1985) placed mothers on the far end of the “cliff” from the infant. Mothers first smiled to the infants and placed a toy on top of the safety glass to attract them; infants invariably began crawling to their mothers. When the infants were in the center of the table, however, the mother then posed an expression of fear, sadness, anger, interest, or joy. The results were clearly different for the different faces; no infant crossed the table when the mother showed fear; only 6% did when the mother posed anger, 33% crossed when the mother posed sadness, and approximately 75% of the infants crossed when the mother posed joy or interest.

Other studies provide similar support for facial expressions as regulators of social interaction. Researchers posed facial expressions of neutral, anger, or disgust toward babies as they moved toward an object and measured the amount of inhibition the babies showed in touching the object (Bradshaw, 1986). The results for 10- and 15-month olds were the same: Anger produced the greatest inhibition, followed by disgust, with neutral the least. This study was later replicated using joy and disgust expressions, altering the method so that the infants were not allowed to touch the toy (compared with a distractor object) until one hour after exposure to the expression (Hertenstein & Campos, 2004). At 14 months of age, significantly more infants touched the toy when they saw joyful expressions, but fewer touched the toy when the infants saw disgust.

A final emotional change is in self-regulation. **Emotional self-regulation** refers to strategies we use to control our emotional states so that we can attain goals (Thompson & Goodvin, 2007). This requires effortful control of emotions and initially requires assistance from caregivers (Rothbart, Posner, & Kieras, 2006). Young infants have very limited capacity to adjust their emotional states and depend on their caregivers to help soothe themselves. Caregivers can offer distractions to redirect the infant’s attention and comfort to reduce the emotional distress. As areas of the infant’s prefrontal cortex continue to develop, infants can tolerate more stimulation. By 4 to 6 months, babies can begin to shift their attention away from upsetting stimuli (Rothbart et al, 2006). Older infants and toddlers can more effectively communicate their need for help and can crawl or walk toward or away from various situations (Cole, Armstrong, & Pemberton, 2010). This aids in their ability to self-regulate. Temperament also plays a role in children’s ability to control their emotional states, and individual differences have been noted in the emotional self-regulation of infants and toddlers (Rothbart & Bates, 2006). 11



Figure 6.3.3: A toddler at a park. (Image is licensed under CC0)

Development of sense of self: During the second year of life, children begin to recognize themselves as they gain a sense of self as separate from their primary caregiver. In a classic experiment by Lewis and Brooks (1978) children 9 to 24 months of age were placed in front of a mirror after a spot of rouge was placed on their nose as their mothers pretended to wipe something off the child’s face. If the child reacted by touching his or her own nose rather than that of the “baby” in the mirror, it was taken to suggest that the child recognized the reflection as him or herself. Lewis and Brooks found that somewhere between 15 and 24 months most infants developed a sense of self-awareness. **Self-awareness** is the realization that you are separate from others (Kopp, 2011). Once a child has achieved self-awareness, the child is moving toward understanding social emotions such as guilt, shame or embarrassment, as well as, sympathy or empathy. 13

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6.4: Social Emotional Milestones

As infants and toddlers interact with other people, their social and emotional skills develop. Here is a table of social and emotional milestones that they typically experience during the first two years.

Table 6.4.1: Social and Emotional Milestones ([Developmental Milestones](#) by the [CDC](#) is in the public domain)

Typical Age	What Most Children Do By This Age
2 months	• Begins to smile at people • Can briefly calm self (may bring hands to mouth and suck on hand) • Tries to look at parent
4 months	• Smiles spontaneously, especially at people • Likes to play with people and might cry when playing stops • Copies some movements and facial expressions, like smiling or frowning
6 months	• Knows familiar faces and begins to know if someone is a stranger • Likes to play with others, especially parents • Responds to other people's emotions and often seems happy • Likes to look at self in a mirror
9 months	• May be afraid of strangers • May be clingy with familiar adults • Has favorite toys
1 year	• Is shy or nervous with strangers • Cries when mom or dad leaves • Has favorite things and people • Shows fear in some situations • Hands you a book when wants to hear a story • Repeats sounds or actions to get attention • Puts out arm or leg to help with dressing • Plays games such as "peek-a-boo" and "pat-a-cake"
18 months	• Likes to hand things to others as play • May have temper tantrums • May be afraid of strangers • Shows affection to familiar people • Plays simple pretend, such as feeding a doll • May cling to caregivers in new situations • Points to show others something interesting • Explores alone but with parent close by
2 years	• Copies others, especially adults and older children • Gets excited when with other children • Shows more and more independence • Shows defiant behavior (doing what he has been told not to) • Plays mainly beside other children, but is beginning to include other children, such as in chase games

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6.5: Forming Attachments

Attachment is the close bond with a caregiver from which the infant derives a sense of security. The formation of attachments in infancy has been the subject of considerable research as attachments have been viewed as foundations for future relationships. Additionally, attachments form the basis for confidence and curiosity as toddlers, and as important influences on self- concept.



Figure 6.5.1: The formation of attachment in action as a father snuggles a newborn. (Image by Andres and Antoinette Ricardo used with permission)

Freud's Psychoanalytic Theory

According to Freud (1938) infants are oral creatures who obtain pleasure from sucking and mouthing objects. Freud believed the infant will become attached to a person or object that provides this pleasure. Consequently, infants were believed to become attached to their mother because she was the one who satisfied their oral needs and provided pleasure. Freud further believed that the infants will become attached to their mothers “if the mother is relaxed and generous in her feeding practices, thereby allowing the child a lot of oral pleasure,” (Shaffer, 1985, p. 435).

Harlow's Research

In one classic study, Wisconsin University psychologists Harry and Margaret Harlow investigated the responses of young rhesus monkeys to explore if breastfeeding was the most important factor to attachment.



Figure 6.5.2: A rhesus monkey sucking its thumb. (Monkey image by [splotter_nl](#) is licensed under [CC BY 2.0](#))

The infant monkeys were separated from their biological mothers, and two surrogate mothers were introduced to their cages. The first mother (the wire mother) consisted of a round wooden head, a mesh of cold metal wires, and a bottle of milk from which the baby monkey could drink. The second mother was a foam-rubber form wrapped in a heated terry-cloth blanket. The infant monkeys went to the wire mother for food, but they overwhelmingly preferred and spent significantly more time with the warm terry-cloth mother. The warm terry-cloth mother provided no food but did provide comfort (Harlow, 1958). The infant's need for physical closeness and touching is referred to as **contact comfort**. Contact comfort is believed to be the foundation for attachment. The Harlows' studies confirmed that babies have social as well as physical needs. Both monkeys and human babies need a secure base that allows them to feel safe. From this base, they can gain the confidence they need to venture out and explore their worlds.

Bowlby's Theory

Building on the work of Harlow and others, John Bowlby developed the concept of attachment theory. He defined attachment as the affectional bond or tie that an infant forms with the mother (Bowlby, 1969). An infant must form this bond with a primary caregiver in order to have normal social and emotional development. In addition, Bowlby proposed that this attachment bond is very powerful and continues throughout life. He used the concept of a secure base to define a healthy attachment between parent and child (Bowlby, 1982). A **secure base** is a parental presence that gives the child a sense of safety as the child explores the surroundings.



Figure 6.5.3: A mother offering a secure base as her infant plays on a slide. (Image is licensed under [CC0](#))

Bowlby said that two things are needed for a healthy attachment: The caregiver must be responsive to the child's physical, social, and emotional needs; and the caregiver and child must engage in mutually enjoyable interactions (Bowlby, 1969). Additionally, Bowlby observed that infants would go to extraordinary lengths to prevent separation from their parents, such as crying, refusing to be comforted, and waiting for the caregiver to return.



Figure 6.5.4: This child is seeking comfort from an attachment figure. (Image on Pexels)

Bowlby also observed that these same expressions were common to many other mammals, and consequently argued that these negative responses to separation serve an evolutionary function. Because mammalian infants cannot feed or protect themselves, they are dependent upon the care and protection of adults for survival. Thus, those infants who were able to maintain proximity to an attachment figure were more likely to survive and reproduce.

Erikson: Trust vs. Mistrust

As previously discussed in chapter 1, Erikson formulated an eight-stage theory of psychosocial development. Erikson was in agreement on the importance of a secure base, arguing that the most important goal of infancy was the development of a basic sense of trust in one's caregivers. Consequently, the first stage, trust vs. mistrust, highlights the importance of attachment. Erikson maintained that the first year to year and a half of life involves the establishment of a sense of trust (Erikson, 1982). Infants are dependent and must rely on others to meet their basic physical needs as well as their needs for stimulation and comfort. A caregiver who consistently meets these needs instills a sense of trust or the belief that the world is a trustworthy place. The caregiver should not worry about overly indulging a child's need for comfort, contact or stimulation.



Figure 6.5.5: This baby-wearing father is creating trust with his infant child. (Image by [Ferenc Horvath](#) on [Unsplash](#))

Problems Establishing Trust

Erikson (1982) believed that mistrust could contaminate all aspects of one's life and deprive the individual of love and fellowship with others. Consider the implications for establishing trust if a caregiver is unavailable or is upset and ill-prepared to care for a child. Or if a child is born prematurely, is unwanted, or has physical problems that make him or her more challenging to parent. Under these circumstances, we cannot assume that the parent is going to provide the child with a feeling of trust.

Mary Ainsworth and the Strange Situation

Developmental psychologist Mary Ainsworth, a student of John Bowlby, continued studying the development of attachment in infants. Ainsworth and her colleagues created a laboratory test that measured an infant's attachment to his or her parent. The test is called **The Strange Situation** because it is conducted in a context that is unfamiliar to the child and therefore likely to heighten the child's need for his or her parent (Ainsworth, 1979).



Figure 6.5.6: An infant crawling on the floor with toys around as done in the Strange Situation. (Infant image is in the public domain)

During the procedure, which lasts about 20 minutes, the parent and the infant are first left alone, while the infant explores the room full of toys. Then a strange adult enters the room and talks for a minute to the parent, after which the parent leaves the room. The stranger stays with the infant for a few minutes, and then the parent again enters and the stranger leaves the room. During the entire session, a video camera records the child's behaviors, which are later coded by the research team. The investigators were especially interested in how the child responded to the caregiver leaving and returning to the room, referred to as the "reunion." On the basis of their behaviors, the children are categorized into one of four groups where each group reflects a different kind of attachment relationship with the caregiver. One style is secure and the other three styles are referred to as insecure.

- A child with a **secure attachment style** usually explores freely while the caregiver is present and may engage with the stranger. The child will typically play with the toys and bring one to the caregiver to show and describe from time to time. The child may be upset when the caregiver departs, but is also happy to see the caregiver return.
- A child with an **ambivalent** (sometimes called resistant) **attachment style** is wary about the situation in general, particularly the stranger, and stays close or even clings to the caregiver rather than exploring the toys. When the caregiver leaves, the child is extremely distressed and is ambivalent when the caregiver returns. The child may rush to the caregiver, but then fails to be comforted when picked up. The child may still be angry and even resist attempts to be soothed.
- A child with an **avoidant attachment style** will avoid or ignore the mother, showing little emotion when the mother departs or returns. The child may run away from the mother when she approaches. The child will not explore very much, regardless of who is there, and the stranger will not be treated much differently from the mother.

- A child with a **disorganized/disoriented attachment style** seems to have an inconsistent way of coping with the stress of the strange situation. The child may cry during the separation, but avoid the mother when she returns, or the child may approach the mother but then freeze or fall to the floor.

How common are the attachment styles among children in the United States? It is estimated that about 65 percent of children in the United States are securely attached. Twenty percent exhibit avoidant styles and 10 to 15 percent are ambivalent. Another 5 to 10 percent may be characterized as disorganized.

Some cultural differences in attachment styles have been found (Rothbaum, Weisz, Pott, Miyake, & Morelli, 2010). For example, German parents value independence and Japanese mothers are typically by their children's sides. As a result, the rate of insecure-avoidant attachments is higher in Germany and insecure-resistant attachments are higher in Japan. These differences reflect cultural variation rather than true insecurity, however (van Ijzendoorn and Sagi, 1999).

Keep in mind that methods for measuring attachment styles have been based on a model that reflects middle-class, U. S. values and interpretation. Newer methods for assessment attachment styles involve using a **Q-sort technique** in which a large number of behaviors are recorded on cards and the observer sorts the cards in a way that reflects the type of behavior that occurs within the situation (Waters, 1987). There are 90 items in the third version of the Q-sort technique, and examples of the behaviors assessed include:

- When child returns to mother after playing, the child is sometimes fussy for no clear reason.
- When the child is upset or injured, the child will accept comforting from adults other than mother.
- Child often hugs or cuddles against mother, without her asking or inviting the child to do so.
- When the child is upset by mother's leaving, the child continues to cry or even gets angry after she is gone.

At least two researchers observe the child and parent in the home for 1.5-2 hours per visit. Usually two visits are sufficient to gather adequate information. The parent is asked if the behaviors observed are typical for the child. This information is used to test the validity of the Strange Situation classifications across age, cultures, and with clinical populations.

Caregiver Consistency

Having a consistent caregiver may be jeopardized if the infant is cared for in a child care setting with a high turnover of staff or if institutionalized and given little more than basic physical care.

Infants who, perhaps because of being in orphanages with inadequate care, have not had the opportunity to attach in infancy may still form initial secure attachments several years later. However, they may have more emotional problems of depression, anger, or be overly friendly as they interact with others (O'Connor et. al., 2003).

Social Deprivation

Severe deprivation of parental attachment can lead to serious problems. According to studies of children who have not been given warm, nurturing care, they may show developmental delays, failure to thrive, and attachment disorders (Bowlby, 1982). **Non-organic failure to thrive** is the diagnosis for an infant who does not grow, develop, or gain weight on schedule. In addition, postpartum depression can cause even a well-intentioned mother to neglect her infant.



Figure 6.5.7: This is a residential nursery in 1888. (Nursery image is in the public domain)

Reactive Attachment Disorder

Children who experience social neglect or deprivation, repeatedly change primary caregivers that limit opportunities to form stable attachments, or are reared in unusual settings (such as institutions) that limit opportunities to form stable attachments can certainly

have difficulty forming attachments. According to the Diagnostic and Manual of Mental Disorders, 5th edition (American Psychiatric Association, 2013), those children experiencing neglectful situations and also displaying markedly disturbed and developmentally inappropriate attachment behavior, such as being inhibited and withdrawn, minimal social and emotional responsiveness to others, and limited positive affect, may be diagnosed with **Reactive Attachment Disorder**. This disorder often occurs with developmental delays, especially in cognitive and language areas. Fortunately, the majority of severely neglected children do not develop Reactive Attachment Disorder, which occurs in less than 10% of such children. The quality of the caregiving environment after serious neglect affects the development of this disorder.

Resiliency

Being able to overcome challenges and successfully adapt is **resiliency**. Even young children can exhibit strong resilience to harsh circumstances. Resiliency can be attributed to certain personality factors, such as an easy-going temperament. Some children are warm, friendly, and responsive, whereas others tend to be more irritable, less manageable, and difficult to console, and these differences play a role in attachment (Gillath, Shaver, Baek, & Chun, 2008; Seifer, Schiller, Sameroff, Resnick, & Riordan, 1996). It seems safe to say that attachment, like most other developmental processes, is affected by an inter play of genetic and socialization influences.

Receiving support from others also leads to resiliency. A positive and strong support group can help a parent and child build a strong foundation by offering assistance and positive attitudes toward the newborn and parent. In a direct test of this idea, Dutch researcher van den Boom (1994) randomly assigned some babies' mothers to a training session in which they learned to better respond to their children's needs. The research found that these mothers' babies were more likely to show a secure attachment style in comparison to the mothers in a control group that did not receive training. 22



Figure 6.5.8: This infant massage class for new mothers could provide training and support for mothers. (Image is in the public domain)

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6.6: Child Care

According to the U.S. Census Bureau in 2011, over sixty percent of families with children under five relied on regular child care arrangements. Around a quarter of those families used organized child care facilities as their primary arrangement.²⁴

Child care involves supervising a child or children, usually from infancy to age thirteen, and typically refers to work done by somebody outside the child's immediate family. Child care is a broad topic covering a wide spectrum of contexts, activities, social and cultural conventions, and institutions. The majority of child care institutions that are available require that child care providers have extensive training in first aid and are CPR certified. In addition, background checks, drug testing, and reference verification are normally required.

It is traditional in Western society for children to be cared for by their parents or their legal guardians. In families where children live with one or both of their parents, the child care role may also be taken on by the child's extended family. If a parent or extended family is unable to care for the children, orphanages and foster homes are a way of providing for children's care, housing, and schooling.

Child Care in the United States

Formal child care options include **center-based care** and **family child care homes**. Each state has different regulations for licensing child care centers, including teacher requirements. In some states, teaching in a child care center requires an associate's degree in child development. States with quality standards built into their licensing programs may have higher requirements for support staff, such as teacher assistants. **Head Start** (a federally funded child care program for income qualified families) lead teachers must have a bachelor's degree in Early Childhood Education. States vary in other standards set for daycare providers, such as teacher to child ratios.



Figure 6.15 – A caretaker reading to an infant. (Image by the Air Force Medical Service is in the public domain)

State legislation may regulate the number and ages of children allowed before the home is considered an official family child care program and subject to licensing regulations. Often the nationally recognized Child Development Associate credential is the minimum standard for the individual leading this home care program.



Figure 6.16 – A caretaker playing with a group of children. (Image by the U.S. Air Force is in the public domain)

In addition to these licensed options, parents may also choose to find their own caregiver or arrange childcare exchanges/swaps with another family. This care is typically provided by nannies, au pairs, or friends and family. The child is watched inside their own home or the caregiver's home, reducing exposure to outside children and illnesses. Depending on the number of children in the home, the children utilizing in-home care can enjoy the greatest amount of interaction with their caregiver and form a close bond.

There are no required licensing or background checks for this type of in-home care, making parental vigilance essential in choosing an appropriate caregiver. The cost of in-home care is the highest of childcare options per child, though a household with many

children may find this the most convenient and affordable option. 27

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6.S: Summary

In this chapter, we looked at:

- Temperament and goodness-of-fit.
 - Cultural and gender influences.
 - The development of emotions.
 - Theories and styles of attachment.
 - Erikson's stage of trust versus distrust.
 - Importance of attachment and things that can impede it.
 - The types of child care available to families.
-

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CHAPTER OVERVIEW

7: Observation and Documentation - The Key to Intentional Teaching

To provide children with a safe and nurturing learning environment and to maintain program effectiveness, teachers must incorporate observation, documentation and assessment into their daily routines. To truly be effective, teachers must develop skills and strategies that are grounded in best practices. In this chapter you will be presented with information that highlights how observation and documentation can be used as a key strategy to ensure intentional teaching. You will examine the initial steps to take to becoming a skilled observer, and you will reflect on how to objectively document the interactions that you see and the conversations that you hear. It is important to note that becoming a skilled observer takes time and practice, and that learning how to incorporate observation, documentation and assessment into your regular routines and daily duties requires some thoughtful consideration.

[7.1: The Role of Observation](#)

[7.2: Becoming a Skilled Observer](#)

[7.3: Observations can be Spontaneous or Planned](#)

[7.4: Questions you may want to ask yourself as you plan your next observation](#)

[7.5: The Role of Documentation](#)

[7.6: Objective versus Subjective Observation Evidence](#)

[7.7: Recognizing Your Biases](#)

[7.8: Ethical Guidelines when Observing Children](#)

[7.9: Observation and Documentation Dos and Don'ts](#)

[7.10: Conclusion and References](#)

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7.1: The Role of Observation

Observations are conducted every day in early childhood classroom environments. Teachers are constantly surveying the environment and completing safety checks to make sure the equipment and materials are safe for the children to use. Teachers also perform daily health screenings to ensure their children are healthy enough to participate in program activities. Beyond the standard safety check and health screening, teachers have many other important tasks and duties that they must do in order to maintain a copacetic classroom environment. Intentional teachers use their observations to plan and implement curriculum, set up engaging learning environments, monitor the children's social interactions, track behaviors, communicate with families, and assess each child's progress and development. Essentially, observations help teachers be more accountable. By conducting regular observations intentional teachers can:

1. Evaluate program effectiveness
2. Evaluate teacher effectiveness
3. Make improvements to ensure quality practices
4. Plan and implement developmentally appropriate curriculum
5. Measure and assess a child's development
6. Develop respectful family partnerships
7. Understand the cultural practices and family structure
8. Select effective learning strategies to support and accommodate the diverse needs of children
9. Ensure ethical conduct and professional standards of practice
10. Teach with confidence

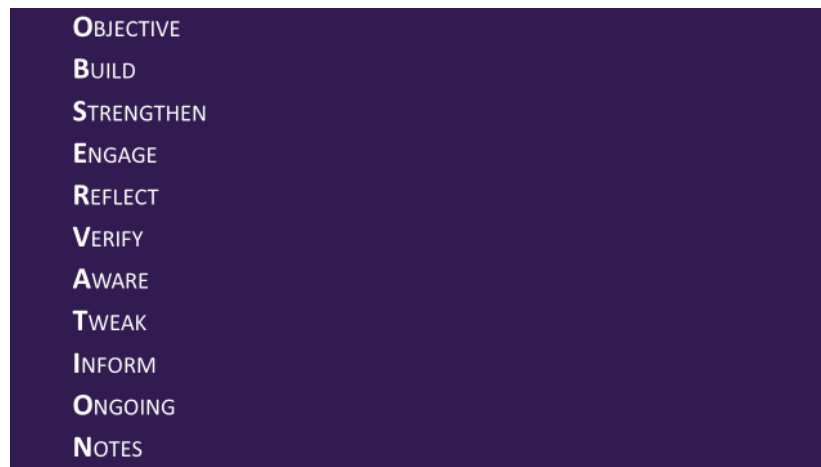


Figure 1.1: COC OER ^[1]

Pin It! Observation

Observation is defined as “the process of gathering information about objects and events using senses of sight, smell, sound, touch and taste, noticing specific details or phenomena that ordinarily might be overlooked” (CDE, 2016 p. 64).^[2]

If we want to understand children, we must first watch them and listen to them. Then, we must try to make sense of what we observed and give it meaning. The role of observation is to provide teachers with information and evidence that they will need to make informed decisions on how to best support the children in their care. With each observation, you will get a glimpse into a child's developing mind. Not only will you see a child's personality emerge, you will be able to see what a child can do. As you watch your children, you will see how they problem solve when conflicts arise and how they cope with the stress from being in a group setting. You will learn about their individual needs and their cultural practices. When you watch children closely, their interests and abilities are revealed. With each observation, you will gain useful insight that will help you become an intentional teacher.

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7.2: Becoming a Skilled Observer

To truly observe a child, you must be present, knowledgeable, inquisitive and intentional. With every observation, you will sharpen your skills as you learn how to effectively gather objective evidence and detailed data.

Be present: To capture all the individual mannerisms, subtle social nuances, non-verbal body language and dynamic conversations that occur throughout the day you must be attentive, focused and ready to go at any given moment. Children move fast. When we blink, we are bound to miss some little detail or precious moment, that's a given. Being present takes considerable effort and careful planning.

Be knowledgeable: Understanding the core concepts of early childhood education is extremely important if you are to set reasonable expectations and plan developmentally appropriate learning experiences. Familiarizing yourself with child development theories will help you understand and appreciate why children do what they do. Learning about the key principles in early care and education will provide you with a solid foundation and a wide range of instructional strategies to support a child's development.

Be inquisitive: Think of yourself as a researcher. Your primary mission is to investigate the children in your care by routinely gathering evidence, using a variety of observation methods and tools. As a good researcher you will need to ask some thoughtful questions. These questions will guide you as you plan purposeful observations and as you select your method of observation. Here are some sample questions you may ask yourself: What activities interest Max? How many times did Stevie hit today? What skills did Hazel master today with this activity, and what skills need further support? How long did Zoey stay engaged while playing in the sandbox? What milestones will this activity support? By asking thoughtful questions, you will learn more about the children in your care and you will do a better job at supporting each child's individual needs. Rather than fixating on a child's behavior, in time you will begin using focused observations to try and figure out the reasons why a child acts the way they do.

Be intentional: As you organize learning experiences, set up the classroom and outside environment, assess children's developmental progress, engage in activities, and interact with your children and families – you must have a thoughtful plan of action in place. "Intentional teaching means that everything you do as a teacher has a specific goal and purpose" (Gordon & Browne, 2016 p. 103). Even as spontaneous situations arise, intentional teachers must make the most of teachable moments. Intentional teachers conduct regular observations and gather objective documentation data to be accountable for the actions they take, the plans they generate and the assessments they make.

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7.3: Observations can be Spontaneous or Planned

Spontaneous observations occur all the time. Whether teachers are actively engaged with their children during an activity or in the background cleaning up after an activity, teachers have numerous opportunities to see and hear some wonderful developments as they randomly occur. According to Piaget, children require long uninterrupted periods of play and exploration so that they can discover things for themselves. If we truly believe that children are capable of socializing, problem solving, and creating complex systems with rules, then we can successfully use spontaneous observations to capture a child's development as it unfolds naturally.

As intentional teachers, we can also appreciate when teachable moments arise unexpectedly. These golden moments are noteworthy as well. For example, as we witness a child attempting to master a milestone, we may provide some verbal support or guidance to scaffold the child's learning. For example, when Abraham is becoming frustrated with not being able to get a piece of his puzzle to fit, a teacher might ask, "What happens when you turn the piece around?" During spontaneous situations, we must remember to simultaneously make mental notes so that we can later write down and reflect on a more formal plan of action that can be later used to help the child achieve their developmental goals.

Let's review the advantages and disadvantages associated with spontaneous observations.

- **Advantages:** Being in the moment allows you to enjoy your children, and children appreciate your presence. When you are present, you can celebrate a child's success or provide positive reinforcements to help them master major milestones. While being spontaneous, you can focus on the child's interests and pose thoughtful questions to extend and enrich their learning experience. When a teacher keeps a low profile, a child is less likely to be self-conscious or nervous.
- **Disadvantages:** The longer you wait to document your spontaneous observation evidence, the harder it will be to remain objective and recall the vital details which is important when tracking behaviors or assessing development. Also, the more time that passes, the more difficult it will be to access accurate data. For example, by not documenting the children's dialogue or capturing their key quotes in a timely manner, you may find it difficult to remember their actual word choices and use of vocabulary which is essential for assessing a child's expressive language development.

Let's now discuss focused or **planned observations**. Becoming a skilled observer takes practice. At first you may be slightly overwhelmed with trying to incorporate an official observation time into your already busy schedule. You may struggle with finding that delicate balance between knowing when to interact with your children and realizing when to step back and observe. Once you do observe, you might be surprised by the amount of evidence you have collected on each child. What's more, you will have to sift through all the evidence, and that can be both time consuming and exhausting. Since your time is limited and you cannot possibly observe everything, incorporating a planned observation will help you navigate through your busy day and you will be able to gather more specific evidence (Grouland & James, 2013).

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7.4: Questions you may want to ask yourself as you plan your next observation

When should I observe?

From the moment a child walks into their classroom until the time they leave, opportunities to learn are occurring. Some observations will happen spontaneously, while others will be scheduled. To see a child's full potential, you will need to observe at various times throughout the day. For example, some children are slow-to-warm and it may take them some time to get acclimated before they can fully engage and interact with others. If a child is slow -to-warm, the morning drop-off may not be the best time to document their social development. You will want to track them throughout the day, at various times (including transition times and snack/meal times), to get a full picture of who they are and what they can do.

Where should I observe?

Many times, observations are centered around structured, teacher-directed activities. This is, in fact, a perfect time to witness what major milestones a child has mastered. However, observing a child while they are exploring in the dramatic play area (*inside*) or while they are in the sandbox area (*outside*) can prove to be just as enlightening. During child-directed play or open exploration, you will no doubt be able to document many of the developmental skills as suggested in the DRDP or Rating Scales, especially how they communicate, cooperate, solve dilemmas and create. Because children can play and learn differently while they are inside as compared to when they are outside, it is necessary to observe in both environments. Likewise, it is important to observe in all activity areas and play spaces.

What observation method should I use?

Use a variety of methods to record and document your children. You will want to “try out” several tools and techniques to find your “go to” method. Because each tool has a specific purpose or focus, using a variety of methods will provide you with sound documentation data to better understand the whole child's development. Note: In the next chapter, you will examine the various tools and techniques more closely.

Who should I observe?

You will want to observe each child as individuals, and you will want to track group interactions. Becoming aware of who is in your class is necessary if you are going to create a caring classroom community and respectful learning environment. Look for those who are the leaders in your group; find out who needs more one-to-one support and who are your helpers; watch for who plays with who. This insight can help you organize peer scaffolding opportunities which can free up some of your time. As a gentle reminder, sometimes we connect with certain children for one reason or another, and other times a child may challenge us. Either way we need to regularly observe each child with an open mind and an open heart, and we need to look at children with a clear lens that is free of bias. Each child needs your attention; each child has unique gifts; and each child needs your support.

What is the focus of my observation, what am I looking for?

With focused observations, there usually is a specific goal in mind. For example, you might want to know what milestones a child has mastered. For that, you would use a developmental checklist to “check-off” all the skills the child was observed doing. Maybe you want to learn what the child's interests are and what they like to play with. For that, you can use a frequency count to tally up all the areas and activities the child used during that observation. Keep in mind that you can observe several skills and competencies across multiple domains during one observation. For example, one day you might set out a math activity and the children are expected to create patterns using colorful beads and pipe cleaners, While they work and play, you can listen to the children's conversations as they describe the patterns they are making; and you can note their fine motor development based on how well they string the beads onto the pipe cleaner; you can also see how they shared space and materials with their peers. Although this was a math activity, many other areas of development can be observed.

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7.5: The Role of Documentation

One of the cornerstones of a high-quality early care and education program is the practice of observing, documenting and assessing children's development. According to NAEYC (2009), in order to make formative decisions that will guide what goes on in the classroom, there needs to be an organized system in place to collect information. When we record our observations and collect data, we “hold in memory the actions, nonverbal communication, or comments that seem to be significant to children's thinking” (California Preschool Program Guidelines, 2015 p. 46). When we document children's learning and collect key artifacts, we create tangible evidence that we can share with the children and their families, along with administrators and stakeholders. There are many ways you can record and document children's learning. In fact, you should attempt to utilize several methods as part of your regular observation routines.

To collect and record data you can use the following methods :

- running records
- anecdotal notes
- checklists
- frequency counts
- learning stories
- time or event samples
- work samples
- taking photos, videotaping, or audio recordings

To store your documentation

To safely store your collected data, you will need to have an organized system in place. Portfolios are a popular strategy used by intentional teachers. To create a portfolio, you can use a binder or notebook, a file or accordion-style folder, or a cardboard box. As you collect observation evidence for each child, it is vital that you date everything so you can organize it chronologically. This will help you track each child's progress throughout the school year more efficiently. Portfolios help you construct a well-rounded and authentic picture of each child in your class. Knowing the “whole child” you are better equipped to build on each child's individual interests, and you are more apt to plan developmentally appropriate activities.

Each child should have their own portfolio. A well-organized portfolio will contain observations and artifacts of children's work that are collected at different time periods throughout the school year. It is recommended that you include some type of documentation that highlights each developmental domain. For example:

- **Gross Motor:** Take photographs of your child while they are engaged in outside activities like running, jumping, climbing, riding a bike or playing in the sandbox.
- **Fine Motor:** Keep a checklist of when your child learns to button, zip, and tie his shoes. Include work samples of their cutting, coloring, painting, and samples of emergent writing
- **Social-Emotional:** Write anecdotal notes when your child engages in open-ended, child-directed play. Take note of how they share and cooperate with others. Do a frequency count to see which centers your child chooses to spend their time in and tally their play patterns to see if they prefer to play alone or with others.
- **Cognitive:** Chart a science experiment and take photos. Photograph a completed puzzle. Use a video camera to record a child as she builds a block bridge. And, as she explains her process and she had to figure out all the steps to take so that the bridge wouldn't fall down – be sure to record that too.
- **Literacy and Oral language:** Save writing examples to track how the child writes her name. Include illustrations of stories they love and the stories they write themselves. Write down quotes in your running record or make audiotapes of conversations during circle time.
- **Creative expression:** Videotape your child while playing in the dramatic play area or while performing a dance during music and movement. Photograph a clay creation, painting or block tower.

To be clear, it isn't the amount of documentation you collect for each portfolio that matters, it's the quality of information you gather. Portfolios tell a story of the whole child. There should be a beginning, middle, and an end. Each work sample, anecdotal

note, checklist, frequency count and learning story should be used to showcase how a child processes information, develops relationships, and learns while playing.

To document children's learning

Whether you collect evidence through spontaneous or planned observations, you will use your documentation to ultimately assess a child's learning, growth, and development. With well-organized documentation, intentional teachers can effectively communicate with a child's family, using the evidence and artifacts they have collected over time. Families appreciate being able to see their child's progression and how they interact with others. Families also enjoy seeing the types of activities their child engages in during a typical day at school. Here are a few ways documentation can be used to showcase a child's learning, growth and development:

- rating scales and formal developmental assessments
- daily progress reports
- documentation boards

Pin It! Ten Teacher Tips When Gathering your Documentation

1. Date – this is key in tracking development over time
2. Time – start time and end time
3. Setting – note the location (indoor or outdoor; center or play area)
4. Purpose – what is the intended goal
5. Note the child (or children) who are involved in the activity
6. Record only the facts – Write down exactly what you see and hear
7. Be as concise (to the point) as you can
8. Record the facts in the order as they occur
9. Be descriptive and provide vivid details -create a visual picture so others can “see” what is happening
10. Be specific and avoid vague or general terms – this is helpful when you go back to review your dat

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7.6: Objective versus Subjective Observation Evidence

Intentional teachers must learn how to write objective observations. As you observe, it is best to write down all that you see and hear, and report just the facts. It takes practice to learn how to separate facts from opinions. Here are some helpful tips for you to review:

Table 7.6.1: Objective Observations vs. Subjective Observations

Objective Observations	Subjective Observations
Objective observations are based on what we observed using our senses, we record exactly what we see, hear, taste, touch, and smell	Subjective observations are often influenced by our past events, personal experiences and opinions, and can be biased based on our cultural backgrounds
Objective information is based on the facts we gather. If we don't see it, we don't report it. We report only details and provide vivid descriptions	Subjective information is based on our opinions, assumptions, personal beliefs, prejudice feelings or can be based on suspicions, rumors and guesses
Results are more likely to be valid and reliable from child to child	Results are often inconsistent and vary from child to child
Objective Terms that can be Used: Seems to be; Appears to	Subjective Words to Avoid: Just; because; but; always, never; can't; I think; happy, smart, helpful, pretty, angry, shy, likes, loves, hates, sad

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7.7: Recognizing Your Biases

Google the word bias and this is what pops up: “prejudice in favor of or against one thing, person, or group compared with another, usually in a way considered to be unfair.”

Biases, we all have them. Biases stem from our upbringing. Every interaction and every experience we have had has shaped who we are. To some degree, our biases influence our beliefs and behaviors, they sway our attitudes, and they affect our personalities. Because our biases are so ingrained into who we are, it would be unrealistic to simply say “ignore your bias.” Therefore, a valuable exercise might be to do a self-check and examine your own biases. Look for those biases that are “triggers.” More specifically, think about the behaviors, temperamental traits, and moods that make you feel uncomfortable, frustrated, or annoyed.

It is important to note, that we might not be fully aware of all our biases. For example, when a child says, “give me some milk!” Our first response might be “Ummm, how do you ask?” We might not realize that manners (or lack of them) can make us react in a judgmental way. What’s important to recognize is that how we feel about the child’s behavior can taint how we see them. What’s more, our biases can influence how we gather our observation evidence. As intentional teachers we have to recognize our biases so we can treat all children with the respect that they deserve. According to NAEYC’s Code of Ethical Conduct and Statement of Commitment (2011),

P-1.3—We shall not participate in practices that discriminate against children by denying benefits, giving special advantages, or excluding them from programs or activities on the basis of their sex, race, national origin, immigration status, preferred home language, religious beliefs, medical condition, disability, or the marital status/family structure, sexual orientation, or religious beliefs or other affiliations of their families (p. 3).

So as not to lose our objectivity, it is important to keep an open heart, an open mind, and a clear lens. Rather than letting a child’s behavior trigger you, look beyond their behavior, look beyond your bias. Focus on collecting objective observation evidence and use that data to reflect on what might be causing that behavior. Consider ways that you can support the child through redirection, modeling, scaffolding or positive reinforcements. As intentional teachers, one of our primary roles is to empower children, and to build meaningful relationships by creating warm, caring environments (Epstein, 2007).

Pin It! Common Mistakes to Avoid When Writing Observation Evidence

- Making Conclusions : Billie can’t do anything by himself because he is the youngest in a large family and they do everything for him; Sharon’s parents are getting a divorce, so she is sad
- Making Assumptions : Annie never shares; Denise always hits Thomas
- Labeling : Rosie is mean ; Jeff is such a good boy
- Comparing : Tommy can’t ride the bike as well as Sam; Zoey was the best listener at circle time
- Focusing on Feelings or Emotions : Max looks so sad today; Jax looks so happy as he slides down the slide
- Adding Opinions : Martha really likes playing dress up, she is in the dramatic play area every day; Suki is shy and never says anything during circle time.

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7.8: Ethical Guidelines when Observing Children

Every day, teachers observe, record and capture essential moments in a child's development. The evidence and artifacts that are gathered are then used to plan curriculum and assess development. Although we have highlighted the importance of gathering work samples and observation evidence as a key element to be an intentional teacher, we must also consider the perspective of the child. In the article "Who is Watching? Thinking Ethically about Observing Children" the authors highlight some of the ethical tensions that can arise within early childhood settings when trying to balance the rights of children, the responsibilities of teachers and the role of a student who is training to be a future teacher.

In most classrooms, a typical day includes teachers grabbing their cameras to take snapshots of the children in their care so that they will have ample documentation. Consider this - does the teacher's presence change the context of the child's experience? Does the thought of being monitored make the child behave any differently? How does the child feel about having their picture taken? Are teachers becoming overly concerned about capturing children in precious moments, rather than being engaged in teachable moments? As a "student" who is learning to observe and document a child's development it is important for you to consider the following guidelines when observing children:

- Take every precaution to maintain confidentiality and to ensure privacy
- Remember to ask if it is OK to take photographs of children and their work
- Understand that children have the right not to take part in activities
- Be respectful and keep a reasonable amount of space between you and the child so as not to interfere with their play and learning
- Be attuned to children's body language, temperament and styles of communication
- See each child as a unique individual who has their own perspective, set of feelings, interests, and way of socializing, along with their own cultural context, belief system, and values
- Be upfront and inform children about the purpose of your observation visit if you are approached
- Share information with the child about what you have observed when appropriate
- Write quotes down just as they were said without adding context, or trying to rationalize what the child may have meant
- Be aware that photos and observation data should be collected in a non-intrusive manner
- Ensure that observation evidence and photos are used only for the purposes intended
- Handle photos and data with care and sensitivity, and always store information securely
- Realize that a child's reactions, behaviors and conversations may not be what you expect and therefore you should refrain from being judgmental or tainted by your cultural biases

By following these guidelines, you are providing the children you observe with the respect they deserve while ensuring their dignity and safety. The centers and programs where you are observing are trusting you to act with integrity while you are at their site observing their children. Lastly, families will appreciate that you have their child's best interest at heart.



Figure 7.8.1: Observing the world through a different lens. (Public Domain; [Andrew Seaman](#) on [Unsplash](#))

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7.9: Observation and Documentation Dos and Don'ts

Whether performing a planned or spontaneous observation here are some helpful tips to ensure you are recording quality evidence:

Table 7.9.1: Observation and Documentation Do's and Don'ts

Observation and Documentation DOs:	Observation and Documentation DON'Ts
1. Note the date, time, setting, 2. Note the child (or children) involved 3. Record only the facts – in a concise (to the point) manner 4. Record the facts in the order as they occur and exactly as you see it 5. Collect vivid details and quotes 6. Use a variety of Observation Methods 7. Observe with an open heart, an open mind and a clear lens, free of bias 8. Be attentive and alert, and use all your senses 9. Note what the child CAN DO rather than what he cannot do 10. Keep a low profile and respect the children's space while they are playing	1. Do not interfere or pressure the children to perform 2. Do not assume or state your opinion while recording evidence 3. Do not record anything you do not see 4. Do not label behaviors, actions or feelings 5. Avoid using subjective, bias or judgmental terms 6. Avoid using exaggerations and conditional words 7. Do not summarize information 8. Avoid using generalizations or vague terms

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7.10: Conclusion and References

To become a skilled observer takes time and practice (Gronlund & James, 2013). You will need to figure out your rhythm so that you can incorporate observation and documentation into your regular routine. As an intentional teacher, you will want to plan systematic observations so that you can document each child's unique qualities, interests, developmental strengths and needs, as well as uncover their cultural practices, approaches to learning and play preferences throughout the school year. As you gather evidence you will want to be as objective as you can be, and you will have to recognize your biases. As you collect your documentation on each child, you will want to organize it in a chronological manner and store it safely. Lastly, be sure to observe every child in your class, be aware that some children may catch your attention more than others for one reason or another. In the next chapter, we will examine several observation tools and techniques that you will want to use as part of your regular observation routine to ensure high-quality practices.

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CHAPTER OVERVIEW

8: Quality Counts

The need for high-quality childcare continues to be a topic of interest as more and more families enter the workforce and more and more children need care. Every week, families from all socioeconomic backgrounds drop their children off at some type of childcare. According to the National Institute for Early Education Research, “In the United States, 76% of children ages three to four, receive education and care from someone other than a parent.” (NIEER, 2002). With so many children needing childcare, researchers and policymakers are tasked with figuring out how to best support the next generation of preschoolers. In this chapter, we will address the need for high-quality in early care and education as means to reduce the achievement gap between children from low to high socioeconomic families. We will also compare standard industry practices to what the field of early care and education recognizes as high-quality practices. Lastly, we will review some of the current observation methods, tools and techniques that can be used to ensure programs are implementing quality practices. ^[4]

[8.1: Closing the Achievement Gap](#)

[8.2: Not all Preschool Programs are Alike](#)

[8.3: Process Quality and Structural Quality](#)

[8.4: A Look at Standard Industry Practices](#)

[8.5: The Role of the Teacher in High-Quality Practices](#)

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[8.7: Measuring High-Quality in Early Care and Education Classrooms](#)

[8.8: Conclusion and References](#)

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8.1: Closing the Achievement Gap

Decades of research on early child development has determined that “When it comes to early care and education programs, quality is critical,” (Wechsler, Melnick, Maier & Bishop, 2016, p.1). It is suggested that thoughtfully designed preschool programs can impact and influence a child’s future learning outcomes. Not only are there short-term benefits, based on data collected from quantitative research projects (e.g. Perry Preschool, the Abecedarian Project, and the Chicago Child-Parent Centers), there are long-term benefits as well. More specifically, children from low-income homes who attended high-quality preschool programs showed higher achievement scores - especially in math and reading, as compared to their counterparts who were not able to attend a quality preschool. Furthermore, children who were enrolled in high-quality programs were less likely to be placed in special education, less likely to be retained or held back a grade, and it was noted that they were more likely to graduate from high school. ^[5]

Unfortunately, due to limited funding opportunities and financial restraints, there are many families who cannot afford to send their child to a high-quality preschool. “This lack of access to high-quality early childhood education perpetuates the achievement gap, evidenced by the fact that only 48 percent of low-income children are ready for kindergarten, compared to 75 percent of moderated – or high-income children” (p. 3 Center for American Progress). This data reveals that the achievement gap is problematic on many levels. Moving forward we must consider how we, as advocates and educators, can lessen the achievement gap so that all children, no matter their socioeconomic status, can get a smart start. To find possible solutions to this dilemma, let’s take a closer look at and compare standard industry practices to what the field of early care and education regards as high-quality practices . ^[6]

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8.2: Not all Preschool Programs are Alike

As more and more children need childcare, families are faced with a tremendous task of finding “the right preschool program.” When choosing a center, some families may contemplate certain factors like cost and affordability, hours of operation and availability, and location. Some families, on the other hand, may consider the school philosophy, the education and experience of teachers, the environment and daily activities, as well as the curriculum model and guidance policies. As you can see, there are numerous possibilities to consider. Families must also decide on whether to send their child to a state-funded or faith-based program, a family childcare or a traditional preschool setting. No matter what type of program a family chooses, in the state of California all childcare centers must be licensed by the California Department of Social Services and comply with Community Care Licensing Title 22 regulations. For the purpose of this text, in order to demonstrate that all preschools are not alike, we will refer to “ standard industry practice ” as any state licensed childcare program and we will refer to “ high-quality practice ” as any childcare center that undergoes regular assessments using tools and techniques that are above and beyond the standard industry practice .

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8.3: Process Quality and Structural Quality

Unlike standard industry practices, high-quality practices place an emphasis on promoting positive child outcomes. The key to a high-quality program is contingent upon what happens inside the classroom environment. Let's examine how both process quality and structural quality work together to influence positive outcomes for children.

Process quality refers to the types of interactions that occur throughout the day between the teachers, children, families, and administrators. Process quality also considers the types of materials that are available for the children to use, as well as the activities that children engage in throughout their day. Lastly, process quality takes into account the health, well-being and safety of the children. Structural quality on the other hand, refers to the features and characteristics of a program. More specifically, the class size, teacher-to-child ratios, teacher qualifications and experiences, teacher pay scale, along with the allotted square footage for play space define quality. Although process quality is thought to have a more direct impact on child outcomes as compared to structural quality, researchers and leaders in the field of early care and education agree that process and structural indicators are interrelated, and when combined together they promote the highest quality experiences.

For example, when groups are smaller, teachers tend to have more positive, supportive, and stimulating interactions with children. Warm and nurturing interactions are directly linked to children's social competence and future academic success, and such interactions are essential to high quality. Early childhood teachers who are more highly qualified and have smaller groups can more effectively provide individualized, responsive learning opportunities. Finally, higher teacher wages have consistently been linked to higher process quality. ^[8]

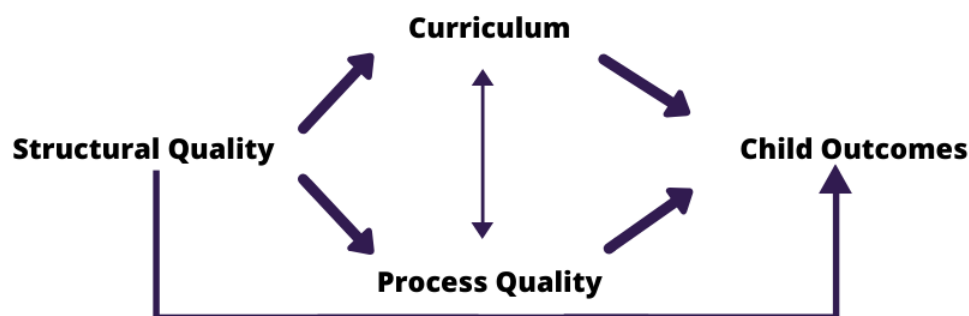


Figure 8.3.1: Structural Quality directly effects Child Outcomes ^[9]

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8.4: A Look at Standard Industry Practices

To legally operate a childcare program in California, a center must comply with certain licensing policies and procedures. These state regulations provide “a baseline standard and are primarily focused on protecting children from harm rather than on advancing child development and early learning,” (Workman & Ullrich, 2017, p. 3). In other words, Title 22 Regulations stipulate health and safety standards, space and square footage requirements, supervision standards, and teacher qualifications. Title 22 Regulations do not however, consider curriculum activities, age appropriate materials, or teacher-to-child interactions, nor does it address developmentally appropriate practices such as family culture and perspectives, child development theories, or principles and practices.

To ensure early childhood education programs are compliant with all state policies and procedures, a licensing analyst will conduct an annual inspection, or will evaluate a program as needed. Typically, the analyst will look at the center’s overall cleanliness and they will inspect both the indoor and outdoor environment to certify that the center is safe for the children. The analyst will confirm that the ratios are met, and that there is proper space and square footage available for each child to play and nap. The analyst will also conduct a spot check of the employee files to confirm teacher qualifications, and they will look through the children’s files to validate that the proper paperwork is signed and in complete order. To comply with state regulations and policies, a center director will need to download the California Code of Regulations, Title 22 administered by CDSS (Divisions 12 only) and follow all the mandated requirements. If any criteria are not met, the analyst will cite the program. The program will then be given a certain timeframe to rectify and correct the concern. The analyst will return to verify the problem has been fixed. Families who are considering a program can check the Community Care Licensing website to see if a center has received any “substantiated citations.” ^[7]

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8.5: The Role of the Teacher in High-Quality Practices

As mentioned above, the teacher plays a vital role in orchestrating high-quality practices. In high-quality classrooms, not only must teachers create a safe and nurturing space, they must intentionally set up the environment to support children's interests and individuality. California childcare programs serve a diverse population, therefore, an intentional teacher must also consider the cultural, linguistic, and socioeconomic status of each family enrolled in her class. The highly-qualified teacher has a deep understanding of child development, and with that knowledge she will provide appropriate materials and experiences to challenge the children in her care. In the chart below, we can see how teachers maintain high-quality practices.

Table 8.5.1: Classroom Environments

Physical environment	The overall design and layout of a classroom, including the learning centers and play spaces, the age appropriate materials, and the child size furnishings
Social environment	The interactions that occur within the classroom between teachers, children, family members, center staff and administration
Temporal environment	The routines and daily schedules, the timing, sequence, and length of play time, the time spent indoors and outdoors engaged in child-directed and teacher-directed activities

Here are some considerations to incorporate quality practices into your classroom to promote responsive caregiving while supporting the physical, social, emotional and intellectual development of children:

Pin It! The Building Blocks of High Quality Early Childhood Education Programs ¹⁰

1. Early learning standards and curricula that address the whole child, are developmentally appropriate, and are effectively implemented.
2. Assessments that consider children's academic, social-emotional, and physical progress and contribute to instructional and program planning.
3. Well-prepared teachers who provide engaging interactions and classroom environments that support learning.
4. Ongoing support for teachers, including coaching and mentoring.
5. Support for English learners and students with special needs.
6. Meaningful family engagement.
7. Sufficient learning time.
8. Small class sizes with low student-teacher ratios.
9. Program assessments that measure structural quality and classroom interactions.
10. A well-implemented state quality rating and improvement system.

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8.6: A Look at High-Quality Practices

One of the hallmarks of high-quality practices is the practice of continuously monitoring and evaluating a program's overall effectiveness for the purpose of accountability. Therefore, in addition to complying with state licensing regulations, high-quality programs may utilize noted assessment tools and resources (e.g. ECERS, CLASS, QRIS, NAEYC's Developmentally Appropriate Practice) to evaluate their center and staff. To guide high-quality practices, early childhood educators often look to the National Association for the Education of Young Children (NAEYC) to provide ethical pedagogy. NAEYC is a recognized professional organization committed to promoting quality early learning experiences for children, birth through age 8. Grounded by research and theory principles, NAEYC promotes best practices for children, families, teachers, administrators, stakeholders and policy makers. To ensure quality practices are being implemented, it is suggested that teachers follow NAEYC's Developmentally Appropriate Practice (DAP) Framework:

- Teachers encourage children to be active participants in their own learning
- Teachers set reasonable expectations based on what they know about a child's age and stage of development
- Teachers build on what children know using a variety of learning strategies, materials, meaningful experiences
- Teachers plan activities to support all aspects of development: social, emotional, physical and cognitive
- Teachers value each child's family, language, and cultural practices
- Teachers are aware of each child's interests, strengths, abilities and individual needs
- Teachers recognize play as a primary context in which young children learn
- Teachers establish warm, caring and respectful relationships with children, families and colleagues
- Teachers regularly assess the children's development and the environment, and they self-reflect on their own practices (Gordon and Browne, 2016, *Beginning Essentials in early childhood education* 3e)

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8.7: Measuring High-Quality in Early Care and Education Classrooms

One of the characteristics of a high-quality early childhood program is the practice of continuously monitoring children's development, along with the environmental setting and teacher interactions. By evaluating the overall performance in these key areas, teachers, administrators and families can reflect, make necessary changes and improvements to support all students and families. There are numerous tools on the market that evaluate program quality. For the purpose of this text we will focus on just a few tools that are highly recognized and most often used in California to monitor quality practices in preschool programs.

The Environment Rating Scales (ERS)

The Environment Rating Scale is a standardized assessment tool that can help caregivers, teachers, and administrators improve the quality of their program. The ERS measure process quality .

Process quality consists of the various interactions that go on in a classroom between staff and children, staff, parents, and other adults, among the children themselves, and the interactions children have with the many materials and activities in the environment, as well as those features, such as space, schedule and materials that support these interactions. Process quality is assessed primarily through observation and has been found to be more predictive of child outcomes than structural indicators such as staff to child ratio, group size, cost of care, and even type of care, for example child care center or family child care home . ^[11]

There are 4 Environment Rating Scales:

1. The Infant and Toddler Environmental Rating Scale (ITERS) for programs serving young learners aged 6 weeks to 30 months
2. The Early Childhood Environmental Rating Scale (ECERS) for preschool programs serving children aged 3-5 years
3. The School-Age Child Environmental Rating Scale (SACERS) for afterschool programs serving children aged 5-12 years
4. The Family Child Care Environmental Rating Scale (FCCERS) for family childcare programs serving children aged 6 weeks to 12 years.

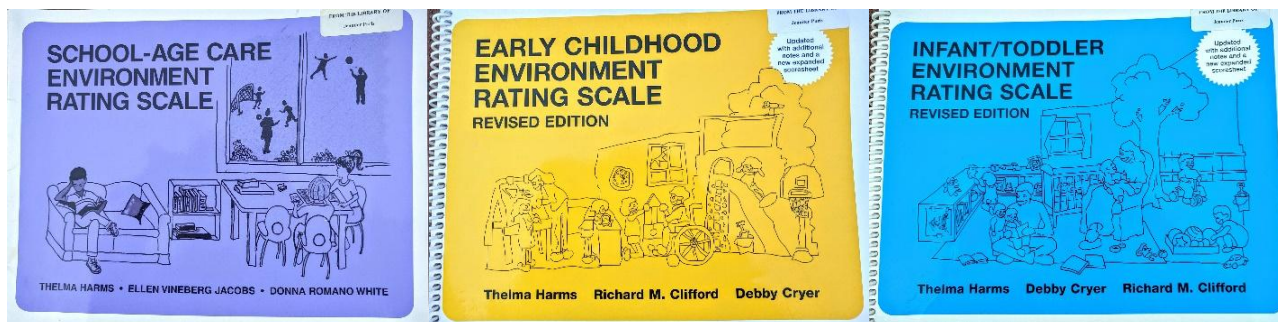


Figure 8.7.1: Rating Scale Texts ^[12]

Why Use Environment Rating Scales

The scales are used in a variety of ways including for self-assessment by center staff, preparation for accreditation, and voluntary improvement efforts by licensing or other agencies. For example, in the United States:

- Several states, including California , Massachusetts, Montana, Mississippi, Kansas, Oregon, Kentucky, New Mexico, Georgia, Florida, Wisconsin, and Nebraska have also initiated quality evaluation and improvement programs using our scales. Each state is tailoring its use of the scales to its individual needs and resources.
- The state of Arkansas has trained personnel, who do assessments and provide training and technical assistance so that childcare centers and homes can increase their quality of care. Another innovative feature of the Arkansas program is that parents who select childcare facilities with an average of 4.5 or higher on our scales are eligible for two times the state childcare tax exemption. Thus, both parents and providers are being rewarded for quality improvements that benefit the children.
- The state of Colorado uses the scales in a variety of program improvement and evaluation projects. For example, Denver has a quality improvement program that uses on site consultation and training based on scale scores. Many of the centers participating in this program serve poor and minority children and their families. The state of Colorado is currently considering a tiered reimbursement system using the scales.

- North Carolina also currently uses scale scores as part of their 5-star rated license system. Centers and family childcare homes are awarded either one or two stars based on compliance with licensing standards. Programs may voluntarily apply for an additional three stars based on a set of quality measures including the licensing compliance record, teacher and director education, and the levels of process quality as measured by the appropriate environmental scale. Only the lowest level of licensing is mandatory. However, an additional fee is paid to the provider of subsidized care for each additional star earned voluntarily.
- The Oklahoma 3-star tiered license incorporates an evaluation with the scales in the second tier as a basis for quality improvement, and provides technical assistance based on scores for meeting accreditation standards. Tiered reimbursement is a part of this system.
- Tennessee is now initiating a rated license system, based on North Carolina's experience. In their system, however, program evaluation is not voluntary, but is required yearly to create a "Report Card" that must be posted with the license so childcare consumers have access to reliable information on the quality of childcare they are using for their children. Tiered reimbursement will also be tied to scores on the scale.
- All the US military services have been using the scales routinely in their center and family childcare homes for program improvement and monitoring. The military child development system was recognized by Executive Order in 1998 for its high quality.
- Our environmental rating scales are widely used by programs as they prepare for accreditation. This is due to the fact that our scales use a format with detailed levels of quality that provides a blueprint for gradual change. The content of our scales is completely supportive of the various credentialing and accreditation programs.

The ERS Tool

As suggested by ERS, in order to provide high-quality care and education experiences to all children and their families, a childcare program must provide for the three basic needs all children have:

- Protection of their health and safety
- Building positive relationships
- Opportunities for stimulation and learning from experience

Let's take a closer look at how to use the Early Childhood Environmental Rating Scale (ECERS-3) for preschool programs serving children aged 3-5 years. The Scale consists of 35 items organized into 6 subscales: ^[13]

- Space and Furnishings
- Personal Care Routines
- Language and Literacy
- Learning Activities
- Interaction
- Program Structure

Within each subscale there are indicators that are arranged in a hierarchical order with basic needs at low levels and the more educational and interactional aspects at higher levels. The requirements for each indicator must be met before the next indicator is measured. If a requirement is not met, scoring then comes to a stop.

Scoring:

- 1 = inadequate
- 3 = minimal
- 5 = good
- 7 = excellent

Empirical Research

Empirical studies using the Early Childhood Environment Rating Scale – Revised (ECERS-R) tool have generally found positive associations between the quality of early childhood programs and child development.

The ECERS-R (1998) is the revised edition of the original ECERS (1980). It is currently being used in several major studies, including the Early Head Start Study (Mathematica Corporation), and Welfare, Children and Families: A Three City Study

(Columbia University, University of Chicago, and Harvard University). The original ECERS was used in the Head Start FACES study, in which over 400 classrooms are included nationwide. The preliminary results in all these studies show that the ECERS and the ECERS-R are performing very well.

Additionally, it should be noted that the ECERS and ITERS were used as the comprehensive quality measures in the National Child Care Staffing Study (Whitebook, Howes, & Phillips, 1989) and the Cost, Quality, and Child Outcomes Study (1995), the major studies of their time. The FDCRS was used in The Study of Children in Family Child Care and Relative Care (Galinsky, Howes, Kontos, & Shinn, 1994). In all of these studies, a relationship was found between higher scores on the ECERS and more positive child development outcomes in areas that are considered important for later school success. The effects of higher quality early childhood experiences have now been shown to last at least through the second grade of elementary school (Peisner-Feinberg, Burchinal, Clifford, Culkin, Howes, Kagan, Yazejian, Byler, Rustici, & Zelazo, 1999). Research is continuing to evaluate longer-lasting effects. ^[14]

ERS Strengths

The instrument has good test-retest reliability, high inter-rater reliability (Clifford et al., 2010), and many studies have demonstrated its predictive validity (Burchinal et al., 2008; Montes et al., 2005; Peisner-Feinberg et al., 2001). Furthermore, the results show that ECERS-R is a significant predictor of child development in two domains: physical health and well-being, and social competence.

ERS Limitation

While the ECERS-R is a useful tool to measure the quality of early childhood programs across various settings, there are some limitations. Because the Environmental Rating Scales were developed in the United States, the relevance to non-American cultural settings has been questioned (Dickinson, 2006; Mathers, Singler, & Karemaker, 2012). Some have criticized that the ITERS-R scale places too much emphasis on the structural aspects of childcare (Sanders & Howes, 2013; Vermeer et al., 2008), while others are concerned that the Rating Scales fail to measure the interactions between the teacher and children and families, which is considered to be key quality factors in childcare (Bisceglia, Perlman, Schaack, & Jenkins, 2009; Helmerhorst et al., 2014).

Although the Environment Rating Scales are highly regarded, there has also been some considerable criticism. For example, a closer look at the items in the ECERS-R reveals that some items may be less relevant than others in our study's setting—poor, rural villages in Indonesia. Item 27 outlines the provision of TV, video or computers for classroom activities. Item 3 describes the provision of soft furnishings such as carpeted space and cushions for children's relaxation and comfort. While all of these provisions would be great to have, they are often unfeasible in rural, resource-constrained environments. In over 3 weeks of field observation, we rarely saw soft furnishings—sitting on the floor for children and adults alike is the norm in rural Indonesia – even when soft furnishings are available. We did encounter one center with a computer lab during piloting of the ECERS-R but this was a state-of-the-art center where not one but three international donors had channeled funding. ^[15]

ECERS FAQ Find:

- When was the first ECERS tool published?
- Who typically uses the ECERS tool?
- Who administers the assessment tool?
- How can teachers prepare for an assessment?
- When was the last time the ECERS tool was updated?
- How many measures are there in the ECERS?

The Classroom Assessment Scoring System (CLASS)

Research shows that all children benefit from high-quality instruction and classroom interactions, regardless of language status, race/ethnicity, or special needs (August & Shanahan, 2006; Bowman, Donovan, & Burns, 2001). When teachers provide individualized support and guidance to the children in their classrooms, they contribute to each child's social and emotional development, which has been linked to their overall physical development and academic achievement. The CLASS tool showcases various strategies that teachers can implement to promote quality interactions. It is important to note that class does not favor any curriculum model over another.

The CLASS tool differs from other measurement tools that may address the content of the physical environment, available materials, or a specific curriculum. Although the physical environment materials and curriculum are important, the CLASS tool focuses more on the context of how teachers directly interact, engage and communicate with the children in their classroom environment. CLASS measures cooperative and creative learning experiences and focuses on the teacher's role in allowing children to be active participants in their own learning. More specifically, CLASS promotes social justice and equity, and has "indicators" to assess how a teacher develops a sense of community and empathy for others. Not only must the teacher consider the tangible environmental elements, they must consciously incorporate quality interactions. Teachers must ask questions and engage in thoughtful conversations that emphasize back and forth dialogue rather than one and done responses. Teachers must extend the children's vocabulary and create opportunities where children can use their expressive language skills. Lastly, teachers must provide positive feedback to children throughout the day and allow children to make choices.

Why Use the Classroom Assessment Scoring System (CLASS)

As advocates and educators, we know that engaging interactions and well-designed environments form the foundation for optimal learning to occur. High-quality preschool programs should strive to incorporate the following:

- well-managed and well-organized classrooms with clearly defined spaces
- support systems to enhance children's social and emotional development
- a variety of instructional materials that stimulate children's thinking and curiosity
- opportunities for authentic interactions and meaningful conversations
- a balance of teacher-directed activities and child-directed activities
- enhanced language and literacy implemented throughout the day
- opportunities for movement and classroom spaces that support kinesthetic learning

Research findings from over 3,000 classrooms found that children who were in classrooms that received higher CLASS ratings showed greater gains in social skill, language, early literacy, and math development. Furthermore, after a decade of research, crucial conclusions were made that suggest using the CLASS tool can not only improve the effectiveness of an individual classroom, it can also improve the program as well. Let's look at some reasons as to why you might want to use the CLASS tool:

1. Effective teacher-child interactions are an active and crucial ingredient for children's social and academic development.
2. Children in ECE settings are not consistently exposed to effective teacher-child interactions.
3. Initial evidence suggests thresholds for effective teacher-child interactions, as measured by CLASS, in promoting children's learning and development.
4. Quality improvement efforts that focus explicitly on teacher-child interactions maximize impacts for children.
5. Carefully designed and implemented professional development support can improve the quality of teacher-child interactions

The CLASS Tool

The CLASS Tool is divided into 3 Domains: Emotional Support; Classroom Organization; and Instructional Support. Each Domain has several Dimensions (see the chart below), and each Dimension has several Indicators that provide detailed descriptors of how a teacher should interact (Note: the indicators for each dimension are not listed in the chart below.)

Table 8.7.2: CLASS Tool Domains

Emotional Support	Classroom Organization	Instructional Support
1. Positive Climate 2. Negative Climate 3. Teacher Sensitivity 4. Regard for Student Perspective	1. Behavior Management 2. Productivity 3. Instructional Learning Formats	1. Concept Development 2. Quality of Feedback 3. Language Modeling 4. Literacy (optional)

Scoring

Scoring is based on a 7-point scale, with the "low range" being a score of 1 to 2, the "middle range" a score of 3 to 5, and the "high range" a score of 6 to 7. The higher the range in each dimension the better.

CLASS Strengths

The Classroom Assessment Scoring System (CLASS) tool is a systematic observation tool that can be used to measure the interactions between teachers and their children in typical classroom settings. The CLASS tool has also been used to assess classroom quality across diverse populations, including dual language learners (DLLs), children from migrant families, tribal populations, in addition to children with special needs and children with diverse cultural backgrounds (Downer et al., 2011). The CLASS tool is deemed both reliable and valid, and it provides preschool programs and individual classroom teachers with an opportunity to regularly monitor and evaluate themselves.

Formal assessments can be made by certified CLASS evaluators and the results are shared with the teacher and program with the intent of finding strategies on how to improve interactions. The tool can also be used informally. Teachers can review each domain, dimension and indicator, and then reflect on their own practices to find ways they can incorporate more intentional interactions.

CLASS Limitations

Even though every CLASS observer is formally certified, there will be small, systematic differences in their scoring. Some observers may tend to give slightly higher scores, while others may tend to be slightly more critical. Although slight differences fall within the threshold for “reliability,” inaccurate results have been noted. One other limitation is that there is little emphasis on structural quality. More specifically, CLASS does not assess the physical environment or materials, and it is not designed to review program safety.

Additional Methods, Tools and Techniques to Ensure High-Quality Practices

Program Accreditation

Both the [National Association for the Education of Young Children](https://www.naeyc.org/) (NAEYC) (link: <https://www.naeyc.org/>) and the [National Early Childhood Program Accreditation](https://www.naeyc.org/accreditation) (NECPA) ^[16] (link: <https://www.naeyc.org/accreditation>) are nationally recognized agencies that set a standard of excellence for overall program quality. Programs that pursue accreditation must meet key criteria expectations in areas such as “the learning environment, teacher and child interactions, staff qualifications, professional development, and family engagement” (Center for America, 2017, p. 6). Both NAEYC and NECPA offer training, technical assistance, and consulting services to support early care and education programs that not only want to meet but exceed standard industry practices. Accreditation is a voluntary endeavor that requires programs to undergo a self-study as they prepare for the validation process. Programs that achieve accreditation status must be re-assessed every three years to demonstrate a continued commitment to high-quality practices.

The Quality Rating and Improvement System (QRIS)

The Quality Rating and Improvement System (QRIS) is a systemic approach to assess, improve, and communicate the level of quality in early care and school-age care programs. ^[17] The main purpose of the QRIS is to improve and standardize the quality of care in all facilities in the state, and to make childcare more accessible and affordable for families. In California, the QRIS is used to:

- Assess program quality comparably across provider types (publicly and privately funded, centers and family childcare homes) throughout the state
- Align program standards with early learning and practitioner standards
- Support continuous quality improvement for participating programs and their staff
- Provide families with information about program quality to assist them in making informed choices. ^[18]

The Caregiver Interaction Scale (CIS)

In the late 80's, Arnett released the Caregiver Interaction Scale (1989) to assess a global rating of caregiver sensitivity and responsiveness in both early care and education settings and family childcare environments. The tool focuses on caregiver / teacher emotional interactions and measures several items including sensitivity, harshness, detachment, and permissiveness. Items are rated on a 4-point scale. The scale has limitations as it captures only one aspect of process quality, and thus it is suggested that additional assessments be used to measure more structural dimensions.

NAEYC Position Statement on Importance of Environmental Assessments

The National Association for the Education of Young Children^[19] and the National Association of Early Childhood Specialists in State Departments of Education take the position that policy makers, the early childhood profession, and other stakeholders in young children's lives have a shared responsibility to:

- Construct comprehensive systems of curriculum, assessment, and program evaluation guided by sound early childhood practices, effective early learning standards and program standards, and a set of core principles and values: belief in civic and democratic values; commitment to ethical behavior on behalf of children; use of important goals as guides to action; coordinated systems; support for children as individuals and members of families, cultures, and communities; partnerships with families; respect for evidence; and shared accountability.
- Implement curriculum that is thoughtfully planned, challenging, engaging, developmentally appropriate, culturally and linguistically responsive, comprehensive, and likely to promote positive outcomes for all young children.
- Make ethical, appropriate, valid, and reliable assessment a central part of all early childhood programs. To assess young children's strengths, progress, and needs, use assessment methods that are developmentally appropriate, culturally and linguistically responsive, tied to children's daily activities, supported by Professional development, inclusive of families, and connected to specific, beneficial purposes: (1) making sound decisions about teaching and learning, (2) identifying significant concerns that may require focused intervention for individual children, and (3) helping programs improve their educational and developmental interventions.
- Regularly engage in program evaluation guided by program goals and using varied, appropriate, conceptually and technically sound evidence to determine the extent to which programs meet the expected standards of quality and to examine intended as well as unintended results.
- Provide the support, Professional development, and other resources to allow staff in early childhood programs to implement high-quality curriculum, assessment, and program evaluation practices and to connect those practices with well-defined early learning standards and program standards.



Figure 8.7.2: In the right environment children thrive^[20]

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8.8: Conclusion and References

Research suggests that an enriched learning environment, along with meaningful interactions and experiences can significantly enhance a child's overall development (Center for American Progress, 2017). Not only do children deserve high-quality learning experiences, parents need the assurance of knowing that their children are in safe, healthy and nurturing environments. Unfortunately, providing high-quality early childhood education services can be particularly challenging especially for the estimated four million children who are living in poverty and considered at-risk. Thus, the achievement gap continues to be a concern and the quest for quality is ongoing. As early childhood educators, we must strive to regularly observe, collect data and assess our programs, and reflect on our teaching practices to be more proactive in our quest for quality. While a score is important to look at and improve on, it is not the end all, be all, it merely serves to guide our practices as it relates to a whole picture. Ongoing observation and documentation help to keep us informed of how to best serve the children and families in our care.

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CHAPTER OVERVIEW

9: Using Observation Methods, Tools and Techniques to Gather Evidence

Observing children as they play, learn, and socialize with others is an integral part of every early educator's daily routine. According to the California Preschool Program Guidelines, when early caregivers and preschool teachers “regularly observe and document brief, subtle moments of children’s learning through play, those records help parents and others understand how useful and important play is in helping children to learn and grow” (p. 32-33). In this chapter, we will examine the various observation methods, tools and techniques that can be used to gather information about the children in your care. Although teachers may favor one method over the other, it is recommended that teachers utilize several methods, tools and techniques so that they can gather a well- rounded perspective of each child. To truly understand the “whole child” it is important to realize that observation and documentation is an ongoing process that begins with gathering “baseline data.”

[9.1: Taking the First Step - Gathering Baseline Data](#)

[9.2: Understanding the Child](#)

[9.3: Let's Get Started](#)

[9.4: A Closer Look at Observation Methods, Tools and Techniques](#)

[9.5: Conclusion and References](#)

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9.1: Taking the First Step - Gathering Baseline Data

In order to truly measure the learning, growth, and development of a child over time, there needs to be a *point of reference*, or a starting point. Baseline data provides a starting point. As recommended by the California Department of Education, in the Desired Results Developmental Profile (DRDP), to establish a baseline, children should be observed “within 60 calendar days of enrollment and [formally assessed] every 6 months thereafter” (DRDP, 2015, p. ii). More specifically, any time a child starts your program, or any time you introduce a new concept, topic or theme, it would be beneficial to gather baseline data. With each observation the goal is to track - ***What the child can do***. Then, as we review each observation, we further consider ***what the child has the potential to do***. Knowing specific details about how the child responds to the activities we have planned, and how the child is interacting with their peers, allows intentional teachers to make informed decisions that are in the best interest of the child. Baseline data allows us to create individualized activities and enriched learning opportunities and set up engaging environments where each child can feel empowered, challenged and well cared for.

Here is an example:

Aaron is 3.5 years old and this is his first time in preschool. To see whether Aaron can write his name, you would set out writing materials (markers or crayons, paper and possibly stencils), and you would observe Aaron at the writing center. To gather baseline data, you could use an Anecdotal Note to record how Aaron holds the markers – is he using the palmer grasp or the pincher grasp? Is he using his right or left hand? You would also want to note what Aaron created - did he write his name, draw a picture or scribble? If Aaron scribbled, he might not be ready to use lined paper to write his name or to journal a story. Rather than planning an activity that would require Aaron to write between the lines, it may be more beneficial to plan activities that would help him further develop his fine motor skills. Perhaps you would set out activities that would build his pincher grasp like play dough or stringing beads. Once you observe Aaron’s progression and his “signs of readiness”, then you would reintroduce writing between the lines.

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9.2: Understanding the Child

Many of the same tools and techniques you use to gather baseline data, you will continue to use to support the whole child. This includes screening, planning curriculum, and assessing development. Every observation you complete provides valuable information that you can use to be more intentional and more responsive. When we observe the children in our care, we can learn about their:

- interests, abilities and preferences
- developmental skill level (cognitive, language, social, emotional, physical)
- how they strategize in social situations
- how they approach learning opportunities
- personality and temperament

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9.3: Let's Get Started

Whether you are doing a planned observation, or you decide to do a spontaneous observation, you will need some essentials. An intentional teacher is a prepared teacher, and here are a few things you will need:

1. Something to write on – paper, sticky notes, color coded index cards, clipboard, notebook
2. Something to write with – colored ink pens, sharpie markers
3. Something to record with – photo camera, video camera, tape recorder, printer
4. Something to store your documentation in – a filing cabinet, accordion file folder, portfolio
5. Blank observation tool templates – checklists, frequency counts, ABC, anecdotal notes
6. Some extras – tape, stickers, paper clips, stapler, batteries, dictionary

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9.4: A Closer Look at Observation Methods, Tools and Techniques

No single observation can give you all the information you will need about a child's development. In order to truly understand a child's unique attributes, preferences, personality and strengths, you must observe them consistently, using several documentation tools and techniques. Each observation method has strengths and limitations. In this section, we will review some of the more commonly used techniques and tools that teachers use to gather objective observation evidence: Running Record; Checklists; Frequency Count; Anecdotal Record; Work Sample; Learning Story; and Technology.



Figure 9.4.1: Notetaking is one of the oldest forms of recording observations. (Public Domain; [Glenn Carstens-Peters](#) from [Unsplash](#))

Running Record

One of the oldest observation methods used in early child education is the Running Record. Running Records are considered by some as an “informal method” of observation as compared to Narrative Description or Specimen Records which are considered to be a more “formal method” of collecting data. The primary difference between the two methods is that with a Running Record, evidence is gathered in a more spontaneous (informal) manner as it occurs, whereas with a Narrative Description a (formal) plan would be arranged in advance, prior to the observation. More specifically, you would schedule a day, time and setting, you would select a specific child or group of children, and you would decide on the purpose, reason or focus of your observation (e.g. cognitive skills, social interactions, play patterns). Both methods provide rich, detailed evidence and both methods provide written accounts of everything you see and hear a child doing during a specific timeframe (Bentzen, 2009).

For the purpose of this text, we will use the term Running Record and recommend that you, as an intentional teacher, conduct Running Records (whether spontaneous or planned, informal or formal) as part of your regular or routine observations. The primary goal for using a Running Record is to “obtain a detailed, objective account of behavior without inference, interpretations, or evaluations” (Bentzen, 2009, p.112). You will know you have gathered good evidence when you can close your eyes and you can “see” the images in your mind as they are described in your Running Record (Bentzen, 2009).

Collecting Your Data

All you need is time, paper and a pen to gather your observation evidence. The goal with a running record is to write down everything you see and hear - exactly as it occurs, without adding any comments or attaching any opinions. As the saying goes, “just the facts, ma’am!” With the Running Record format, not only will you highlight children's behaviors, you will record the “setting, situation and sequence” in which the behavior occurred. Be as descriptive as possible and yet be as concise as possible. Children move quickly, so you must write quickly. When conducting a running record, you need to be out of ratio. You are to step back and observe from a distance. Do not interfere with the child's natural play, do not ask questions and do not run after them. Be as invisible as possible.

Organizing your Data

As you collect rich, detailed data throughout the school year, you will begin to recognize patterns of development, and you will see each child's unique attributes, personalities, and abilities as they emerge. Be sure to date all your running records; having 12-24 children in your classroom can add up to a lot of running records. You will need to store your running records safely in a portfolio or file folder. When it comes time to assess a child's development, you will be able to look back and review all the evidence you have collected and to monitor the child's progress over time.

Note: A Running Record is an ideal observation method for “students”. Teachers may not always have the time or staff coverage to conduct a Running Record.

Table 9.4.1: Running Record

Advantages	Disadvantages
1. Provides detailed data about the who, what, where, and when 2. Evidence is documented as it occurs, in a sequence 3. Provides objective and descriptive evidence 4. Appropriate for gathering baseline information about the child's interests, abilities and skill level 5. Ideal for tracking a child's development over time 6. Less structured, more free flowing 7. Evidence can be gathered formally or informally 8. Interpretations and reflections can be added later	1. Time consuming 2. May be difficult to keep up and follow along as children move quickly from one activity to another 3. Not a practical technique for teachers who are in ratio 4. Behaviors may not be typical for that observation day as compared to other days

Let's Practice Gathering Evidence

Example 1:

Running Record: On 7/2/2019, Jorge played in the sandbox for 20 minutes.

What did you "see" with this example? What was the setting, situation and sequence of events?

What did you learn about Jorge?

Was the evidence objective? Was the evidence descriptive?

Let's try again.

Example 2:

Running Record: 7/2/2019. Time: 10:10am

During outside play and exploration, the following activities were available: bikes, sandbox, sensory table with goop, hula hoops, balls and a reading area with a basket of books. Jorge played in the sandbox for 20 minutes. With his left hand, Jorge dug a hole using a shovel. Jorge asked Julissa if he could have the dinosaur, "When you are finished, can I have the dinosaur for my cave?" Julissa handed Jorge the dinosaur and said, "Can I see?" Jorge nodded his head up and down.

At 10:30am, the teacher announced that it was time to clean up. Jorge stood up, dropped his shovel, ran over to the door and got in line. While in line, Jorge waved his hands and said "Come on Max. Come on. Here. Come here." Max ran over and stood next to Jorge in line.

What did you "see" with this example? What was the setting, situation, and sequence of events?

What did you learn about Jorge?

Was the evidence objective? Was the evidence descriptive? ^[22]

Running Record Template #1

Date:

Start Time:

End Time:

Setting:

Activity Area:

Who did you observe:

Running Record

Running Record Template #2

Date:
Start Time:
End Time:
Setting:
Activity Area:
Who did you observe:

Running Record	Interpretation
----------------	----------------



Figure 9.4.2: When is a frequency count used? Whenever you need to tally and record how many times a behavior is occurring. ^[23]

Frequency Counts (Time or Event Sampling)

A Frequency Count is an informal observation method that is used to gather information about a child's interests, social interactions, play patterns, and temperamental traits. As the teacher observes the children at play, a tally mark is made every time the noted behavior or action occurs within a set timeframe. Frequency Counts are also used to track undesirable or challenging behaviors, as well as ideal or positive behaviors.

Collecting your data

To create a Frequency Count, you must first decide on what social interactions, behaviors, interest areas, or types of play you want to monitor. You may decide to track your child during one focused activity or timeframe, or you may map out what a typical day might look like for your child and track all the interactions and experiences they engage in throughout the day. Either way, as you observe your child, you will make a tally mark every time they play in a specified area or display one of the action items as listed on your Frequency Count.

Here are some examples of how you might use a Frequency Count to gather data:

1. Sue has been hitting a lot lately and displaying other challenging behaviors . You will want to track how many times she hits in a typical day, along with any other challenging behaviors. You will also want to track where the incidents are occurring – are there more incidents while inside the classroom or are things happening during outside play? You will want to look at when the incidents are occurring most often– are there more incidents earlier in the day or later in the day? You may want to observe what is happening at drop-off time, mealtime and at naptime. Lastly, you may want to track who Sue is socializing with and how she plays with others. Does Sue display a consistent play pattern (parallel play, cooperative play, onlooker play)?
2. Thomas is a new student and his mother wants to know how he is doing. You may want to observe which centers Thomas goes to most often throughout the day and track his interests. You may also want to track whether he plays alone or with other children.
3. You and a child in your class are constantly butting heads . How can you create a supportive environment and provide a “goodness of fit?” You may need to track the child's temperamental traits and observe how the child approaches activities and how they respond to social situations.

Organizing Your Data

After you have collected all the data for that timeframe, count the tally marks. What can you interpret from this data? What areas or action items received a high number of tally marks? What areas or action items received a low number of tally marks? Do you see any patterns? As you consider those questions, reflect on a plan of action that you might use to further support that child's development.

Table 9.4.2: Advantages and Disadvantages of Frequency Data

Advantages	Disadvantages
1. Quick and easy to use, and no training is required 2. Can be personalized or designed to gather specific baseline data (play patterns, challenging behaviors, social situations, temperamental traits) 3. Provides immediate quantifiable data 4. Ideal for tracking behaviors over time and for noting an increase or decrease of incidents 5. Can be useful when planning behavior modification strategies 6. Data can be graphed or charted to find consistent patterns	1. Does not provide rich details or context like anecdotal notes or running records 2. There is no clear sequence of events regarding certain actions or behaviors 3. (Although the behavior is tracked, information about the antecedent and the consequence is missing) 4. Does not provide qualitative evidence 5. Results may be misleading

Frequency Count to Track Areas and Interests				
Child's Name:				
Observation Date:	INDOOR CYCLE		OUTDOOR CYCLE	
	Start Time:	End Time:	Start Time:	End Time:
Areas and Interests	Tally Marks	Total	Tally Marks	Total
Art				
Blocks / Legos				
Library / Reading				
Dramatic Play				
Math				
Writing / Journaling				
Science / Nature				
Sensory				
Quiet Corner				
Computer Lab				
Music / Movement				
Climbing Structure				
Bikes				
Organized Games				
Super-Hero Play				
Rough and Tumble				
Running / Chasing				

Frequency Count to Track Play Patterns and Social Interactions				
Observation Date:	INDOOR CYCLE		OUTDOOR CYCLE	
	Start Time:	End Time:	Start Time:	End Time:
Play Patterns and Social Interactions	Tally Marks	Total	Tally Marks	Total
Solitary Play: Plays alone – does not seek out peer social interactions				
Parallel Play: Plays next to someone, using similar materials but did not directly interact				
Associative Play: Shares materials and talks to others while engaged in an activity				
Cooperative Play: Plays with peers in an organized manner with rules, taking turns				
Peer Interactions: Plays with Boys				
Peer Interactions: Plays with Girls				
Interactions with Teacher: Talks to teacher / shares ideas / asks for help				
Bystander: Is yelled at, hit or involved in an altercation / incident				
Instigates / Initiates Disputes: Hits, takes toys, yells at peers, causes an altercation / incident				
Problem solves: Communicated and resolved disputes without teachers help				
Teacher Interactions: Teacher needed to help resolve peer disputes / altercations				

Frequency Count to Track Temperament and Behavior				
Observation Date	INDOOR CYCLE		OUTDOOR CYCLE	
	Start Time End Time		Start Time End Time	
Temperament Traits and Behavior	Tally Marks	Total	Tally Marks	Total
Appears Highly Active – Rarely sits still, moves around, fidgets A LOT, races through activities				
Appears Easily Distracted Changes activities before finishing task / looks around a lot				
Appears Focused Completes tasks before moving on to the next task / can tune others out				
Reacts Intensely Has high emotional energy when reacting to others – yells/cries				
Remains Calm Able to transitions and go with the flow/does not react to altercations				
Appears Sensitive Squirms when touched, holds ears, squints, doesn't seem to like to touch certain textures				
Appears Cautious Hesitates or needs time to warm up to people and activities before joining in				
Appears to be in a good mood Smiles/ laughs often, cooperates with others and seems pleasant				
Appears Moody Has difficulty making transitions, displays highs and lows, rarely smiles when interacting with others				

Checklists

Checklists are an efficient and practical way to collect information about a child's development. Checklists are based on "developmental norms" as determined by developmental theorists. With each age range, there are certain expectations and skills

that a child should be able to achieve. Checklists are designed to track a child's competencies in all the developmental domains including physical, cognitive, language, social and emotional. With a checklist, teachers can easily see what a child can do, as well as note what areas of development need further support. Teachers can create their own checklists based on certain skill sets, or they can download a formal developmental milestone checklist from a reputable source to look at a child's full range of development. Checklists can be used to track a large group of children or an individual child.

Collecting your data

Whether you design your own checklist or download one, use it regularly to collect data. The checklist can be utilized in two ways:

1. You can observe a child on a specific day while they are engaged in an activity (either child-directed or teacher-directed). As you observe, you will check off the skills or milestones that the child can do on that day, at that moment.
2. You can also review data from other observations (e.g. running records or anecdotal notes, work samples) that you collected, and ADD any other skills or milestones that were mastered during those previous observations.

*Note: It is vital that you note the dates that you observed the skills being mastered. A check mark alone will limit the reliability and validity

Organizing your data

Schedule a day and time to regularly review your observation data. Data collected from other observations (mastered milestones and developing skill sets) can be added to the checklist so you can clearly see a child's progress over time. You may use colored pens to track all the different dates that milestones were achieved. As you review the checklist, what can you interpret from this data? Does the child demonstrate strengths in any of the developmental domains or areas of learning? Which milestones and skills need further support? As you consider those questions, reflect on a plan of action that you might use to further support that child's development. How can you provide opportunities for the child to gain more practice? What adjustments need to be made to make the activity more challenging? What extensions can be added to continue the learning pattern? ^[24]

Table 9.4.3: Advantages and Disadvantages of Checklists

Advantages	Disadvantages
1. Ideal for tracking a child's progress over time 2. Different observers (the teacher, assistant or a support team) can check off skills that they observe the child doing 3. Checklists can be created to measure specific areas of development, or a subset of developmental skills 4. Checklists can be used to observe a group of children or an individual child 5. Checklists are quick and easy to use, and no training is required 6. Checklists can be used in conjunction with other observations 7. Checklists highlight the developmental strengths a child has mastered, as well as those skills that need further support 8. Developmental Milestone Checklists are readily available online through various agencies (i.e. Center for Disease Control) 9. Data can help plan curriculum activities	1. Checklists do not provide rich details or context like anecdotal notes or running records 2. There is no clear sequence of events to regarding certain actions or behaviors 3. Checklists focus on developmental norms and typical development with no regard for environment, family influences, cultural influences and individual development 4. Teachers tend to focus on the skills and milestones that haven't been mastered, focusing on the deficits rather than highlighting the strengths. This can make the child and parents feel as if they have failed or add unnecessary stress 5. Checklists must be updated regularly using other observation methods

Checklist for Physical Milestone

Perceptual Movement

Skills	Can Do	Needs Further Support	Date and Evidence
Moves in a zig-zag pattern – able to change directions with ease			
Plays follow the leaders and mirrors others movements			
Moves body to music cues			
Speeds up and slows down while running or riding bike			

Gross Motor Movement

Skills	Can Do	Needs Further Support	Date and Evidence
Completes tasks on an obstacle course			
Changes directions and stops quickly while running			
Pumps legs on a swing			
Runs and uses arm and legs in opposition			
Climbs			
Walks up and down stairs with one foot on each stair step			
Hops on one foot			
Kicks balls			
Catches and throws (bean bags and balls)			
Pedals a 3-wheeled bike (tricycle)			
Bounces a ball several times			
Walks along a balance beam			
Jumps up and down, jumps forward using arms			

Fine Motor Movement

Skills	Can Do	Needs Further Support	Date and Evidence
Cuts with scissors			
Uses writing utensils (markers, crayons, pencils) to scribble			
Prints letters, numbers			
Uses stamps and stamp pad			
Strings beads			
Pours liquid into cup			
Manipulates, moves and picks up small objects			
Uses utensils to feed self			
Buttons and zips			
Peels a banana or orange			
Opens and closes a Ziploc baggie			
Scoops and pours materials (sand, dirt, rocks, beads)			

Anecdotal Records

An Anecdotal Record is “an informal observation method often used by teachers as an aid to understanding the child’s personality or behavior. It provides a running account of behavior that is either typical or unusual for the child” (Bentzen, 2009, p. 178). Anecdotal Records, also referred to as “anecdotal notes,” are direct observations of a child that offer a window of opportunity to see into a child’s actions, interactions and reactions to people and events. An Anecdotal Record is an excellent tool that provides teachers with a collection of narratives that can be used to showcase a child’s progress over time. As compared to a Running Record, Anecdotal Records provide brief notes that are focused on a specific event or activity.

Collecting Your Data

To gather effective observation evidence, you need to include the following components:

1. Accurate and specific details of the event (vivid descriptions exactly as you see and hear them happening - do not summarize, assume or make judgments)
2. The context, setting and situation that surrounds the event (the where, when, who, what, and how)
3. Objective facts about the child’s behavior and interactions (report actions and conversations)
4. Write records in the past tense

Here are some examples of observation evidence you might want to gather:

- Social interactions with peers
- Everyday routines, like mealtime and transition times
- How they utilize materials at the various centers (library, block, math, science, art, music)
- How they engage in teacher-directed activities (structured learning opportunities)
- How they engage in child-directed activities (open exploration opportunities)
- How they are inside and how they are outside

Organizing your Data

Once you have completed the Anecdotal Record you will take a moment to interpret the data. You will look for patterns and you will note whether the data reflects typical or unusual behavior for the child. To measure a child's developmental progress, you will look for their strengths (skills and milestones that have been mastered) and their needs (skills and milestones that the child needs further support with). The summary notes help you to clarify instructional recommendations (adjustments that you will make to the environment to accommodate the child's individual learning style). The notes you take can help you generate developmentally appropriate lesson plan activities and interactions. All Anecdotal Records need to be dated and stored safely in the child's portfolio or file folder.

Table 9.4.4: Advantages and Disadvantages of Anecdotal Record

Advantages	Disadvantages
1. Provides vivid details about the who, what, when, where and how 2. Takes less time to write up an observation as compared to using Running Records 3. Evidence is documented as it occurs, in a sequence 4. Provides objective and descriptive evidence 5. Interpretation notes can be added afterwards 6. Evidence can be gathered formally (planned) or informally (spontaneously) 7. No special training is required 8. Provides qualitative data over time and is helpful in tracking changes in a child's development over time	1. Data can be tainted if it is not written in the moment 2. Focuses on one event, situation or behavior at a time and can miss or overlook important information 3. Does not provide quantitative data results 4. May not always report a child's typical pattern of development or behavior



Pin It! Writing an Anecdotal Note

Watch this video to learn [how to write an anecdotal note](https://www.youtube.com/watch?v=GsXvbflrLu4&t=92s) :

<https://www.youtube.com/watch?v=GsXvbflrLu4&t=92s>

Watch this video to learn [how to use an anecdotal note](https://www.youtube.com/watch?v=KAczTiO1rUg&t=3s) :

<https://www.youtube.com/watch?v=KAczTiO1rUg&t=3s>

Anecdotal Note Template

*As you gather evidence, focus on 1 specific activity. Record what you see and hear. NO INTERPRETING!

Child (Children):

Date:

Start Time:

End Time:

Setting: Inside / Outside

Center or Exploration Area:

Activity:

Materials Used:

Open-Ended
Directed

Product

Teacher-Directed

Child-

What do you see and hear:

|



Figure 9.4.3: A Child's Masterpiece. [25]

Work Samples

Teachers have been collecting pieces of children's artwork and posting them on the classroom walls forever. Not only do the children enjoy seeing their work of art on display, parents appreciate seeing their child's work as well! To create an official work sample however takes more effort than hanging a picture on the wall. What exactly is a work sample? A work sample is a tangible piece of evidence that showcases a child's effort, progress and achievement. More specifically, not only does a work sample highlight the final product, it can highlight the process as well, by highlighting the child's problem-solving efforts, experimentation methods or collaboration skills. Work samples are authentic artifacts that provide information about the child's learning experience.

Collecting your data

Work samples can be gathered throughout the school year. Typically, you would collect a variety of samples that highlight the child's overall development in each of the developmental areas: Physical; Cognitive; Language; Social -Emotional. More specifically, you might include a child's drawing or painting, a writing sample from their journal, a cutting sample, or photographs of the child engaged in activities such as building a block tower or sandcastle or riding a bike.

Organizing your data

Whether you post a work sample on the classroom wall (using a documentation board) or you collect a sample for a child's portfolio, you must add documentation. Not only will documentation help families recognize the value of play, it reinforces the concept that every activity is an opportunity to learn. For accuracy, be sure to include the following information: Child's Name; Date; Setting; and an Anecdotal Note with a description about how and why the sample was collected. Work samples should be organized in a chronological manner to showcase progress over time. Be sure to store work samples in a safe place like a file-folder or portfolio, or electronically in a computer file.

Table 9.4.5: Advantages and Disadvantages of Work Samples

Advantages	Disadvantages
1. Provides tangible/ visible evidence that teachers can use to track a child's learning, growth and development over time 2. Parents and children both enjoy seeing the work on display 3. Provides authentic documentation which is ideal for assessment 4. Teachers can use information to plan and adjust curriculum to help children achieve their learning goals 5. Families can see how children learn through play 6. Children can share their insights as to how they created the work sample and offer their perspectives as to what they were thinking (authentic evidence) 7. Children enjoy seeing their work on display and they can feel empowered when their work is valued	1. Can be time consuming adding anecdotal documentation and creating documentation boards 2. Requires ample storage space 3. Requires a financial investment in technology (camera, video or audio recorder) 4. Concerns over confidentiality and privacy when using photos, audio or videos

Work Sample Template

(insert a photo of the work sample)	
Child:	
Date:	Time:
Setting: Indoor or Outdoor	Center or Play Area:
Activity:	
What activity choices were available that day:	
Anecdotal Notes: (objective facts, vivid and descriptive details, concise observation information)	
Developmental Milestones that were supported:	
1. 2. 3.	
Quotes / Child's Perspective	

Learning Stories

In an article published in NAEYC's Teaching Young Children, Judy Pack shares her thoughts on Learning Stories, "I like to think of it as observing small moments that provide big opportunities." [26]

As compared to Running Records or Anecdotal Notes, a Learning Story is an observation method that is written in a narrative story format to highlight a child's learning. The Learning Story communicates more than facts about how a child approaches or accomplishes tasks, it spotlights key moments in a child's day and focuses on their strengths. When writing a Learning Story, a teacher not only writes down what she saw and heard, she can also write down what she thought about while she watched the child play. More than that, this method encourages the child and their families to be active participants in the reflective process. When the teacher shares the Learning Story with both the child and family members, they can add their comments, ask follow-up questions and make suggestions on how to move forward based on what was reported in the Learning Story. One unique aspect of Learning Stories is that when used regularly, they can help teachers connect to families and build strong, respectful relationships. [27]

Gathering your data

Whether you plan an observation, or you spontaneously watch a child as they play, and whether you observe during a teacher-directed activity or during a child-directed moment, you can gather some suitable evidence for your Learning Story. As you watch and listen to a child at play, you can take some pictures and jot down some objective and descriptive facts that you will use to write a story. As suggested by Park (2016), if you want to learn about a child's interests and capabilities, and how they process information; you will want to watch the following:

- Engagement: How long does the child stay focused and engaged in an activity?
- Intentionality: Does the child have a goal in mind or express a plan of action?
- Relationships: Does the child interact or connect with others?
- Learning disposition: Does the child have a particular approach to figuring things out or a preferred style of learning? [28]

Organizing your data

Whether you want to write a short paragraph or a full page, there are some key components that you must include in your Learning Story. We will refer to the EarlyWorks tool and the guidelines as recommended by Tom Drummond to write up your observation data. [29] Your Learning Story should include the following:

1. A Title – All good stories have a title that draws the reader in. Titles can act as a reminder of the content of the learning story, making it easy for educators to revisit at a later time.
2. Photos – Learning Stories should have at least one photo. Visual images evoke emotion and a connection to the story.
3. Narrative – This is where the storyteller (you) describes what is seen and heard. It is best to write in the first person, using "I...". The narrative is the body of the story and highlights authentic observation evidence (facts and vivid details).
4. What it means – This is where the storyteller (you) interprets the learning that took place. It is best to write in the second person, using "You...".
5. Opportunities and Possibilities – This is where you reflect on planning for the next step and building on what the child knows.
6. Family & Child's Voice – The child's family is encouraged to provide their understanding of the story. Families can create stories and provide valuable insight into the learning that happens at home. Children can also share their perspectives. [30]

*Note: A Learning Story Template is available

Table 9.4.6: Advantages and Disadvantages of Learning Stories

Advantages	Disadvantages
1. The child receives positive messages that their ideas and way of thinking are valued and they enjoy hearing stories about their successes 2. The teacher, child and family have an equal opportunity to reflect on the child's thinking and learning 3. The stories provide insight into the best way to plan for a more meaningful curriculum. 4. The stories capture moments in a child's daily life that can be used with other observation tools to create a comprehensive profile on a child 5. Provides authentic information about a child's strengths in a friendly and personal format 6. Informs families how children learn through play and how they are natural learners, eager investigators, and problem solvers. 7. Opens a door for respectful conversations with parents about school experiences	1. Can be time consuming 2. Can be difficult to remain objective 3. Focuses on one event, situation or behavior at a time and can miss or overlook important information 4. Does not provide quantitative data results 5. May not always report a child's typical pattern of development or behavior

Learning Story Template

Learning Story Title:
Child: Date: Time: Setting / Location:
Narrative: (I observed you today / I saw you / I heard you say / You played / You explored)
Reflection: (I wondered what you were thinking / I thought about...)
Major Milestones: (Here are some of the milestones you achieved today...)
Next Steps: (To extend your play and learning....)
Question to family:

Technology

Finding ways to utilize technology into regular routines can make collecting observation evidence much more efficient for busy teachers. Photographs, video, and audio recordings can authentically capture children's explorations, investigations, play and learning experiences in the actual moment. With this type of documentation, teachers can replay key moments in a child's day to

look for specific interactions, play patterns, developmental milestones, struggles and accomplishments. With this technique, teachers can also listen for language development by recording actual conversations that children are having with their peers. Teachers can also monitor how children problem solve and can tape special moments as well as capture every day moments. As with work samples, teachers can share their observation evidence with the children. Children are fascinated with seeing and hearing themselves. This type of documentation provides the most authentic evidence of all the observation methods.

Collecting your data

There are numerous ways to incorporate technology into your classroom. It is important to keep in mind that each early care and education program would have their own protocol, policies and procedures regarding the use of technology to document children's learning, growth and development, so be sure to verify what you can and cannot do. Here are a few suggestions that you may want to incorporate:

- Use a camera, laptop, tablet, or smartphone to record observations and take pictures
- Ask a child to dictate a story and you can type it up on a computer or use an audio recorder
- Scan or make copies of children's work, such as drawings or writing, to create a visual timeline that shows a child's skill development over time.
- Use email or a parent communication app to post work samples
- Use voice-to-text software to document important discussions. For example, children can explain how they created their piece of art.
- Take pictures of three-dimensional work. For example, woodworking projects, block towers, sandcastles, and culinary creations.
- Film dramatic plays and musical performances that the children produce.
- Use a video camera to document how children are progressing with their developmental milestones in each of the domains. For example, look at playful interactions to track social-emotional development; watch children on the playground to track physical development; observe how children tackle science or math activities to track cognitive development. ^[31]

Organizing your data

Observation data can be conveniently stored on a computer and each child can have their own digital portfolio or file folder. For every child, you would include photos of them at play, photos of their work samples, and any audio recordings or video clips that you may have collected (as suggested above). When using smartphones to take photos or videos, you can easily upload information to your computer or transfer information to other devices. Some teachers may want to use an app to formally organize observation evidence, and some schools may purchase a program that links families to daily observations. Some centers may even use an electronic assessment program (e.g. the Desired Results Developmental Program - DRDP) to track children's developmental progress and teachers would regularly upload observation evidence as part of the assessment process. Here are a few added suggestions on how you can organize and use stored electronic observation evidence:

- Photos can be scanned, printed and posted in the classroom
- A photo slideshow can be created for family nights or as a screen saver
- The children can watch a video montage of a themed project they completed
- Children can look at "old" photos to monitor their own developmental progress and can make comments regarding their work, their thought process and their developmental outcomes. ^[32]

Table 9.4.6: Advantages and Disadvantages of Technology

Advantages	Disadvantages
1. Provides tangible/ visible evidence that teachers can use to track a child's learning, growth and development over time 2. Parents and children both enjoy seeing the work on display 3. Captures authentic documentation which is ideal for assessment 4. Teachers can use information to plan and adjust curriculum to help children achieve their learning goals 5. Families can see how children learn through play 6. Children can share their insights as to how they created the work sample and offer their perspectives as to what they were thinking (authentic evidence) 7. Children enjoy seeing their work on display and they can feel empowered when their work is valued 9. With using multi -media, children can be observed in their natural settings	1. Can be time consuming adding anecdotal documentation and creating documentation boards 2. Requires ample storage space 3. Requires a financial investment in technology (camera, video or audio recorder) 4. Concerns over confidentiality and privacy when using photos, audio or videos

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9.5: Conclusion and References

An intentional teacher is a skilled and thoughtful observer. With each observation, whether a running record, anecdotal note, video recording, checklist, frequency counts, learning story or work sample, they are watching and listening, and considering what do I know about this child, and how can I best support this child? As teachers gather and organize their observation data, they begin to see each child for who they are as an individual, and as a member of the classroom community. With that information, intentional teachers can set realistic expectations of what children can do. Ideally, teachers will utilize the documented data to develop developmentally appropriate activities and to create an interesting and stimulating learning environment that is designed to promote play, socialization, growth and development. Now that you have been introduced to some of the tools and techniques that are used to gather information and document a child's development, in the next chapter, you will delve deeper to review the concepts of typical development and atypical development, and you will learn about some additional tools that can be used to track a child's development. ^[33]

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CHAPTER OVERVIEW

10: The Purpose, Process and Practice of Monitoring, Screening and Evaluating

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10.2: The Purpose of Monitoring, Screening and Evaluating Young Children

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10.1: Introduction

It is essential that Early Childhood Educators be able to recognize typical from atypical development. With typical development, there are certain behavioral expectations and developmental milestones that children should master within certain age ranges. Any behavior and development that falls outside of the standard norms would be considered atypical. As early care providers, how do we know whether a child's development is happening at a normal, excellent or delayed pace? How can we be certain that we are providing an optimal learning space for each child? As intentional teachers our goal is to accommodate all the varied skill levels and diverse needs of the children in our classrooms. Additionally, we must provide a safe, nurturing and culturally respectful environment that promotes inclusion so that all children can thrive. In this chapter we will examine the purpose, process and practice of monitoring, screening and evaluating young children. If we are to effectively support the children and families in our care, we must be able to identify a child's capabilities and strengths early on, as well as recognize any developmental delays or developmental areas that may need additional support. Additionally, we must be aware of the resources and services that are available to support children and families.



Figure 4.1 Building Blocks ^[34]

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10.2: The Purpose of Monitoring, Screening and Evaluating Young Children

Because many parents are not familiar with developmental milestones, they might not recognize that their child has a developmental delay or disability. According to the Centers for Disease Control and Prevention, “In the United States, about 1 in 6 children aged 3 to 17 years have one or more developmental or behavioral disabilities, such as autism, a learning disorder, or attention deficit / hyperactivity disorder (ADHD).” What’s more concerning is that many children are not being identified as having a delay or disability until they are in elementary school. Subsequently, they will not receive the appropriate support and services they need early on to be successful at school. It has been well-documented, in both educational and medical professional literature, that developmental outcomes for young children with delays and disabilities can be greatly improved with early identification and intervention (Squires, Nickel, & Eisert, 1996; Shonkoff & Meisels, 2000). While some parents might be in denial and struggling with the uncertainty of having a child with special needs, some parents might not be aware that there are support services available for young children and they may not know how to advocate for their child. Thus, as early child educators we have an obligation to help families navigate through the process of monitoring, as well as provide information and resources if a screening or evaluation is necessary.

The Process of Monitoring

Who can monitor a child’s development? Parents, grandparents, early caregivers, providers and teachers can monitor the children in their care. As previously stated in Chapter 3, one of the tasks of an intentional teacher is to gather baseline data within the first 60 days of a child starting their program. With each observation, teachers are listening to how a child speaks and if they can communicate effectively; they are watching to see how the child plays and interacts with their peers; and they are recording how the child processes information and problem solves. By monitoring a child closely, not only can we observe how a child grows and develops, we can track changes over time. More importantly, we can identify children who fall outside the parameters of what is considered normal or “typical” development.

When teachers monitor children, they are observing and documenting whether children are mastering “typical” developmental milestones in the physical, cognitive, language, emotional and social domains of development. In particular, teachers are tracking a child’s speech and language development, problem-solving skills, fine and gross motor skills, social skills and behaviors, so that they can be more responsive to each child’s individual needs. Even more so, teachers are trying to figure out what a child can do, and if there are any “red flags” or developmental areas that need further support. As early caregivers and teachers, we are not qualified to formally screen and evaluate children. We can however monitor children’s actions, ask questions that can guide our observations, track developmental milestones, and record our observations. With this vital information we can make more informed decisions on what is in the child’s best interest.

What is this Child Trying to Tell Me?

With 12-24 busy children in a classroom, there are bound to be occasional outbursts and challenging behaviors to contend with. In fact, a portion of a teacher’s day is typically spent guiding challenging behaviors. With all the numerous duties and responsibilities that a teacher performs daily, dealing with challenging behaviors can be taxing. When a child repeats a challenging behavior, we might be bothered, frustrated, or even confused by their actions. We might find ourselves asking questions like:

“Why does she keep pinching her classmate?”

“Why does he put his snack in his hair?”

“Why does he cry when it’s clean up time or when he has to put his shoes on?”

“Why does she fidget so much during group time?”

Without taking the time to observe the potential causes and outcomes associated with the challenging behavior, we may only be putting on band-aids to fix a problem, rather than trying to solve the problem. Without understanding the why, we cannot properly guide the child or support the whole-child’s development. As intentional teachers we are taught to observe, document, and analyze a child’s actions so we can better understand what the child is trying to “tell” us through their behavior. Behavior is a form of communication. Any challenging behavior that occurs over and over, is happening for a reason. If you can find the “pattern” in the behavior, you can figure out how to redirect or even stop the challenging behavior.

How do I find the patterns?

To be most effective, it is vital that we record what we see and hear as accurately and objectively as possible. No matter which observation method, tool or technique is used (e.g. Event Sampling, Frequency Counts, Checklists or Technology), once we have gathered a considerable amount of data we will need to interpret and reflect on the observation evidence so that we can plan for the next step. Finding the patterns can be instrumental in planning curriculum, setting up the environment with appropriate materials, and creating social situations that are suitable for the child's temperament.



Think About It...Patterns

If Wyatt is consistently observed going to the sandbox to play with dinosaurs during outside play, what does this tell you? What is the pattern? Is Wyatt interacting with other children? How is Wyatt using the dinosaurs? How can you use this information to support Wyatt during inside play?

Here are a few ideas:

To create curriculum : To encourage the child to go into the art center, knowing that he likes dinosaurs, I might lay down some butcher paint on a table, put a variety of dinosaurs out on the table, and add some trays with various colors of paint.

To arrange the environment : Looking at my centers, I might add books and pictures about dinosaurs, and I might add materials that could be used in conjunction with dinosaurs.

To support social development: I noticed Wyatt played by himself on several observations. I may need to do some follow up observations to see if Wyatt is initiating conversations, taking turns, joining in play with others or playing alone.

As you can see these are just a few suggestions. What ideas did you come up with? As we monitor children in our class, we are gathering information so that we can create a space where each child's individual personality, learning strengths, needs, and interests are all taken into account. Whether the child has a disability, delay or impairment or is developing at a typical pace, finding their unique pattern will help us provide suitable accommodations

What is a Red Flag?

If, while monitoring a child's development, a "red flag" is identified, it is the teacher's responsibility to inform the family, in a timely manner, about their child's developmental progress. First, the teacher and family would arrange a meeting to discuss what has been observed and documented. At the meeting, the teacher and family would share their perspectives about the child's behavior, practices, mannerisms, routines and skill sets. There would be time to ask questions and clarify concerns, and a plan of action would be developed. It is likely that various adjustments to the environment would be suggested to meet the individual child's needs, and ideas on how to tailor social interactions with peers would be discussed. With a plan in place, the teacher would continue to monitor the child. If after a few weeks there was no significant change or improvement, the teacher may then recommend that the child be formally screened and evaluated by a professional (e.g. a pediatrician, behavioral psychologist or a speech pathologist).

The Process of Screening and Evaluating

Who can screen and evaluate children? Doctors, pediatricians, speech pathologists, behaviorists, Screenings and evaluations are more formal than monitoring. Developmental screening takes a closer look at how a child is developing using brief tests. Your child will get a brief test, or you will complete a questionnaire about your child. The tools used for developmental and behavioral screening are formal questionnaires or checklists based on research that ask questions about a child's development, including language, movement, thinking, behavior, and emotions.

Developmental screenings are cost effective and can be used to assess a large number of children in a relatively short period of time. There are screenings to assess a child's hearing and vision, and to detect notable developmental delays. Screenings can also address some common questions and concerns that teachers, and parents alike, may have regarding a child's academic progress. For example, when a teacher wonders why a child is behaving in such a way, they will want to observe a child's social interactions and document how often certain behaviors occur. Similarly, when a parent voices a concern that their child is not talking in complete sentences the way their older child did at that same age. The teacher will want to listen and record the child's conversations and track their language development.

Developmental Delays – is the condition of a child being less developed mentally or physically than is normal for their age.

Developmental Disabilities – According to the CDC, developmental disabilities are a group of conditions due to an impairment in physical, learning, language, or behavior areas. These conditions begin during the developmental period, may impact day-to-day functioning, and usually last throughout a person's lifetime. Some noted disabilities include:

- ADHD
- Autism Spectrum Disorder
- Cerebral Palsy
- Hearing Loss
- Vision Impairment
- Learning Disability
- Intellectual Disability ^[35]

The Practice of Screening Young Children

To quickly capture a snapshot of a child's overall development, early caregivers and teachers can select from several observation tools to observe and document a child's play, learning, growth and development. Systematic and routine observations, made by knowledgeable and responsive teachers, ensure that children are receiving the quality care and support they deserve. Several observation tools and techniques can be used by teachers to screen a child's development. Because each technique and tool provides limited observation data, it is suggested that teachers use a combination of tools and techniques to gather a full panoramic perspective of a child's development. Here are some guidelines:

- Monitoring cannot capture the complete developmental range and capabilities of children, but can provide a general overview
- Monitoring can only indicate the possible presence of a developmental delay and cannot definitively identify the nature or extent of a disability
- Not all children with or at risk for delays can be identified
- Some children who are red-flagged may not have any actual delays or disabilities; they may be considered "exceptional" or "gifted"
- Children develop at different paces and may achieve milestones at various rates

Tools and Techniques to Monitor and Screen Children's Development

Let's briefly review some of the options more commonly used to monitor children's development.

Developmental Milestone Checklists and Charts

There are many factors that can influence a child's development: genetics, gender, social interactions, personal experiences, temperaments and the environment. It is critical that educators understand what is "typical" before they can consider what is "atypical." Developmental Milestones provide a clear guideline as to what children should be able to do at set age ranges. However, it is important to note that each child in your classroom develops at their own individualized pace, and they will reach certain milestones at various times within the age range.

Developmental Milestone Charts are essential when setting up your classroom environments. Once you know what skills children should be able to do at specific ages, you can then plan developmentally appropriate learning goals, and you can set up your classroom environment with age appropriate materials. Developmental Milestone Charts are also extremely useful to teachers and parents when guiding behaviors. In order to set realistic expectations for children, it is suggested that teachers and parents review all ages and stages of development to understand how milestones evolve. Not only do skills build upon each other, they lay a

foundation for the next milestone that's to come. Developmental Milestone Charts are usually organized into 4 Domains: Physical, Cognitive, Language, and Social -Emotional.

Table 4.1 - Gross Motor Milestones from 2 Months to 2 Years ^[36]

Typical Age	What Most Children Do by This Age
2 months	• Can hold head up and begins to push up when lying on tummy • Makes smoother movements with arms and legs
4 months	• Holds head steady, unsupported • Pushes down on legs when feet are on a hard surface • May be able to roll over from tummy to back • Brings hands to mouth • When lying on stomach, pushes up to elbows
6 months	• Rolls over in both directions (front to back, back to front) • Begins to sit without support • When standing, supports weight on legs and might bounce • Rocks back and forth, sometimes crawling backward before moving forward
9 months	• Stands, holding on • Can get into sitting position • Sits without support • Pulls to stand • Crawls
1 year	• Gets to a sitting position without help • Pulls up to stand, walks holding on to furniture ("cruising") • May take a few steps without holding on • May stand alone
18 months	• Walks alone • May walk up steps and run • Pulls toys while walking • Can help undress self
2 years	• Stands on tiptoe • Kicks a ball • Begins to run • Climbs onto and down from furniture without help • Walks up and down stairs holding on • Throws ball overhand

Table 4.2 - Fine Motor Milestones from 2 Months to 2 Years ^[37]

Typical Age	What Most Children Do by This Age
2 months	• Grasps reflexively • Does not reach for objects • Holds hands in fist
4 months	• Brings hands to mouth • Uses hands and eyes together, such as seeing a toy and reaching for it • Follows moving things with eyes from side to side • Can hold a toy with whole hand (palmar grasp) and shake it and swing at dangling toys
6 months	• Reaches with both arms • Brings things to mouth • Begins to pass things from one hand to the other
9 months	• Puts things in mouth • Moves things smoothly from one hand to the other • Picks up things between thumb and index finger (pincer grip)
1 year	• Reaches with one hand • Bangs two things together • Puts things in a container, takes things out of a container • Lets things go without help • Pokes with index (pointer) finger
18 months	• Scribbles on own • Can help undress herself • Drinks from a cup • Eats with a spoon with some accuracy • Stacks 2-4 objects
2 years	• Builds towers of 4 or more blocks • Might use one hand more than the other • Makes copies of straight lines and circles • Enjoys pouring and filling • Unbuttons large buttons • Unzips large zippers • Drinks and feeds self with more accuracy

Table 4.3 - Cognitive Milestones from 2 Months to 2 Years ^[38]

Typical Age	What Most Children Do by This Age
2 months	• Pays attention to faces • Begins to follow things with eyes and recognize people at a distance • Begins to act bored (cries, fussy) if activity doesn't change
4 months	• Lets you know if she is happy or sad • Responds to affection • Reaches for toy with one hand • Uses hands and eyes together, such as seeing a toy and reaching for it • Follows moving things with eyes from side to side • Watches faces closely • Recognizes familiar people and things at a distance
6 months	• Looks around at things nearby • Brings things to mouth • Shows curiosity about things and tries to get things that are out of reach • Begins to pass things from one hand to the other
9 months	• Watches the path of something as it falls • Looks for things he sees you hide • Plays peek-a-boo • Puts things in mouth • Moves things smoothly from one hand to the other • Picks up things like cereal o's between thumb and index finger
1 year	• Explores things in different ways, like shaking, banging, throwing • Finds hidden things easily • Looks at the right picture or thing when it's named • Copies gestures • Starts to use things correctly; for example, drinks from a cup, brushes hair • Bangs two things together • Puts things in a container, takes things out of a container • Lets things go without help • Pokes with index (pointer) finger • Follows simple directions like "pick up the toy"
18 months	• Knows what ordinary things are for; for example, telephone, brush, spoon • Points to get the attention of others • Shows interest in a doll or stuffed animal by pretending to feed • Points to one body part • Scribbles on own • Can follow 1-step verbal commands without any gestures; for example, sits when you say "sit down"
2 years	• Finds things even when hidden under two or three covers • Begins to sort shapes and colors • Completes sentences and rhymes in familiar books

- Plays simple make-believe games
- Builds towers of 4 or more blocks
- Might use one hand more than the other
- Follows two-step instructions such as “Pick up your shoes and put them in the closet.”
- Names items in a picture book such as a cat, bird, or dog

Table 4.4 - Language Milestones from 2 Months to 2 Years ^[39]

Typical Age	What Most Children Do By This Age
2 months	• Coos, makes gurgling sounds • Turns head toward sounds
4 months	• Begins to babble • Babbles with expression and copies sounds he hears • Cries in different ways to show hunger, pain, or being tired
6 months	• Responds to sounds by making sounds • Strings vowels together when babbling (“ah,” “eh,” “oh”) and likes taking turns with parent while making sounds • Responds to own name • Makes sounds to show joy and displeasure • Begins to say consonant sounds (jabbering with “m,” “b”)
9 months	• Understands “no” • Makes a lot of different sounds like “mamamama” and “bababababa” • Copies sounds and gestures of others • Uses fingers to point at things
1 year	• Responds to simple spoken requests • Uses simple gestures, like shaking head “no” or waving “bye-bye” • Makes sounds with changes in tone (sounds more like speech) • Says “mama” and “dada” and exclamations like “uh-oh!” • Tries to say words you say
18 months	• Says several single words • Says and shakes head now • Points to show others what is wanted
2 years	• Points to things or pictures when they are named • Knows names of familiar people and body parts • Says sentences with 2 to 4 words • Follows simple instructions • Repeats words overheard in conversation • Points to things in a book

Table 4.5 - Social and Emotional Milestones from 2 Months to 2 Years ^[40]

Typical Age	What Most Children Do By This Age
2 months	• Begins to smile at people • Can briefly calm self (may bring hands to mouth and suck on hand) • Tries to look at parent
4 months	• Smiles spontaneously, especially at people • Likes to play with people and might cry when playing stops • Copies some movements and facial expressions, like smiling or frowning
6 months	• Knows familiar faces and begins to know if someone is a stranger • Likes to play with others, especially parents • Responds to other people's emotions and often seems happy • Likes to look at self in a mirror
9 months	• May be afraid of strangers • May be clingy with familiar adults • Has favorite toys
1 year	• Is shy or nervous with strangers • Cries when mom or dad leaves • Has favorite things and people • Shows fear in some situations • Hands you a book when she wants to hear a story • Repeats sounds or actions to get attention • Puts out arm or leg to help with dressing • Plays games such as "peek-a-boo" and "pat-a-cake"
18 months	• Likes to hand things to others as play • May have temper tantrums • May be afraid of strangers • Shows affection to familiar people • Plays simple pretend, such as feeding a doll • May cling to caregivers in new situations • Points to show others something interesting • Explores alone but with parent close by
2 years	• Copies others, especially adults and older children • Gets excited when with other children • Shows more and more independence • Shows defiant behavior (doing what he has been told not to) • Plays mainly beside other children, but is beginning to include other children, such as in chase games

Table 4.6 - Gross Motor Milestones from 3 Years to 5 Years ^[41]

Typical Age	What Most Children Do by This Age
3 years	• Climbs well • Runs easily • Pedals a tricycle (3-wheel bike) • Walks up and down stairs, one foot on each step
4 years	• Hops and stands on one foot up to 2 seconds • Catches a bounced ball most of the time
5 years	• Stands on one foot for 10 seconds or longer • Hops; may be able to skip • Can do a somersault • Can use the toilet on own • Swings and climbs

Table 4.7 - Fine Motor Milestones from 3 Years to 5 Years ^[42]

Typical Age	What Most Children Do by This Age
3 years	• Copies a circle with pencil or crayon • Turns book pages one at a time • Builds towers of more than 6 blocks • Screws and unscrews jar lids or turns door handle
4 years	• Pours, cuts with supervision, and mashes own food • Draws a person with 2 to 4 body parts • Uses scissors • Starts to copy some capital letters
5 years	• Can draw a person with at least 6 body parts • Can print some letters or numbers • Copies a triangle and other geometric shapes • Uses a fork and spoon and sometimes a table knife

Table 4.8 - Cognitive Milestones from 3 Years to 5 Years ^[43]

Typical Age	What Most Children Do by This Age
3 years	• Can work toys with buttons, levers, and moving parts • Plays make-believe with dolls, animals, and people • Does puzzles with 3 or 4 pieces • Understands what “two” means
4 years	• Names some colors and some numbers • Understands the idea of counting • Starts to understand time • Remembers parts of a story • Understands the idea of “same” and “different” • Plays board or card games • Tells you what he thinks is going to happen next in a book
5 years	• Counts 10 or more things • Knows about things used every day, like money and food

Table 4.9 - Language Milestones from 3 Years to 5 Years ^[44]

Typical Age	What Most Children Do By This Age
3 years	• Follows instructions with 2 or 3 steps • Can name most familiar things • Understands words like “in,” “on,” and “under” • Says first name, age, and sex • Names a friend • Says words like “I,” “me,” “we,” and “you” and some plurals (cars, dogs, cats) • Talks well enough for strangers to understand most of the time • Carries on a conversation using 2 to 3 sentences
4 years	• Knows some basic rules of grammar, such as correctly using “he” and “she” • Sings a song or says a poem from memory such as the “Itsy Bitsy Spider” or the “Wheels on the Bus” • Tells stories • Can say first and last name
5 years	• Speaks very clearly • Tells a simple story using full sentences • Uses future tense; for example, “Grandma will be here.” • Says name and address

Table 4.10 - Social and Emotional Milestones from 3 Years to 5 Years ^[45]

Typical Age	What Most Children Do by This Age
3 years	• Copies adults and friends • Shows affection for friends without prompting • Takes turns in games • Shows concern for a crying friend • Dresses and undresses self • Understands the idea of “mine” and “his” or “hers” • Shows a wide range of emotions • Separates easily from mom and dad • May get upset with major changes in routine
4 years	• Enjoys doing new things • Is more and more creative with make-believe play • Would rather play with other children than by self • Cooperates with other children • Plays “mom” or “dad” • Often can’t tell what’s real and what’s make-believe • Talks about what she likes and what she is interested in
5 years	• Wants to please friends • Wants to be like friends • More likely to agree with rules • Likes to sing, dance, and act • Is aware of gender • Can tell what’s real and what’s make-believe • Shows more independence • Is sometimes demanding and sometimes very cooperative

Time Sampling or Frequency Counts

When a teacher wants to know how often or how infrequent a behavior is occurring, they will use a Frequency Count to track a child's behavior during a specific timeframe. This technique can help teachers track a child's social interactions, play preferences, temperamental traits, aggressive behaviors, and activity interests.

Checklists

When a teacher wants to look at a child's overall development, checklists can be a very useful tool to determine the presence or absence of a particular skill, milestone or behavior. Teachers will observe children during play times, circle times and centers, and will check-off the skills and behaviors as they are observed. Checklists help to determine which developmental skills have been mastered, which skills are emerging, and which skills have yet to be learned.

Technology

Teachers can use video recorders, cameras and tape recorders to record children while they are actively playing. This is an ideal method for capturing authentic quotes and work samples. Information gathered by way of technology can also be used with other screening tools and techniques as supporting evidence. (Note: it is important to be aware of center policies and procedures regarding proper consent before photographing or taping a child).

Event Sampling and the ABC Technique

When an incident occurs, we may wonder what triggered that behavior. The Event Sampling or ABC technique helps us to identify the social interactions and environmental situations that may cause children to react in certain ways. If we are to reinforce someone's positive behavior, or change someone's negative behavior, we must first try to understand what might be causing that particular behavior. With an ABC Analysis, the observer is looking for and tracking a specific behavior. More than the behavior itself, the observer wants to understand what is causing the behavior – this is antecedent. The antecedent happens before the behavior. It is believed that if the observer can find the “triggers” that might be leading up to or causing the challenging behavior, then potential strategies can be planned to alter, redirect or end the challenging behavior. In addition to uncovering the antecedent, what happens after the behavior is just as important, this is the “consequence.” How a child is treated after the incident or challenging behavior can create a positive or negative reinforcement pattern. In short, the ABC technique tells a brief story of what is happening before, during, and after a noted behavior.

The ABC observation method requires some training and practice. The observer must practice being neutral and free of bias, judgement and assumption in order to collect and record objective evidence and to portray an accurate picture. Although it may be uncomfortable to admit, certain behaviors can frustrate a teacher. If the teacher observes a child while feeling frustrated or annoyed, this can possibly taint the observation data. It is important to record just the facts. And to review the whole situation before making any premature assumptions.

Collecting your data

If you have a concern about a child's behavior or if you have noticed a time when a child's behavior has been rather disruptive, you will schedule a planned observation. For this type of observation, you can either video record the child in classroom environment, or you can take observation notes using a Running Record or Anecdotal Record technique. To find a consistent pattern, it is best to tape or write down your observations for several days to find a true and consistent pattern. To document your observations, include the child's name, date, time, setting, and context. Observe and write down everything you see and hear before, during and after the noted behavior.

Organizing your data

Divide a piece of paper into 3 sections: A – for Antecedent; B – for Behavior; and C- for Consequence. Using your observation notes you will organize the information you collected into the proper sections. As you record the observation evidence, remember to report just the facts as objectively as possible. Afterwards, you will interpret the information and look for patterns. For example, did you find any “triggers” before the behavior occurred? What kind of “reinforcement” did the child receive after the behavior? What are some possible strategies you can try to minimize or redirect the challenging behavior? Do you need to make

environmental changes? Are their social interactions that need to be further monitored? With challenging behaviors, there is not a quick fix or an easy answer. You must follow through and continue to observe the child to see if your strategies are working.



Pin It! The ABC Method

(A) Antecedent : Right before an incident or challenging behavior occurs, something is going on to lead up to or prompt the actual incident or behavior.

For example, one day during lunch Susie spills her milk (this behavior has happened several times before). Rather than focusing solely on the incident itself (Susie spilling the milk), look to see what was going on before the incident. More specifically, look to see if Susie was in a hurry to finish her snack so she could go outside and play? Was Susie being silly? Which hand was Susie using – is this her dominant hand? Is the milk pitcher too big for Susie to manipulate?

(B) Behavior: This refers to the measurable or observable actions. In this case, it is Susie spilling the milk.

(C) Consequence: The consequence is what happens directly after the behavior.

For example, right after Susie spilt the milk, did you yell at her or display an unhappy or disgusted look? Did Susie cry? Did Susie attempt to clean up the milk? Did another child try to help Susie?

Watch this video for more information on the [ABC model](https://www.youtube.com/watch?v=UVKb_BXEp5U) : https://www.youtube.com/watch?v=UVKb_BXEp5U

ABC Template		
Observer		Date
Child:	Time:	Background Information:
Age:	Location:	
	Setting:	
Antecedent	Behavior	Consequence
Interpretations		
Plan of Action / Strategies		

The Practice of Screening and Evaluating

Beyond monitoring, once a child has been “red-flagged” they will need to be assessed by a professional who will use a formal diagnostic tool to evaluate the child’s development. Families can request that a formal screening be conducted at the local elementary school if their child is 3 to 5 years old. Depending upon the nature of the red flag, there are a battery of tools that can be used to evaluate a child’s development. Here are some guidelines:

- Screenings are designed to be brief (30 minutes or less)

- A more comprehensive assessment and formal evaluation must be conducted by a professional in order to confirm or disconfirm any red flags that were raised during the initial monitoring or screening process
- Families must be treated with dignity, sensitivity and compassion while their child is going through the screening process
- Use a screening tool from a reputable publishing company

Screening Instruments and Evaluation Tests

The instruments listed below are merely a sample of some of the developmental and academic screening tests that are widely used.

Ages and Stages Questionnaires (ASQ), Brookes Publishing Company (available in Spanish, French, and Korean)

Battelle Developmental Inventory Screening Test, Riverside Publishing

Developmental Indicators for Assessment of Learning (DIAL) III, Pearson Assessments (includes Spanish materials)

Dynamic Indicators of Basic Early Literacy Skills (DIBELS), University of Oregon Center on Teaching and Learning

Early Screening Inventory-Revised (ESI-R), Pearson Early Learning (includes separate scoring for preschool and kindergarten) ^[46]



Pin It! Reliability and Validity Defined

Reliability means that the scores on the tool will be stable regardless of when the tool is administered, where it is administered, and who is administering it. Reliability answers the question: Is the tool producing consistent information across different circumstances? Reliability provides assurance that comparable information will be obtained from the tool across different situations.

Validity means that the scores on the tool accurately capture what the tool is meant to capture in terms of content. Validity answers the question: Is the tool assessing what it is supposed to assess?

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10.3: Public Policies on Including Children with Special Needs

Public Policies on Including Children with Special Needs

Throughout the past 40 years there have been some significant changes in both state and federal laws, as well as with public policy and social attitudes towards integrating children with special needs and learning disabilities into typical classroom settings. Stigmas from the past have dissipated and more inclusive practices are in place. In addition to Federal laws such as the Individuals with Disabilities Act (IDEA) and the Americans with Disabilities Act (ADA), there are national associations such as the Division for Early Childhood (DEC) and the National Association for the Education of Young Children (NAEYC) who rally to protect the rights of children with disabilities or other special needs. As stated in their joint position on inclusion, the DEC and NAEYC believe:

Early childhood inclusion embodies the values, policies, and practices that support the right of every infant and young child and his or her family, regardless of ability, to participate in a broad range of activities and contexts as full members of families, communities, and society. The desired results of inclusive experiences for children with and without disabilities and their families include a sense of belonging and membership, positive social relationships and friendships, and development and learning to reach their full potential. The defining features of inclusion that can be used to identify high quality early childhood programs and services are access, participation, and supports. (p. 141; DEC and NAEYC 2009, 1)

When early caregivers and preschool teachers practice monitoring as part of their regular routines, they demonstrate accountability and responsive caregiving. Nearly 65% of children are identified as having a special need, disability, delay or impairment, and will require some special services or intervention. As early educators our role is twofold:

1. Provide an environment where children feel safe, secure and cared for
2. Help children develop coping skills to decrease stress and promote learning and development

Individualized Education Plan?

Some children may need more individualized support and might benefit from specialized services or individualized accommodations. Children who are over the age of 3 who qualify for special education must have an individualized education program (IEP) in place. As required by both federal and state laws, IEPs must have clearly identified goals and objectives that can be regularly monitored. IEPs are designed by a TEAM that usually includes the child's parents or guardians, the preschool teacher, special education professionals (e.g. behaviorists, speech pathologists, occupational therapists). Together the team plans appropriately accommodations, modifications and makes recommendations that will help the child meet their developmental goals.

While everyone on the team has a role, the teacher's role is to integrate approaches that can best support the child while in class. For example, if the IEP notes that the child needs support with language development, the teacher would consider finding someone in class who could provide peer to peer scaffolding. The teacher would want to find someone who has strong language skills, and who is cooperative and kind to others. She would then partner the two children up throughout the day so that the typical child could model ideal language skills to the child with the IEP. The teacher would also provide regular updates to parents, continue observing and monitoring the child's development, and would provide access to alternative resources and materials as much as possible. ^[47]

Creating Inclusive Learning Environments

To ensure that all children feel safe, secure and nurtured, teachers must strive to create a climate of cooperation, mutual respect and tolerance. To support healthy development, teachers must offer multiple opportunities for children to absorb learning experiences, as well as process information, at their own pace. While one child may be comfortable with simple verbal instructions to complete a particular task, another child may benefit from a more direct approach such as watching another child or adult complete the requested task first. Teachers who are devoted to observing their children are motivated to provide experiences that children will enjoy and be challenged by. The classroom is not a stagnant environment - it is ever-changing. In order to maintain a high-quality classroom setting, it is essential to utilize your daily observations of children and the environment to monitor the experiences and interactions to ensure there is a good fit. ^[48]

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10.4: Conclusion and References

Monitoring, screening and evaluating children is both necessary and takes time and practice. Rather than waiting until there is a major concern, intentional teachers should conduct observations on a regular basis to closely monitor each child's development. By watching children, we can find patterns. Once we understand the patterns, we can better understand why children do what they do, and ideally, we can create an inclusive learning environment that meets the needs of all our children. Understanding that over half of the children in your classroom may potentially have some special need, disability, delay or impairment is crucial. Recognizing that unless we observe regularly, we won't be able to refer families in a timely manner to get the support services and professional help that they need is essential. Research tells us that children who receive early intervention are more likely to master age-appropriate developmental milestones, have increased academic readiness and are more apt to socialize with their peers. It is important to remember that everyone in the classroom, including teachers, assistants and directors and supervisors, should be involved with monitoring a child's development. As you continue to read this text, you will discover how observations are essential in planning effective curriculum, documenting children's learning, assessing development and communicating with families. ^[49]

Referrals, Agencies and Support Groups ^[50]

[Administration on Intellectual and Developmental Disabilities \(AIDD\)](#)

AIDD seeks to improve and increase services for individuals with developmental disabilities that promote independence and inclusion in society. This website contains information on AIDD's programs and other helpful resources, such as a developmental disabilities program directory by state and grants and funding information.

[American Academy of Pediatrics](#)

The American Academy of Pediatrics comprises pediatricians committed to the health of infants, children, adolescents, and young adults. The website contains general information about children's health, as well as more specific information about guidelines, policies, and publications. This organization also hosts a website specifically for parents

[Center for Parent Information and Resources \(CPIR\)](#)

The CPIR serves as a central resource of information and products to the community of Parent Training Information Centers and the Community Parent Resource Centers, so that they can focus their efforts on serving families of children with disabilities.

[Department of Education](#)

The U.S. Department of Education (DOE) has resources to assist with the educational needs of children with developmental disabilities.

The DOE's [Technical Assistance and Dissemination Network \(TA&D Network\)](#)

Provides links to a variety of other websites and online resources that focus on special education issues, such as policy, technology, curricula and parent trainings.

The DOE's [Office of Special Education and Rehabilitative Services \(OSERS\)](#) Provides support to parents and individuals, school districts, and states in three main areas:

- Special education: [Office of Special Education Programs \(OSEP\)](#)[external icon](#)
- Vocational rehabilitation: [Rehabilitation Services Administration \(RSA\)](#)[external icon](#)
- [DisabilityMeasures.org](#)

DisabilityMeasures.org is an online resource with measurement tools for assessment, screening, and research concerning individuals with disabilities.

[First Signs](#)

First Signs is dedicated to educating parents and professionals about early identification and intervention for children at risk for developmental delays and disorders, including autism.

[Insure Kids Now!](#)

Each state provides no-cost or low-cost health insurance coverage for eligible children through Medicaid and the Children's Health Insurance Program. This website has basic facts about these programs. It also has links to each state's insurance program for

children, where you can learn who is eligible for the programs, how to apply, and what services are covered. Information is available in English and Spanish.

[MedlinePlus](#)

MedlinePlus, a service of the U.S. National Library of Medicine and the National Institutes of Health, provides information on many different types of developmental disabilities, as well as resources on prevention and screening, research, statistics, law and policy, and more.

[My Child Without Limits](#)

My Child Without Limits provides resources for families of young children from birth through 5 years of age with developmental delays or disabilities, as well as for professionals who work with these individuals. The site also has a national resource locator where visitors can find local service providers, community organizations, and government agencies.

[National Association of Councils on Developmental Disabilities \(NACDD\)](#)

The NACDD supports state and territorial councils in implementing the Developmental Disabilities Assistance and Bill of Rights Act and promoting the interests and rights of individuals with disabilities and their families.

[National Institute on Disability, Independent Living, and Rehabilitation Research \(NIDILRR\)](#)[external icon](#)

NIDILRR is a federal government grants-making agency that sponsors grantees to generate new disability and rehabilitation knowledge and promote its use and adoption.

[National Institutes of Health \(NIH\)](#)

Several institutes within the NIH conduct and fund research about developmental disabilities. They also offer information to the public and educational programs for health professionals. They include:

[National Eye Institute \(NEI\)](#)

The NEI studies ways to prevent and treat eye diseases and vision problems and to improve the lives of people with these conditions.

[National Institute of Child Health and Human Development \(NICHD\)](#)

The NICHD conducts and supports research on all stages of human development to better understand the health of children, adults, families, and communities, including those with developmental disabilities.

[National Institute on Deafness and Other Communication Disorders \(NIDCD\)](#)

The NIDCD studies hearing loss, deafness, and problems with speech and language.

[National Institute of Mental Health \(NIMH\)](#)[external icon](#)

The NIMH studies mental illness and behavior problems, including such conditions as autism, attention-deficit/hyperactivity disorder, and learning disabilities.

[National Institute of Neurological Disorders and Stroke \(NINDS\)](#)[external icon](#)

NINDS studies the causes, diagnosis, treatment, and prevention of brain and nervous system disorders such as cerebral palsy and epilepsy.

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CHAPTER OVERVIEW

11: Looking at Diversity, Equity, and Inclusion

Learning Objectives

After this chapter, you should be able to:

- Define diversity, equity, and inclusion.
- Examine the importance of diversity.
- Distinguish the difference between equity and equality.
- Explain what inclusion means.
- Discuss some ways programs should be inclusive.

[11.1: Diversity](#)

[11.2: Equity](#)

[11.3: Inclusion](#)

[11.4: Summary](#)

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11.1: Diversity

Diversity

Let's begin by defining diversity and exploring its significance to working with children. The concept of diversity means understanding that each individual is unique, and recognizing our individual differences. These can be along the dimensions of race, ethnicity, gender, sexual orientation, socio-economic status, age, physical abilities, religious beliefs, political beliefs, or other ideologies. It is the exploration of these differences in a safe, positive, and nurturing environment. It is about understanding each other and moving beyond simple tolerance to embracing and celebrating the rich dimensions of diversity contained within each individual.



Figure 1.1: Diversity in early childhood education. ^[3]

Diversity is a reality created by individuals and groups from a broad spectrum of demographic and philosophical differences. It is extremely important to support and protect diversity, to value individuals and groups without prejudice, and foster a climate where equity and mutual respect are intrinsic.

According to Queensborough Community College, “‘Diversity’ means more than just acknowledging and/or tolerating difference. Diversity is a set of conscious practices that involve:

- Understanding and appreciating interdependence of humanity, cultures, and the natural environment.
- Practicing mutual respect for qualities and experiences that are different from our own.
- Understanding that diversity includes not only ways of being but also ways of knowing;
- Recognizing that personal, cultural and institutionalized discrimination creates and sustains privileges for some while creating and sustaining disadvantages for others;
- Building alliances across differences so that we can work together to eradicate all forms of discrimination.

Diversity includes, therefore, knowing how to relate to those qualities and conditions that are different from our own and outside the groups to which we belong, yet are present in other individuals and groups. These include but are not limited to age, ethnicity, class, gender, physical abilities/qualities, race, sexual orientation, as well as religious status, gender expression, educational background, geographical location, income, marital status, parental status, and work experiences. Finally, we acknowledge that categories of difference are not always fixed but also can be fluid, we respect individual rights to self-identification, and we recognize that no one culture is intrinsically superior to another”. ^[4]

Cultural and Linguistic Diversity in the U.S. and California

There is a rich array of ethnic and social groups found in many early childhood programs in California. Much of this cultural diversity is due to high levels of immigration. Foreign-born persons represented 12 percent (32.5 million) of the U.S. population in 2002, with almost 50 percent of that group coming from Latin America, 25 percent from Asia, and 20 percent from Europe (Schmidley 2003). In 2010, of the more than 2.5 million children under the age of five living in California, about half of these

children were Latino (U.S. Census Bureau 2010). It is important to note that Latinos may be of any race, according to the U.S. Census Bureau. White non-Latino children make up 30 percent of children under five in California, Asian-Pacific Islanders make up 10 percent, Black or African Americans make up 6 percent, and the remaining 4 percent represent a wide range of ethnic groups (Whitebook, Kipnis, and Bellm 2008). ^[5]

Significance of Diversity

A growing body of research shows that diversity in schools and communities can be a powerful lever leading to positive outcomes in school and in life. Racial and socioeconomic diversity benefits communities, schools, and children from all backgrounds. Today's students need to be prepared to succeed with a more diverse and more global workforce than ever before. Research has shown that more diverse organizations make better decisions with better results. The effects of socioeconomic diversity can be especially powerful for students from low-income families, who, historically, often have not had equal access to the resources they need to succeed. ^[6]



Figure 1.2: Diversity in schools, including ECE, is beneficial. ^[7]

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11.2: Equity

In education, the term equity refers to the principle of fairness . While it is often used interchangeably with the related principle of equality , equity encompasses a wide variety of educational models, programs, and strategies that may be considered fair, but not necessarily equal. ^[8] In other words, equity means making sure every student has the support they need to be successful.

Equity in education “requires putting systems in place to ensure that every child has an equal chance for success. That requires understanding the unique challenges and barriers faced by individual students or by populations of students and providing additional supports to help them overcome those barriers. While this in itself may not ensure equal outcomes , we all should strive to ensure that every child has equal opportunity for success.” ^[9] Unlike equity, equality ignores the fact that different people begin with different resources and barriers, and therefore will need more or less support as a result. ^[10]

Figure 1.3 is a simplified visual of difference between equality (giving everyone the same thing) and equity (giving each person what they need).

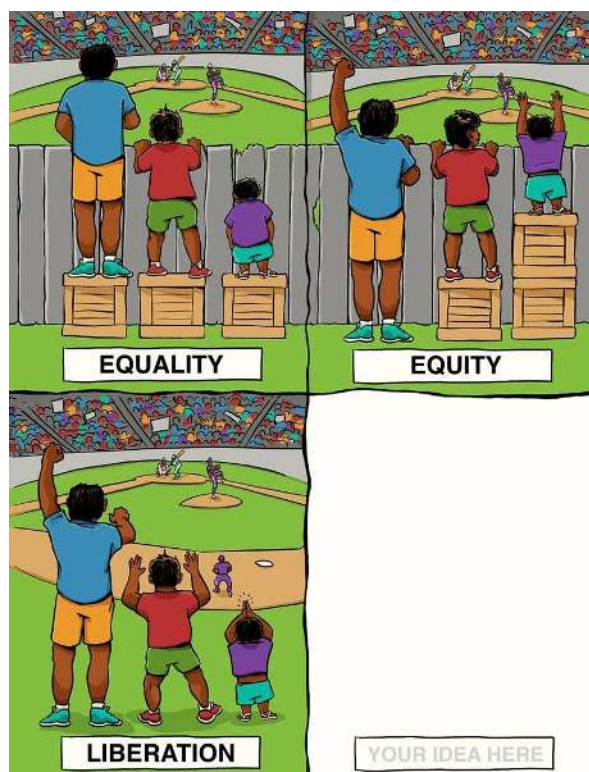


Figure 1.3: A simplified visual of equality versus equity. ^[11]

Other images have been created that show that equity isn’t quite that simple and often what is creating the inequity is not characteristics of the person (such as height as shown in the image), but in the system. Systemic oppression and unearned privilege are addressed in later chapters of the book

Why Does Educational Equity Matter?

When we think of a fair and just society one of the defining characteristics is likely to be that all individuals have equal opportunity to realize their potential, irrespective of the circumstances into which they are born. Education plays a critical role in determining whether or not individuals are given this opportunity. There are a range of reasons why good educational outcomes matter, from the individual; better health and longer life, to the societal; greater social cohesion, inclusion and trust; to the economic, productivity, economic growth, innovation, social wealth and reduced welfare costs. For a society or nation committed to ‘creating a fair and egalitarian place in which opportunities exist for all’, education is a key lever or vehicle through which this can occur. ^[12]



Figure 1.4: Making sure all children have equal opportunities is critical. ^[13]

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11.3: Inclusion

When we talk about inclusive early childhood education, we are talking about programs that are designed for children and families from a wide range of backgrounds. A program can serve diverse families, but not be truly inclusive; you can have families from different backgrounds in your program, but do they feel welcome? Are you forcing them to adapt to a program that isn't designed for them or that doesn't take into consideration their social, cultural, and/or racial contexts? Designing an inclusive program translates to everything from physical space to how you interact with children and families. ^[14]

Inclusion as it Relates to Children with Disabilities

Inclusion embodies the values, policies, and practices that support the right of every child and their family, regardless of ability, to participate in a broad range of activities and contexts as full members of families, communities, and society. The desired results of inclusive experiences for children with and without disabilities and their families include a sense of belonging and membership, positive social relationships and friendships, and development and learning to reach their full potential. The defining features of inclusion that can be used to identify high quality early childhood programs and services are:

- Access - providing access to a wide range of learning opportunities, activities, settings, and environments
- Participation - even if environments and programs are designed to facilitate access, some children will need additional individualized accommodations and supports to participate fully in play and learning activities with peers and adults.
- Supports - an infrastructure of systems-level supports must be afforded to those providing inclusive services to children and families. ^[15]



Figure 1.5: All children need to be able to fully participate in the early childhood education environment. ^[16]

Children with disabilities and their families continue to face significant barriers to accessing inclusive high-quality early childhood programs and too many preschool children with disabilities are only offered the option of receiving special education services in settings separate from their peers without disabilities. ^[17]

Think About It...

Describe your understanding of how diversity, equity, and inclusion are related.

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11.4: Summary

Early childhood programs serve a diverse array of children and families. Recognizing the value of this diversity and creating relationships with families that provide the context of their culture, will allow early childhood education programs to be inclusive in a variety of different ways and provide educational equity for the children for whom they provide care and education.

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CHAPTER OVERVIEW

12: The Importance of Culture

Learning Objectives

After this chapter, you should be able to:

- Discuss what culture is and how it has been defined or described
- Describe how culture is passed
- Identify myths about culture
- Relate how culture affects development
- Explain the importance of being responsive to children and families' culture

[12.1: Introduction](#)

[12.2: The Role of Culture in Development](#)

[12.3: Myths About Culture](#)

[12.4: Responsiveness to Culture and Language Supports Children's Learning](#)

[12.5: Summary](#)

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12.1: Introduction

Culture is a broad concept that refers to the customs, values, beliefs, and practices of a group of people. It incorporates family roles, rituals, communication styles, emotional expression, social interactions, and learned behavior. Culture also refers to a shared way of life that includes social norms, rules, beliefs, and values that are transmitted across generations (Hill, McBride-Murry, and Anderson 2005, 23). Although cultural groups often share ethnic and linguistic backgrounds, these are not what define culture. Culture has been described as arising from “a dynamic system of social values, cognitive codes, of behavioral standards, worldviews, and beliefs used to give order and meaning to our lives” (Gay 2000, 8).

Culture infuses and is reflected in routines of daily living. Culture is a primary source of beliefs, attitudes, language, and personal efficacy (belief that one has control over and is responsible for one’s life), sense of time (whether time is thought of in large chunks such as hours and days rather than precisely in terms of minutes and seconds), and perceptions of personal space. Culture is the source of the symbols used to capture aspects of life such as important life transitions, relationships, status and power, achievement, group identity, and the meaning of life and death. Culture conveys a set of beliefs about how social relationships should be ordered and how the world operates. ^[18]

A variety of definitions of culture are provided in the table below. The purpose of providing these definitions is to invite us to review and discuss the various definitions of the term as a framework for further discussions. ^[19]

Table 2.1: Definitions of Culture ^[20]

Culture is...
• The organized and common practices of particular communities. • A shared organization of ideas that includes the intellectual, moral, and aesthetic standards prevalent in a community and the meaning of communicative actions. • The complex processes of human social interaction and symbolic communication. • A set of activities by which different groups produce collective memories, knowledge, social relationships, and values within historically controlled relations of power. • An instrument people use as they struggle to survive in a social group. • A framework that guides and bounds life practices. • All that is done by people. • The ways and manners people use to see, perceive, represent, interpret, and assign value and meaning to the reality they live or experience. • The complex whole that includes knowledge, beliefs, art, morals, customs, and any other capabilities and habits acquired by man as a member of society. • Shared understanding, as well as the public customs and artifacts that embody these understandings. • Patterns, explicit and implicit, of and for behavior acquired and transmitted by symbols, constituting the distinctive achievement of human groups, including their embodiments in artifacts. • Not so much a matter of inert system in which people operate, but rather a historical construction by people that is always changing.

Culture is complex and is something we are exposed to from the day we are born. It is a process detailed in the following deep structures:

1. Culture is a set of rules for behavior . Culture cannot be “seen” because the rules are invisible; one can see only the products of culture: the behaviors produced by the rules. Nevertheless, cultural rules do not cause behavior; they influence people to behave similarly, in ways that help them to understand each other. It is by understanding a culture’s rules that one knows how to greet a person younger than oneself, older than oneself, a friend, or a stranger. Cultural rules help people to know how to hold a baby. Cultural rules shape food preferences and celebrations—determine whether the sun or the moon is celebrated; whether to wear a dress or pants, or nothing at all. These rules give meaning to all the events and experiences of life. The essence of culture is not these behaviors themselves, but the rules that produce the behaviors.
2. Culture is characteristic of groups. The rules of a culture are shared by the group, not invented by the individual. The rules of the group, which are passed on from one generation to the next, form the core of the culture. Although one must remember that in addition to group cultural differences, there are individual differences. Each person develops a unique personality as a result

of his or her personal history and, at the same time, develops in a cultural context with some behavioral characteristics that are shared by other members of the group.



Figure 2.2: Culture is not seen, but you can see the behaviors that result from acculturation. ^[21]

3. Culture is learned. No one is born acculturated; rather, each person is born with a biological capacity to learn. What each person learns depends upon the cultural rules of the people who raised them. Some rules are taught with words: “hold your fork in your right hand, and your knife in your left.” Other rules are demonstrated by actions—when to smile, how close to stand when talking to someone, and so on. Because culture is learned, it is a mistake to assume a person’s culture by the way she or he looks. Someone may be racially black and culturally Irish. A person can also become bicultural or multicultural by learning the rules of cultures other than his or her own primary group.
4. Individuals are embedded, to different degrees, within a culture. Culture is learned and as children are acculturated, they usually learn the core rules of their culture, yet they may not always learn each cultural rule equally well. Some families are more bound to tradition, others less so. Further, even though families and individuals learn the cultural rules, they may not always behave according to what they have learned—some people are conformists; others are nonconformists. Consequently, the behavior of members of a cultural group will vary, depending on how deeply embedded their experiences are within the core of a culture. Thinking about behavioral variations in this way helps those who work with individual families to understand why those from a similar culture do not share all culturally based behaviors.
5. Cultural groups borrow and share rules. Each cultural group has its own set of core behavioral rules and is therefore unique; yet some of the rules of Culture A may be the same as the rules of Culture B. This happens because cultural rules evolve and change over time, and sometimes when two groups have extensive contact with one another, they influence each other in some areas. Thus, two groups of people may speak the same language, yet have different rules about roles for women. Understanding of this concept helps to avoid confusion when a person from another culture is so much like the teacher in some ways, yet so different in other ways.
6. Members of a cultural group may be proficient at cultural behavior but unable to describe the rules. Acculturation is a natural process; as people become acculturated, they are not conscious that their ideas and behavior are being shaped by a unique set of rules. Just as a four-year-old who is proficient with language cannot diagram a sentence or explain the rules of grammar if asked to do so, so also people may become thoroughly proficient with cultural behavior without consciously knowing that they behave according to rules. In the same way, understanding acculturation explains why one cannot walk up to a person and ask him or her to explain their culture.

Cultivating openness about culture and development promotes a curiosity for the early childhood educator that helps with curtailing the two common assumptions that exist in society today. The first assumption is that there is one set of “best practices” and one set

of universal developmental goals for all children and families. By avoiding this static view and looking instead at culture as a fluid set of practices organized to accomplish specific goals, one sees that each cultural community may have a unique set of "best practices" to promote socialization and developmental goals for its children. These practices and goals are situated within the broader community context that includes political, social, and economic history.

The second assumption is that culture is equivalent to one's ethnic or linguistic background. Looking at culture as a set of practices rather than as a person's background provides a more powerful way to understand variations within ethnic and linguistic groups than simply comparing attributes across groups. As teachers, early care providers, and researchers often note, it is typical for more differences than similarities to appear among children from the same ethnic or linguistic backgrounds. Families from similar ethnic or linguistic backgrounds do not necessarily have the same routines, goals, or practices. Routines, goals, and practices are developed in the context of a family's history, including cultural and linguistic heritage, but they vary across regions and from country to country and are usually associated with the immediate and recent social, political, and economic goals of the community. The cultural practices, or routine ways of doing things, define the cultural context in which humans develop. Using this approach, practitioners and researchers can explore how culturally based practices with children drive developmental outcomes rather than

focus exclusively on how developmental outcomes differ across ethnic and linguistic groups. The following vignette illustrates this concept. ^[22]

Naptime Struggles



Figure 2.3: Children patterns vary based on home culture. ^[23]

José is a 17-month-old child whose family lives in an apartment in a large city located close to the Mexican border. His family has recently moved to the United States and has been living with his aunt and her four children. José has been attending a local infant/toddler program for almost two months. His teachers report that naptime is particularly difficult for José. Although obviously very tired, José struggles to transition to his cot and often lies on the floor and cries, which disturbs the other children and often wakes them.

José's primary care teacher has tried carrying José to his cot and giving him a book or favorite toy to help him calm down; however, José rolls off the cot and onto the floor and continues to cry. When José finally does fall asleep, it is usually time for the children to get up and have a snack. The lead teacher, Carla, decides to bring up this issue to her supervisor during her next reflective supervision meeting.

When asked to describe how José's behavior during naptime makes her feel, Carla shares that she feels sad for José because he is so obviously distressed and that she wishes she could do something to help him. She also feels that since José has been in the program for almost two months, he should be able to make the transition to naptime more easily. When asked how José's behavior makes her feel in her role as lead teacher, Carla shares that she feels ineffective as a teacher and worries about the effect that José's behavior has on the other children. She also worries about how she and her assistant will get their lunch breaks since all children need to be asleep in order for one of them to leave the classroom.

Carla's supervisor suggests that she do a home visit to get to know the family better and learn more about the family's caregiving routines. During the home visit, Carla learns that José has slept with his mother since birth and that in José's country of origin, children typically sleep with a parent until another sibling is born, at which time they generally move to an older sibling's bed. When discussing this with her supervisor, Carla comes to understand that co-sleeping reflects a goal of José's cultural community, which is to foster interdependence. ^[24]

As this vignette illustrates, the interdependence valued in José's home is dramatically different from the emphasis on self-reliance and autonomy found in his early care program. Researchers have reported that environments where sleep patterns are different from those of the home setting can lead to uncertainty for children (Provence, Naylor, and Patterson 1977) and that sleep patterns are often among the final practices to change when a family moves to a new country (Farooqui, Perry, and Beevers 1991). José experiences very different practices in the early care program, which are based on the goal of independence, from those he experiences at home. By making a home visit to learn more about family practices, Carla has taken an important first step toward understanding José's behavior and creating a sensitive and responsive classroom. ^[25]

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12.2: The Role of Culture in Development

Although the early childhood field has a long history of commitment to developing culturally appropriate approaches to educating young children (“multicultural education”), it still struggles with understanding the role of culture in the development of our youngest children (Maschinot 2008; Derman-Sparks and Olsen Edwards 2010). To develop a culturally responsive approach, it is essential to understand that what children learn from families and teachers is an idea system that extends deep into the values of a group of people. Learning goes far beyond the things generally associated with culture, such as art, music, styles of dress, or holidays. As a child acquires cultural ways of being, these cultural rules for behavior impact identity by giving children the tools to understand their family/community and be understood in it.

Acquiring the idea system of the group is so powerful that it gives children the ability to interact with the group. For example, babies are born with the capability to make sounds; however, those sounds become meaningful only as they communicate with their families. Through communication the sounds are shaped and organized into the words and sentences the babies’ families use to share meaning. Thus, as children come to know the ideas that govern speech and language in their community, they gain the power to communicate and to represent themselves in the world.

So, when teachers treat culture with an almost exclusive emphasis on the celebrations, styles of dress, art, music, and food habits, they fail to appreciate the depth of cultural impact and the idea system at work in the process of development. Although a child’s identity is impacted by participation in family cultural rituals, the focus neither starts nor ends there. Surrounding children with artifacts and customs that are a part of their history, homes, and communities is important. However, when that approach becomes the sole emphasis in attempts to embrace culture, it diverts attention from the more fundamental role that culture plays in the development of children’s social, emotional, physical, and intellectual well-being. The challenge for teachers of young children is to understand the importance of culture to human development and to move beyond mere cultural appreciation and enrichment to cultural empowerment. ^[26]



Figure 2.4: Children learn by being around others that are different than themselves. ^[27]

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12.3: Myths About Culture

Myth 1, Essentialism : It is possible to learn all there is to know about a culture by studying its traditions, beliefs, practices, and attitudes.

Truth : It is nearly impossible to reduce the essential and distinguishing features of any culture or cultural group to descriptive statements or lists of characteristics

Myth 2, Overgeneralization : Cultural practices and beliefs apply in the same way to all members of a cultural group.

Truth : Cultures are dynamic and constantly evolving in response to such factors as environmental conditions, new challenges, technology, and acculturative pressures resulting from close encounters with other cultural groups. Cultures that are in proximity borrow from and are influenced by one another.

Myth 3, Assumption of stability : Cultures are static, constant, and stable.

Truth : The shared system of beliefs, morals, values, attitudes, practices, roles, artifacts, symbols, and language that make up a culture are adaptive, dynamic, and in constant flux in response to changes in the social context. Cultures change in response to strains, opportunities, and altered social landscapes. Learning and relearning must take place continually.

Myth 4, Single-culture assumption : Within a home and family, a single culture predominates.

Truth : Within in a single family there may be blending of several distinct cultures and ethnic identities. This means that individuals living with a single family may reflect not one, but several cultural traditions. ^[28]

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12.4: Responsiveness to Culture and Language Supports Children's Learning

Responsive environments create a climate of respect for each child's culture and language when teachers and other program staff partner and regularly communicate with family members. They work to get to know the cultural strengths each child brings to their early childhood education program. An essential part of being culturally and linguistically responsive is to value and support each child's use of home language, for continued use and development of the child's home language is beneficial, as is becoming multilingual (learning English in addition to any home languages).

Equally important are nurturing interactions with children and their families in which “. . . teachers attempt, as much as possible, to learn about the history, beliefs, and practices of the children & families they serve. . . .” In addition to being responsive to the cultural history, beliefs, values, ways of communicating, and practices of children and families, teachers create learning environments that include resources such as pictures, displays, and books that are culturally rich and supportive of a diverse population, particularly the cultures and languages of the children and families in their preschool setting. Community members add to the cultural richness of a preschool setting by sharing their art, music, dance, traditions, and stories. ^[29]

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12.5: Summary

Culture can be defined in many ways, is complex, and is continually developing. It affects the way children and their families behave, what they value, and their identities. It is critical that early childhood educators partner with families to understand, value, respect, and honor the individual cultures of the children in your early childhood education classroom.

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CHAPTER OVERVIEW

13: Effectively Negotiating and Resolving Conflict Related to Issues of Diversity

Learning Objectives

After this chapter, you should be able to:

- Articulate the importance of celebrating diversity
- Discuss why cultural differences may lead to conflict between families and programs
- Explain how to develop relationships with families that are inclusive and supportive
- Outline how to create practices and policies that respond to differences respectfully
- Describe three steps to deal with cultural differences in early childhood education programs

Working in an early education setting, with children, family and coworkers from varying backgrounds, conflict is inevitable. However, if managed correctly, conflict can be a learning and growing experience for all.

[13.1: Differences and Conflict](#)

[13.2: Preventing Conflict](#)

[13.3: Navigating Cultural Differences](#)

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13.1: Differences and Conflict

Working in an early education setting, with children, family and coworkers from varying backgrounds, conflict is inevitable. However, if managed correctly, conflict can be a learning and growing experience for all.

In her book *Diversity in Early Care and Education: Honoring Differences*, Janet Gonzalez-Mena discusses the need to honor, learn about and explore not only other cultures different than ours, but acknowledge how our own beliefs play a role in our professional caretaking roles. She shares her own process, “They say we teach what we need most to learn. I am a good example. I’m working on my dialoguing skills. The problem is that when I have a strong reaction to something that doesn’t fit my system, I usually consider it a problem.....My natural reaction is to become defensive and start arguing.” This is a common response for many because our upbringing has taught us that our way is the ‘right’ way, so anything different simply doesn’t feel right.

As professionals, it is imperative we build relationships with families and create a classroom of inclusiveness that celebrates diversity.

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13.2: Preventing Conflict

Issues of Social Justice in the Early Childhood Classroom

Summary

Some conflict can be prevented when we build relationships with families based on a willingness to listen to hear about who they are and what they want for their children. Here are some cultural considerations to keep in mind as you work to understand the experiences and values families have and how you can best meet their needs:

- Many families are most comfortable keeping young children at home with a parent, relative, or friend, especially with families from the same cultural background. So, when they do rely on out-of-home child care, they may experience some discomfort and may not be aware of licensing requirements and restrictions.
- Some cultures may expect that the mother's primary role is taking care of children and the home. However, both parents may need to find work due to financial need and thus depend on out-of-home child care. This can create guilt, shame, fear, and discomfort.
- Families with limited English skills are likely to have difficulty gathering information about the varied early care and education options and may rely on word of mouth or recommendations from others within their ethnic or religious community.
- Families may seek reassurance that early care and education providers understand and respect their family's religion and will not inadvertently violate the family's religious practices (e.g., abstaining from pork products).
- Families of a child with a disability may not be aware of the legal educational requirements, learning possibilities, and school options for children with disabilities.
- Hiring staff from the same culture and language as families and providing opportunities for families from the same cultural or linguistic backgrounds to connect may encourage family engagement and mutual support.
- Some cultures show respect for teachers by not being intrusive and interfering with their job (e.g., not offering suggestions or sharing negative opinions). By American standards, this can look like lack of interest. Families may not know the expectations for family engagement in school.

We can start conversations that will help us understand where families are coming from and how we can effectively and respectfully engage and communicate with them. Questions to ask might include:

- What are some ways staff can learn more about your perspectives and needs?
- How would you like to communicate and partner with staff?
- Describe what school was like in your country of origin (if the family has immigrated or are refugees). ^[85]

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13.3: Navigating Cultural Differences

Cultural differences can lead to conflicts. For example, people may disagree on practices for handling a baby, responding to crying, or feeding. Home visit staff may be concerned over how and when to intervene in family arguments. Staff and families in early childhood education programs may differ about how programs should support children's home or native language. Given the wide range of cultural ideas, it is not surprising that adults can have differences that are rooted in the core of their being.

Gonzalez-Mena (1992, 2001, 2008) indicated that these disagreements may be when adults from different cultural backgrounds may find that their familiar ways of working with children are different or when adults within the same culture can disagree. In both of these situations of conflict between program staff and families, Gonzalez-Mena identified four possible outcomes:

1. All sides gain understanding, negotiate, and/or compromise, leading to resolution of the conflict.
2. Program staff understand the families' perspective(s) and change their practices.
3. Families take on the perspective of the program staff and change their practices.
4. No resolution is reached (here, the conflict may continue or intensify; or both sides can cope with the differences).

Of course, conflicts can occur over numerous issues. To help program staff make progress, Gonzalez-Mena challenges them to question their own assumptions about child development practices (e.g., "My way of thinking about X is not the only way to think about it. My way of doing Practice Y is not the only way to work with the child."). Once this commitment to test one's own assumptions is in place, two goals for a conflict situation are: (1) to minimize (or eliminate) extreme differences in practices; and (2) to resolve the situation for the benefit of the child. Program staff are encouraged to take a child centered look at any situation of conflicting practices. ^[86]

The process for each varies greatly not only based on cultures, but even within similar cultures. These practices can often times go against program policy and best practice as we have been taught in the field. ^[87]



Pin it! Differences in Feeding Practices

The following is a scenario from the NAEYC's publication, *Diversity and Infant/Toddler Caregiving* :

"Junior, who is new to the center, is excited when he sees a bowl of food. The baby makes happy sounds, kicks his legs, and waves his arms. But when Helen puts Junior in the high chair and places the bowl in front of him, he just sits there and makes no attempt to feed himself. He looks confused and becomes distressed. Finally he slumps over, a glazed look in his eyes.

His mother explains later that she has taught Junior not to touch his food. In fact, her son has never been in a high chair; he has always been fed on his mother's lap, wrapped up tightly in a blanket to discourage him from interfering with her." ^[88]

Gonzalez-Mena and Bhavnagri suggest that when the family and program do not agree about a practice or policy, early childhood educators should ask themselves:

1. What is the family's cultural perspective on the issue?
2. How do the family's child care practices relate to their cultural perspective?
3. What are the family's goals for the child? How has the family's culture influenced these goals?
4. In review of these goals, is the family's practice in the child's best interest?
5. Is there any sound research that shows that the family's practice is doing actual harm?
6. Is the program's practice or policy universally applicable, or is it better suited to a particular culture?
7. Did the family choose the program because of its particular philosophy, even if it is based on a different culture from their own?
8. Have program staff members attempted to fully understand the family's rationale for its practices, the complexity of the issues, and other contributing factors?
9. Have staff members attempted to fully explain the rationale for program practices? Have they looked at how their own culture influences their perspective?

10. What are some creative resolutions that address the concerns of both partners and the program? ^[89]

The point is to begin and continue to dialogue with families and to exchange information with the goal of resolving the conflict for the benefit of the child. The “bottom line” is really: What is in the best interest of the child? As stated in the National Association for the Education of Young Children’s Code of Ethical Conduct , our first and foremost ethical responsibility to children is to do no harm.

By learning more about the goals that families have for their children, and about the types of behaviors or practices that families prioritize and implement as they raise their children, program staff can more easily match the learning experiences of the classroom to those of the home. For example, if a teacher is concerned that a 3-year-old in her class is not skilled with using a fork, she should first find out if this is a goal of the family. Do they scoop their food at home using spoons? Do they use chopsticks? Do they feed the child or allow the child to self-feed? It is best for the teacher to check what the family practices and goals are before they misjudge what this child needs from them in terms of support and understanding.

According to National Association for the Education of Young Children’s developmentally appropriate practice one of the tenets is to be culturally responsive. In preparing an environment that supports children and families, we need to ensure that we have considered the beliefs, values, and needs of the family to deliver curriculum that addresses the child both individually and as a group. ^[90]

These exercises can be done individually and at a staff/team meeting. It’s important to involve the family and all caregivers as a way to ensure all perspectives are heard. Now that questions have been identified, having the conversation to gather the information is next; however, this comes with challenges. As you enter into the conversation, it’s important to put personal biases and beliefs aside and be ready to actively listen to hear and learn about the family and their point of view. ^[91]

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13.4: Dealing with Differences

The Program for Infant/Toddler Caregivers (PITC) has outlined three steps in their training Dealing with Differences: Acknowledge, Ask, Adapt that can be used in early childhood programs that serve children of all ages.

Step 1: Acknowledge

How does the caregiver recognize the need for communication with the family? How does the caregiver's attitude convey sincere interest and response? What can the caregiver say to the family to communicate awareness that there is a problem they need to jointly solve?

- Take time to think about how you feel about this issue and get clarity on the reasons behind your feelings.
- Listen carefully to the other person's concern. If you bring up the concern, do it respectfully with an attitude of wanting to understand the issues.

Step 2: Ask

What questions can the caregiver ask the families to get information that will help her or him understand more precisely the families' point of view?

- The next step is about data gathering, trying to get to the real sources of conflict or misunderstanding for the family, the child or you. Ask questions that seek to clarify (and allow families to ask questions to understand the program's point-of-view).
- Pay attention to verbal and nonverbal responses. Restate what you think is being said, take time to be sure you are meaning the same thing in the language you are using.

Step 3: Adapt

How does the caregiver work with the family to define the issues and boundaries of the problem? Does the caregiver seek "common ground" as the basis for negotiation? How does the caregiver open up a negotiation with the family about what to do?

- Once the issues have been defined, seek out the common ground by stating your areas of greatest importance to each other. Listen carefully for areas of common agreement.
- Negotiate around the areas of important agreement and boundaries. Come to a resolution that addresses the real/major issues. Sometimes we have to agree to disagree. ^[92]

While using this method is a great start to get the most desired results, there will be instances when it won't take place. A few outcomes to become familiar and comfortable with are different outcomes that may come during the conversation.

- Sometimes there may be a resolution through mutual understanding and negotiation. Both parties see the other's perspective which is where both parties give a little or a lot.
- There may be a resolution that takes place through gradual education and understanding of the caregiver and seeing the perspective of the family.
- There can also be a resolution through the process of family education. This happens when the family sees the caregiver's perspective and decides to change.
- Lastly, and it's common, there can be no resolution. When this happens, the professional should look at Community Care Licensing Regulations(CCL), as well as internal policies and procedures to ensure no laws or rules are being violated. There are times when internal processes are created, but can be adjusted to meet the individual needs to families. These discussions and determinations should be made with the assistance and input of the site administrators. In some circumstances, the program and family may come to a mutual decision that the program is not a good fit for the family's needs.

Conflicts related to diversity are inevitable and should not be seen or approached in a negative way but rather with the goal of partnering to create the best environment for the child to thrive while in your care. The process of partnering takes time, mutual understanding and for at least one person to take the first, often uncomfortable step.

A few things to remember:

1. All families want what's best for their child and are doing what they believe is best

2. Be curious: what are the expectations the family has from you? From the program and for their child? This will help guide any conversations and interactions.
3. Become self-aware: what makes you uncomfortable? What are your personal beliefs?



Think About It...

Think about a time you had conflict related to diversity with a child in your classroom or family member. How could you have used these tools to create an equitable outcome?

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13.5: Summary

We know that being respectful of difference is valuable in an early learning setting. As indicated, these differences can lead to conflicts between families, early childhood professionals, and the program their child is enrolled in. With strong relationships, some of that conflict can be prevented. Early childhood educators can be reflective when disagreements over practices and policies occur. And they can use the three steps outlined by PITC's Dealing with Differences: Acknowledge, Ask, Adapt training to help mitigate the conflict respectfully.

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CHAPTER OVERVIEW

14: Diverse Family Structures

Learning Objectives

- Explain the following laws within the Ideal Gas Law

[14.1: Introduction](#)

[14.2: Summary](#)

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14.1: Introduction

In this chapter, we will explore diverse family structures and terms that will help build a culture of inclusivity and equity. It is important to consider two overarching premises regarding family structures. The first is that Parents refers to biological, adoptive, and step-parents as well as primary caregivers, such as grandparents, other adult family members, and foster parents. The second is that Families can be biological or non-biological, chosen, or circumstantial. They are connected through cultures, languages, traditions, shared experiences, emotional commitment, and mutual support. ^[114] You may notice that we have used families, often even when referring to parent/caregiver throughout this book in an attempt to be as inclusive as possible.



Figure 9.1: This is a family. ^[115]

A feeling of belonging is critical to every child and family's well-being. The drive to form relationships with others begins in infancy and continues throughout early childhood. These relationships help children fulfill their potential in all areas of development—physical, social, emotional, and cognitive. Quality early childhood programs can expand children's experiences of forming relationships when the culture and core curriculum partners with families' and communities' central themes.

Many families have multiple identities and might include themselves in multiple family definitions. Most children see the caring adults who love and take care of them as their family and will refer to them in that way. It is important to recognize the complexity and variation amongst all families. It is recommended to connect with families to find out the language that they use to refer to their families to help respectfully answer questions that may arise. ^[116]

Understanding and conversations are important to gain insight into the structure of each family unit. It also assists in the individualization of the support offered to each child. Families come to an early childhood setting with distinct family structures and cultures that give meaning and direction to their lives. All families are complex and influenced by many factors: family traditions, countries of origin, geographic regions, ethnic identities, cultural groups, community norms, sexual orientation, gender identities, educational and other experiences, personal choices, and home languages.



Figure 9.2: Programs need to partner with all families. ^[117]

While every child and family are unique, many of our conversations with families involve common topics. We can anticipate that there will be discussions about learning and language, daily routines (such as sleeping, feeding, toileting), expectations, new skills, behavior, discipline, and relationships with peers and adults. We also know that each family will bring unique perspectives to these discussions. Ultimately, it is understanding the perspectives of families and seeing them as the experts on their children that helps create the best care and learning environment for their child. ^[118]

Below is a list of terms and definitions, many from the [Welcoming Schools organization](https://www.welcomingschools.org/) , intended to be a starting point for important conversations about family diversity. Many families have multiple identities and might include themselves in multiple family definitions.

- **ADOPTION:** When adults bring children into their families and legally become the parents of those children.
- **ADOPTIVE PARENTS:** The parents of children who have joined the family through adoption.

- **BIRTH PARENT:** A biological parent. People may also use the terms birth mother or birth father. Most often used in the context of adoption.
- **DONOR OR SURROGATE:** People who help other people have children.
- **BLENDED FAMILY:** Two families who come together to form a new family. This may include step-parents and step-siblings.
- **CHOSEN FAMILY:** People who you care about and consider family, such as friends or neighbors.
- **CONDITIONALLY SEPARATED FAMILY:** A family separated for a specific period of time; having a family member in jail, prison, a mental health care facility, the hospital, etc.
- **DIVORCE:** When people legally separate and end a marriage.
- **EXTENDED FAMILY:** All of your relatives, including your grandparents, aunts, uncles and cousins. In some families, this can include neighbors, friends and chosen family.
- **FOSTER PARENT:** People—other than a child's first family—who take children into their homes and take care of them for as long as their family needs help. Sometimes children will return to their first family, sometimes foster parents go on to become adoptive parents or permanent guardians and sometimes children will be adopted by other families.
- **GUARDIAN:** A person who has responsibility by law to care for a child; a person other than the biological parent who takes care of a child. The person may be biologically related to the child, such as a grandparent.
- **INTERFAITH FAMILY:** When people of different religious backgrounds are part of the same family. Some families choose to raise their children primarily in one faith, some choose to teach their children both faiths and others practice multiple faiths.
- **HALF-SISTER or HALF-BROTHER:** When siblings have one biological parent in common.
- **LGBTQ FAMILY:** A family in which some people are lesbian, gay, bisexual, transgender, non-binary or queer. This could include parents, guardians, foster parents, children, chosen family, siblings or grandparents who are LGBTQ.
- **LESBIAN:** Women who love women.
- **GAY:** People who love people of the same gender, typically men who love men.
- **BISEXUAL:** People who love people not exclusively of one particular gender.
- **PANSEXUAL:** People who love people regardless of their sex or gender.
- **TRANSGENDER:** When your gender identity (how you feel) is different than what doctors/midwives assigned to you when you were born (girl/boy or sex assigned at birth).
- **NON-BINARY:** People who do not feel like the words “girl” or “boy” fit. They may feel like both or neither. They sometimes use pronouns such as they, them, theirs.
- **QUEER:** People use this word as a way to identify with and celebrate people of all gender identities and all the ways people love each other. When used in a mean way, it is a word that hurts.
- **MIXED FAMILY:** When people of different racial and cultural backgrounds are part of the same family. People of different ethnic, religious or national backgrounds can also form families who are “mixed” in terms of culture, skin color, language and/or religious practices.
- **MULTIGENERATIONAL FAMILY:** When more than one generation of a family lives together.
- **MULTIRACIAL FAMILY:** When people of different racial backgrounds are part of the same family.
- **MULTILINGUAL FAMILY:** When people within a family speak more than one language.
- **SIBLING:** Children or adults who share a parent whether biologically or not.
- **SINGLE-PARENT FAMILY OR SOLO-PARENT FAMILY:** A family in which one parent cares for the child or children.
- **STEP-SIBLINGS:** If a divorced or solo parent forms a family with a new person and that person already has children, those children can become step-siblings to their children.
- **STEPPARENT:** When a divorced or solo parent forms a family with a new person, the new partner might become a stepparent to their children. ^[119]
- **TRANSNATIONAL FAMILY:** A family residing in two different countries.

What Programs Can Do

The family compositions represented in the populations served by early childhood programs are quite diverse. Staff members typically develop strategies for accommodating this diversity. Sometimes problems arise for staff members because the children and families they serve have not yet acclimated to the social changes this diversity represents. The problems can sometimes emerge in the interactions among the children who are puzzled by and react negatively to the differences or the stigmatizing comments

made by some parents about others. A situation in one program may be an example: Katie is overheard by staff members saying to Martin: “My mommy says I can’t play with you because you have two mommies living together at your house.” It is unclear whether Katie really understands what she is saying, but the situation represents a teachable moment for the children and the staff.

A series of books may be read in circle time that introduce children to different types of families and point out what is common to all (i.e., adoptive families, foster families, single-parent families, multigenerational families, and families led by a grandparent or a gay or lesbian couple). These families represent different ways that adults come together to take care of and love the children they have the responsibility to raise. For some families and staff members, this may represent a complex issue in which they are caught between creating a safe and supportive environment for children who have two mommies and respecting the concerns of parents

who, for religious or other reasons, promote a different view at home. In such cases, staff members may need to check with families and meet with them before circumventing what is said at home.

Two Mommies

This scenario involves an openly lesbian couple who enroll their child in an infant/toddler care program. It focuses on differences of beliefs and attitudes among staff members concerning the definition of a legitimate family unit. It opens up the thorny issue of a teacher judging a family as engaging in “wrong” or unacceptable behavior because that behavior contradicts the teacher’s personal beliefs. What do you think is the responsibility of a culturally responsive professional in such a situation?

The Scenario

For the first time, a family consisting of two female parents—both of whom are open about being lesbians—joins the infant/toddler care center. During the intake session, both women make it clear that they want to be acknowledged as the parents of the infant. They cross out “father” on the admission form and substitute “mother,” so that there is a place for each woman to write down her name. They also ask permission to contribute a poster that shows “two-mommy families” and a few picture books with images of two-mommy and two-daddy families.

The center director consents to their requests. However, when she informs the staff about the family, conflicting responses to having openly lesbian parents in the program necessitates a staff discussion. Christine, the teacher in whose room the infant will be placed, is uncomfortable with the situation. She tells other staff members that she thinks it is wrong to encourage homosexuality, since she believes it is a sin. She wants the director to tell the family that only one parent can be considered the infant’s mother, and that person is the only family member who should interact with the program. She also refuses to use the poster or picture books the family wants to contribute.

Marie, an assistant teacher, agrees with Christine. She even suggests that, to avoid problems, the director not admit the family into the program. She explains that since homosexuals cannot properly raise a child, she does not think the program should encourage homosexuality by accepting the infant.

Rachel explains that she has no problem with a two-mommy family, but she is worried that admitting this family into the program will cause problems with other families. In the interests of keeping the peace, she reluctantly supports Christine’s suggestion to identify only one person as the infant’s mother and that no materials show two-mommy families.

Carrie disagrees with the others. She takes the position that, as professionals, they have a responsibility to support all families equally and to make sure that all the infants and toddlers have their family visible in the program. She reminds her colleagues that the family composition and members’ roles within families vary widely. Carrie further explains that she is not questioning her colleagues’ personal beliefs, but argues that professionals need to act according to professional ethics and not just according to their personal beliefs.

Sarah agrees with Carrie. She reminds her colleagues of the following excerpt from the California Early Childhood Educator Competencies publication: “Cultural perspectives of children, families, staff, and colleagues vary widely on issues such as differences in individual children’s learning, strengths, and abilities; gender identity and gender-specific roles; family composition and member roles” (CDE 2011, 21).

Sarah reminds staff that there was a time when many people considered all single mothers to be immoral and bad parents. Sarah further states that it is equally prejudicial to automatically assume that all two-mommy families are “bad.” Carrie adds to Sarah’s point, declaring that child-rearing problems arise in families of all kinds of cultural backgrounds and configurations. ^[120]



Think About It...

How is this scenario about cultural responsiveness?

How do you feel each of the staff (Christine, Marie, Rachel, Sarah, and Carrie) on their cultural responsiveness? Why?

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14.2: Summary

Educators need to be prepared to serve the diverse array of families they will encounter across their careers. Many types of family structures have been introduced in this chapter. Programs should implement policies that acknowledge and respect different structures of families. And teachers can get to know families and ensure that all children's families are recognized and authentically included in the classroom.



Think About It...

What experiences do you have with diverse family structures? Do you have a reaction to any of these definitions? How might your experiences and feelings about diverse family structures affect how you care for children and interact with their families?

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CHAPTER OVERVIEW

15: Families of Children with Special Needs or Special Health Care Needs

Learning Objectives

- Explain the following laws within the Ideal Gas Law

[15.1: Introduction](#)

[15.2: What Programs Can Do To Be Inclusive of All Children](#)

[15.3: Summary](#)

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15.1: Introduction

Children with disabilities or other special needs refers to children with a specific diagnosis, as well as children who do not have a diagnosis but whose behavior, development, and/or health affect their family's ability to maintain child care services. The disability or special need may be as mild as a slight speech delay or as complex as a mixed diagnosis of motor challenges, vision impairment, and cognitive delays. ^[144] Special health care needs include a variety of conditions such as birth defects, neurological disorders, and chronic illnesses that can be life threatening or impact daily living (e.g., cancer, sickle cell disease [or anemia], cystic fibrosis, hemophilia, AIDS, diabetes, juvenile rheumatoid arthritis). ^[145]

Families of children with disabilities or other special needs have the same need for child care as do other families. However, families of children with disabilities or special needs often find the search for quality and affordable child care a greater challenge as they face the reluctance of many child care providers to enroll their children. This situation makes it all the more important that child care providers strive to include all children in their programs so as not to increase the immense challenges that such families already face. ^[146]

In accordance with the Individuals with Disabilities Education Act (IDEA), children ages 3-21 are entitled to a free, appropriate public education (FAPE) in the least restrictive environment (LRE). LRE requires that, to the extent possible, children with disabilities should have access to the general education curriculum, along with learning activities and settings that are available to their peers without disabilities. Corresponding federal legislation applied to infants and toddlers (children birth to 3) and their families specifies that early intervention services and supports must be provided in "natural environments," generally interpreted to mean a broad range of contexts and activities that generally occur for typically developing infants and toddlers in homes and communities. ^[147]

It is critical that children with disabilities or other special needs, and their families, are included in quality early childhood education programs that are the natural environments of their peers who are typically developing. Children learn from their interactions with other children and their surroundings while developing a sense of security and self-esteem from caring relationships with program providers and staff. Everyone benefits from quality early childhood education programs that provide inclusive care. Children who have a disability or special need get to know and interact with typically developing peers, while their families benefit from programs and services they need to achieve their parenting goals. Children who are typically developing benefit when they have the opportunity to get to know peers who are atypically developing in the classroom. Everyone has the opportunity to learn about other human beings in regard to their strengths and challenges.



Figure 11.1: Children of all abilities should be included in high quality ECE classrooms. ^[148]

Children and families want to be accepted and included in their community regardless of ability. They want to truly belong. But the kind of belonging they desire goes beyond simply "being together." They want full, unconditional membership in family and community. As Norman Kunc, a disability rights advocate, said so eloquently, "When inclusive education is fully embraced, we abandon the idea that children have to become 'normal' in order to contribute to the world. Instead, we search for and nourish the gifts that are inherent in all people. We begin to look beyond typical ways of becoming valued members of the community and, in doing so, begin to realize the achievable goal of providing all children with an authentic sense of belonging."

Children with disabilities or other special needs may present unique challenges, but the care they need is very similar to that needed by any child. Children with special needs spend most of their time doing what other children do. They have the same curiosity,

desire to play, and need to communicate as their peers do. Childcare providers who are providing developmentally appropriate childcare, which is individualized to meet the needs of each and every child, already have many of the skills needed to serve children with disabilities or other special needs. ^[149]

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15.2: What Programs Can Do To Be Inclusive of All Children

Most children identified by special education professionals as having a disability have delays in learning and communication (over 70 percent of children from birth to age 14). What is more important is that learning disabilities are often not recognized or identified until children begin formal schooling. Children who learn differently or have delays in language commonly manifest special needs through their behavior in group settings. Early childhood educators can provide a language-rich environment and make accommodations based on knowledge of the individual child.

There are fewer children with more significant disabilities such as intellectual disabilities (formerly referred to as mental retardation), physical and mobility impairments, or multiple disabilities. When children do have significant disabilities, they are likely to be receiving specialized services that may support success in a child care setting. Children who are eligible for and who receive early intervention or special education services have individual plans with goals and strategies for caregivers and providers to use. For children under age three, the plans are called individualized family services plans (IFSPs); for children over age three, the plans are called individualized education programs (IEPs). Early childhood educators can be an important member of an IFSP or IEP team when these plans are being developed.

Learning about Individual Children

Information about a specific disability may give an early childhood educator ideas for how to support a child. When serving an individual child, however, the provider should focus on the child's needs, not the disability or its label. A child with cerebral palsy, for example, may walk with leg braces, use a wheelchair, have minor physical symptoms, or demonstrate a delay in using language. The possible variations within this one label are tremendous, demonstrating that no single label or diagnosis can provide enough information about a particular child. Early childhood educators need to learn beyond a textbook definition and ask questions with sensitivity and understanding—particularly in talks with parents.

Early childhood educators can go far toward setting a tone of welcome and understanding. When a family member shares a child's diagnosis, a good follow-up question is often "And how does that affect _____'s development?" This approach can help assure a family member that the child care provider is sincerely concerned about the success of the child and is interested in providing appropriate, individually tailored care. The response from the parent will help the child care provider determine what accommodations might be needed, what other questions may be appropriate to ask, and whether specialists are involved or needed.

Promoting Inclusive Practices

Even if children with disabilities are not currently enrolled in an early childhood education program, educators can still promote inclusive practices. One way is to have pictures, books, and materials that present children with disabilities in a general setting. How people are alike and different naturally arises in an early childhood education setting; a caregiver can take advantage of these opportunities to discuss them. Language use is also critical in developing an atmosphere of inclusion. The best practice is to use "person-first" language when one is talking about people with disabilities. This practice simply means putting the person before the disability: "a child with autism spectrum disorder" rather than "an autistic child."

The process of exploring inclusion with families, colleagues, and children will suggest other ways to expand inclusive practices. For example, planning staff discussions on specific changes in philosophy, attitudes, and practices goes far toward including children with special needs in a child care setting. Outside the immediate early childhood education program setting, adults with disabilities in a community might contribute to a care provider's expanding knowledge of issues related specifically to inclusion and to disabilities in general.

Successful Inclusion of Children with Special Needs

As each child is unique, so is each early childhood education program. There is no magic formula for making inclusion work beyond the creativity, energy, and interest that most early childhood educators already bring to their work. Their uniqueness notwithstanding, every program is able to successfully include children with disabilities. And each makes it work child by child, day by day. A "can-do" attitude among the teachers helps to provide the necessary energy for coming up with solutions to the inevitable challenges. It also helps to have an enthusiastic attitude on how to make inclusion work rather than to simply fulfill a legal obligation.

Some children need small changes to the curriculum or minor supports in order to get the most out of certain activities. These sorts of things may consist of fairly simple accommodations, such as providing a special place or quiet activity for a child who is unable to participate in large-group activities or making available a special snack for a child who needs to eat more frequently than the typical meal or snack schedule.



Figure 11.2: Individual children's needs will help you decide what adaptations you need to make. ^[150]

Other children may require more specific adaptations that might not be readily apparent. A variety of community resources can be helpful in determining what those might be. The family, for example, is always the first and most important guide for what a child might need; after that, an area specialist or a local workshop might be. Beyond the immediate community, a world of literature in books, periodicals, and Web sites devoted to disabilities and inclusion can inform an early childhood educator about appropriate adaptations for a child with a particular condition or need.

Programs that begin with a high-quality, developmentally appropriate foundation; a positive attitude on the part of the care provider; appropriate adult-child ratios; supportive administrators; and adequate training for the provider will be in a good position to creatively solve problems for a child with disabilities or other special needs, exactly as it does for children who are typically developing. If a child already has an established diagnosis, trained intervention personnel may be available to assist in this process. One of the biggest roles for a care provider is to facilitate a sense of belonging and inclusion. Several helpful strategies are as follows:

- Start with the assumption that all children are competent.
- Adapt the environment so that it is developmentally appropriate, challenging, and fits the needs and interests of each child.
- While there may be a need to support a child's mastery of a specific skill, keep the whole child in mind, particularly the child's social-emotional experience.

Consider the following questions when adapting an activity for a child with special needs :

- Does the child have an opportunity to be in control of the learning experience?
- Is there a balance between adult-initiated learning and child-initiated learning?
- Can the child make choices while learning the skill?
- Is the child able to initiate his/her own efforts to practice the skill, with support given by the child care provider?
- Is the child gaining self-confidence and showing the joy of accomplishment while learning?
- Is there room in the activity for the child to make discoveries?

Collaborating for Inclusion

To effectively meet the needs of children with differing abilities and learning characteristics, early childhood educators may need to expand the way in which they reach out to families and link with specialists. These two groups of people have important information to share and can serve as resources to support children in a program. Their suggestions invariably enrich efforts at inclusion. Specialists themselves may even be able to visit a care facility and offer some on-site guidance.



Figure 11.3: Collaboration provides valuable support and insight. ^[151]

Providing inclusive early childhood education does not mean a teacher—or even a group of teachers—has to do the work alone. Everyone has a role to play. The primary role of an early childhood educator is to nurture and support the child’s development in a loving and caring manner. Partnerships formed with other adults who are caring for the child—the parents, health-care providers, or specialists—can complement the efforts of all concerned, especially when everyone concentrates on a particular strength. When the expertise of many are combined, ideas develop and strategies emerge that are better than those any one person could have developed alone. The result is the essence of true collaboration.

For collaboration to be successful, the following elements are essential:

- Respect for family’s knowledge and experience with the child. They are the first and best resource and should be included in planning and implemented care of their child.
- Clear and regular communication, both informal or planned meetings.
- Time reserved for collaboration, recognizing that everyone is likely going to be pressed for time.
- Everyone having an investment and active involvement.
- Collaborative efforts to provide the appropriate assessments and support services for the child.

More information about identifying children with special needs and providing inclusive care can be found in the publication *Inclusion Works* by the California Department of Education.

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15.3: Summary

Teachers will have children in their classrooms with diagnosed and undiagnosed special needs, including those related to their health. Early childhood programs have legal obligations to provide inclusive programs and inclusion benefits for everyone involved (children with special needs, their peers that do not have special needs, families, and teachers).

Having a solid foundation in developmentally appropriate practice, which includes the importance of learning about and meeting the needs of each individual child, goes a long way to providing inclusive early education. Support, accommodations, and collaboration are essential to providing inclusive early childhood education programming.

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