

FOCUS ON VOCABULARY AND LANGUAGE

We experience *a continuous self*, but that self *morphs* through stages—typically growing up, raising children, enjoying a career, and, eventually, life’s final stage, which will demand my presence. Although we remain the same person throughout life (*a continuous self*), we do change and transform (*morph*) through various stages of growth and development, such as growing up, getting married, having a family, and pursuing a career.

. . . *from womb to tomb* . . . In the process of becoming who we are, and as we travel (*journey*) through life, from conception to death (*womb to tomb*) we change and mature physically, cognitively, and socially. (Another humorous expression describing the life span or life cycle is from “sperm to worm.”)

Prenatal Development and the Newborn

Conception

Thus, from *conception* onward, *heredity and experience dance together*. The study of how the environment influences gene expression (*switching genes on or off*) is called **epigenetics**. Following the fertilization of an egg by a sperm (*conception*), **genes** influence development; but diet, drugs, stress, and other experiences can affect *epigenetic marks* that trigger or block genetic expression. Thus, genetic inheritance (**heredity**) and *experience* influence each other (*they dance together*). As Myers notes, *genes and scenes* (that is, *environment*) *interact*.

Close-Up: Twin and Adoption Studies

In procreation, a woman and a man *shuffle their gene decks and deal a life-forming hand to their child-to-be* . . . The idea here is that just as cards are randomly interspersed (*shuffled*) and then passed out (*dealt*) to the players, a man and a woman intermingle their genes (*shuffle their gene decks*) and conceive offspring (*deal a life-forming hand to their child-to-be*). The child is then exposed to many environmental factors beyond parental control that limit how much the parents influence the child’s development (*children are not easily sculpted by parental nurture*).

. . . *tease apart* . . . Here the word *tease* means to separate or disentangle. In an attempt to discover or separate out (*tease apart*) the differential effects of environment (*nurture*) and genes (*nature*), investigators need to use two approaches—varying the home **environment** while controlling heredity (separated twin studies) and varying heredity while controlling home environment (adoption studies).

. . . *chain-smoking* . . . A *chain-smoking* person is someone who smokes many cigarettes, usually one after another (it does not mean that he or she smokes chains!).

. . . *blue-collar families* . . . This phrase refers to a social category based on the type of work people do. Traditionally, manual workers wore denim-blue work shirts (*blue-collar shirts*) in contrast to people such as office workers and managers who wore white shirts (white-collar shirts). In this case, Myers discusses **identical twins**, also known as **monozygotic twins** (both named Jim) who were adopted by similar working-class (*blue-collar*) families.

The Competent Newborn

. . . *toddler* . . . This term describes a child who is beginning to learn to walk and who walks with short, uneven steps. In one experiment, infants who were exposed to chamomile-scented balm during breast feeding developed a preference for that aroma that persisted over time. Twenty-one months later (when they were *toddlers*) they preferred playing with chamomile-scented toys. Other children (*toddlers*) who had not smelled (*sniffed*) the scent did not demonstrate this preference.

Infancy and Childhood

Physical Development

After birth, these neural networks had *a wild growth spurt* . . . Myers points out that when you were born, you had all the brain cells that you will ever have. But after birth, there is very rapid development (*a wild growth spurt*) in the number of connections between neurons.

. . . *mushroomed* . . . Research aimed at discovering how early experiences affect brain development (*how early experiences shape the brain*) provided insight (*opened a window*) on that process by raising rats in either solitary confinement (*an impoverished environment*) or in conditions that simulated a natural environment (*an enriched environment*). Rats raised in an *enriched environment* developed a heavier and thicker cortex, their brain weight increased by 7 to 10 percent, and the number of synapses increased dramatically (*mushroomed*) by about 20 percent. Those rats raised with the most toys (the *enriched environment*) had the greatest brain development.

Similar to *paths* through a forest, *less-traveled neural pathways* gradually disappear and *popular* ones are broadened. This analogy suggests that brain development goes on throughout life. Neural connections (*paths* or *pathways*) that are frequently used (*popular*) are widened and more clearly defined, while those connections that are seldom used (*less-traveled neural pathways*) become weakened and may eventually disappear. The *neural pathways* supporting language and agility grow and multiply into puberty, but the *pathways* not used are trimmed or cut (*pruned*). This *use-it-or-lose-it pruning process* closes down unused links and strengthens others.

. . . *smothering crib death* . . . When it is time for sleep, parents usually put their babies in small beds with high sides (*cribs*). If babies sleep face down, they might not be able to breathe properly and might suffocate (*a smothering crib death*). However, the recommendation that babies sleep face up on their backs (*the back-to-sleep position*) has been associated with somewhat later *crawling* (moving on hands and knees) but not with later walking.

Cognitive Development

Out of sight is out of mind. This refers to our tendency to stop thinking about something (*out of mind*) that is no longer in our visual field (*out of sight*). In one experiment, Jean Piaget showed an infant an attractive and interesting (*appealing*) toy and then covered it with his hat (*he flopped his hat over it*). Before the age of 6 months, the infant acted as if the toy no longer existed, which demonstrated a lack of **object permanence** (the infant *seemed to live in the present*). However, by about 8 months, infants begin to show that they do remember things they can no longer see.

When Little Red Riding Hood realized her “*grandmother*” was *really a wolf*, she swiftly revised her ideas about the creature’s intentions and *raced away*. Preschoolers gradually begin to understand that other people have their own mental capacities—for example, intentions, motivations, feelings, or beliefs (*they begin forming a theory of mind*). This is illustrated when the young girl in the

children's story *Little Red Riding Hood* recognized that the big bad wolf (disguised as her "grandmother") had very bad intentions toward her and she quickly escaped (*raced away*).

Why is reading faces such a challenging task for those with ASD? Children with **autism spectrum disorder (ASD)** are believed to have an impaired *theory of mind* and find it difficult to infer others' thoughts and feelings based on their facial expressions (*reading faces is a challenging task for those with autism spectrum disorder*). For example, they might not be able to discern that another child's sulking expression (*pouting mouth*) signals sadness or that someone's bright-eyed look (*twinkling eyes*) means happiness or mischief. The underlying cause seems to be poor communication among brain regions that normally work together and help us perceive another's point of view.

If Piaget's child was a young scientist, Vygotsky's was a young *apprentice*. Lev Vygotsky believed that children's minds develop through interaction with the social environment and that language is an important aspect of this development (*it provides the building blocks for thinking*). Thus, children learn from their parents and others, and this guidance provides a temporary framework or structure (*scaffold*) from which they can step to higher levels of thinking. This is similar to the way a novice or trainee (*apprentice*) learns skills and knowledge from a more experienced worker.

. . . *cognitive milestones* . . . A *milestone* is an event of significance or importance. (Originally, a *milestone* was a large stone by the roadside inscribed with the distance in miles to nearby towns.) Myers notes that the age at which children usually succeed at important mental tasks (*cognitive milestones*) is of less relevance than the developmental order or sequence in which these abilities appear. Today's researchers have confirmed that human **cognition** unfolds basically in the sequence that Piaget described, but they see development as more continuous than did Piaget.

. . . *teeter-totter* . . . A *teeter-totter* is a playground toy (also called a "seesaw"). To use it, two people sit at either end of a long plank or bar balanced in the middle and take turns riding up and down. If one person were to get off the end of the teeter-totter in the down position, the person on the other end would descend rapidly and hit the ground (*crash*). Most older children and adults would not intentionally cause this to happen, but a 3-year-old might not understand that getting off would create a problem for the person on the other end of the *teeter-totter*. Piaget's insights can help us to remember that young children cannot think like adults and cannot take another person's point of view.

By *building on* what children already know, we can engage them in *concrete demonstrations* and stimulate them *to think for themselves*. Preschool and elementary schoolchildren think differently from adults. To help them become independent thinkers (*think for themselves*), Piaget recommended that they be given specific, tangible examples (*concrete demonstrations*) that utilize (*build on*) their existing knowledge.

Social Development

The Harlows decided to *pit the drawing power* of a *food source* against the *contact comfort* of the blanket by creating two artificial mothers. The Harlows' experiment was designed to test whether food or nourishment was more rewarding than the comfort of a soft terry cloth. Thus, when they tested the attraction (*pitted the drawing power*) of the artificial mother who supplied food (*the food source*) against the soft comfort of the terry cloth mother (*the contact comfort*), they were surprised that the monkeys preferred the comfortable (*comfy*) cloth mother. They used "her" as a secure base from which to explore and a protected and sheltered sanctuary (*safe haven* or *secure base*) to return to when frightened or anxious.

Extreme childhood trauma can also leave footprints on the brain. Disturbing, frightening, and shocking (*traumatic*) experiences that occur early in development can have an effect on brain functioning; metaphorically, they can leave impressions (*footprints*) on the brain. Many abused children suffer from nightmares and depression, and during adolescence they may be troubled by substance abuse, binge eating, or aggression. In that way, extreme trauma in childhood can have serious effects on development (*can also leave footprints on the brain*).

Child-raising practices vary. Some parents are *strict*, some are *lax*. When it comes to parenting styles (*child-raising practices*), there is much variability. Some parents impose rigid rules and expect them to be followed without question (*they are strict*) and so they are referred to as *authoritarian* parents (*too hard*). Other parents are *permissive* (*too soft*) and allow children to do as they wish, making few demands on them and using little punishment (*they are lax*). Still other parents are *just right*—these *authoritative* parents not only set rules and enforce them but also discuss the reasons for the restrictions. With older children, *authoritative* parents encourage open discussion and may allow exceptions when making the rules; thus, they are both demanding and responsive. But Myers asks us to remember that the association between parenting style and developmental outcomes is *correlational* and does not imply *causation*.

. . . parenting doesn't happen in a vacuum. Parenting styles are influenced by environmental factors and are, therefore, not completely independent of cultural forces (*parenting doesn't happen in a vacuum*). Rather, parenting styles reflect the attitudes, values, and traditions shared by the culture.

Adolescence

During **adolescence** we *morph* from *child* to *adult*. The time period between the end of childhood and the beginning of adulthood involves many social and biological changes; the person is transformed (*morphed*) from one type of entity (*a child*) to something quite different (*an adult*).

Physical Development

For boys, early maturation has mixed effects. In general, for boys in their early teen years, being stronger and more athletic leads to more self-assurance, greater popularity, and greater independence; but it also puts them more at risk for alcohol use, delinquency, and premature sexual activity (*it has mixed effects*).

If a young girl's *body and hormone-fed feelings* are *too far beyond* her emotional maturity and her friends' physical development and experiences, she may search out older teens or may suffer *teasing* or *sexual harassment* (Ge & Natsuaki, 2009). If a girl's biological development (*her body and hormone-fed feelings*) is proceeding faster or ahead of (*is too far beyond*) her emotional and social development, she may start socializing with and imitating the behavior of older adolescents. Thus, *early maturation* can be a problem for girls, especially if the people around them react in an inappropriate or suggestive manner to their physical development (*sexual harassment*) or make fun of them (*tease them*).

They just, reasoning from their gut, weigh the benefits of risky behaviors more heavily (Reyna & Farley, 2006; Steinberg, 2010). An adolescent's brain continues to develop (*it is a work in progress*). During this period, unused neurons and their connections are cut or trimmed (*pruned*), but frontal lobe maturation progresses more slowly than (*lags behind*) the development of the emotional limbic system. Teens are therefore prone to impulsiveness, irrational thinking, unsafe or dangerous (*risky*) behavior, and emotional outbursts (*emotional storms*). All of these behaviors are

influenced by the emotional limbic system (*they reason from their gut*). They seek the thrills and rewards of unsafe behaviors without considering their danger (*they weigh the benefits more heavily*) and they cannot always find the means to control these impulses (*they can't always locate the brake pedal*).

Cognitive Development

When adolescents achieve the *intellectual peak* Jean Piaget called *formal operations*, they apply their *new abstract thinking tools* to the world around them. The **formal operational stage** is the highest level in Piaget's theory of cognitive development (*its intellectual peak*). Most adolescents reach this stage and are capable of logical, rational, emotionally detached reasoning (they have *new abstract-thinking tools*). For example, many think about and discuss (*debate*) such issues as good and evil, truth and justice, and human nature.

Two crucial tasks of childhood and adolescence are determining right from wrong and developing *character—the psychological muscles for controlling impulses*. *Character* refers to the total qualities a person possesses, including attitudes, beliefs, interests, actions, and a philosophy of life. By developing *character*, adolescents learn to have the intellectual strength (*psychological muscles*) to refrain from acting immorally (*to control their impulses*). Lawrence Kohlberg (and Piaget) proposed that moral reasoning influences moral action. A more recent view suggests that much of our morality is derived from (*rooted in*) our emotions and passions (“*quick gut feelings*” or the “*low road*” of *unconscious, automatic thinking*), which the mind seeks to justify or rationalize (the *moral intuition* approach). These feelings activate or generate (*trigger*) moral reasoning.

Kohlberg claimed these levels form a moral ladder. Kohlberg proposed a stage theory of moral reasoning that has three levels: *preconventional*, *conventional*, and *postconventional*. In his view, children have to go successively through each of these three stages of moral development, much as a person climbs a ladder, one rung at a time, from bottom to top. The lowest rung on this *moral ladder* involves self-interest and avoidance of punishment (*preconventional morality*); the highest rung, which often develops during and after adolescence, is concerned with personal ethical principles and universal justice (*postconventional morality*). Critics contend that the *postconventional* level is culturally limited, typically appearing among people who value (*prize*) *individualism*—giving priority to one's own goals.

. . . *throw a switch* . . . This means to pull a lever. People's moral reasoning and judgments are affected by basic emotional reactions (*quick gut feelings*). This phenomenon is evident in situations that require a choice between two unpleasant alternatives (*a dilemma*). In the Myers example, either pulling a lever (*throwing a switch*) to divert the runaway trolley onto another track or pushing a person onto the tracks results in five people being saved and one person dying. However, the latter choice causes much more emotional conflict (*their brain's emotion areas activate*). Myers' point—emotions influence (*feed*) moral intuitions.

Social Development

. . . *psychosocial task* . . . According to Erik Erikson, each stage of life involves a problem (a *dilemma* or *crisis*) that has to be resolved before we can move on to the next stage. These tasks involve interactions between ourselves, our surroundings, and other people; thus, they are *social* in nature. Young children struggle (*wrestle*) with issues of *trust*, then *autonomy* (independence), then *initiative*. School-age children strive for *competence*. The psychosocial assignment (*psychosocial task*) of adolescence involves *role confusion vs. identity formation*. (This is sometimes called an *identity crisis*).

Some [adolescents] *forge* their identity early, simply by *taking on* their parents' values and expectations. *Forge* literally means to form or shape by heating and hammering metal. Erikson observed that some young people form (*forge*) their identities early by adopting (*taking on*) their parents beliefs, attitudes, ethics, and so on. Others are influenced more by specific peer groups such as athletes (*jocks*), computer lovers (*geeks* or *nerds*), nonconformist dressers (*goths*), and neat, traditional dressers (*preps*) when forming their identities.

The preschooler *who can't be close enough to her mother*, who loves to touch and cling to her, becomes the 14-year-old who *wouldn't be caught dead holding hands with Mom*. When adolescents in Western cultures attempt to develop their own identities, they start to distance themselves from their parents (*they begin to pull away*). Thus, the younger child who has a very strong need to be near her mother (*who can't be close enough to her mother*) develops during adolescence a desire to be independent—she would not like to be seen, especially by her peer group, holding hands with her mother (*she wouldn't be caught dead holding hands with Mom*).

Positive parent-teen relations and positive peer relations often *go hand in hand*. Teens who have close and warm relationships with their parents tend to also have good relationships with their friends. These two tendencies go together (*they go hand in hand*).

. . . heredity *does much of the heavy lifting* in forming individual **temperament** and personality differences. Genetic predispositions contribute much (*do much of the heavy lifting*) in the formation of individual differences in personality. Parents and peers influence teen behavior and attitudes.

Thinking Critically About: How Much Credit or Blame Do Parents Deserve?

Society has reinforced parent blaming. Believing that parents shape their offspring *as a potter molds clay*, people readily praise parents for their children's *virtues* and blame them for their children's *vices*. Myers suggests that, because some factors that affect development are under the parent's control and others are not, it is not appropriate to be judgmental. We should be slower to praise parents for their children's achievements (their children's *virtues*) and slower yet to be critical when the children do not perform up to their expectations (their children's *vices*). Children are not simply formed by their parents' child-raising abilities (*as a potter molds clay*) but rather are influenced by many factors beyond their parents' control.

The *genetic leash may limit* the family environment's influence on personality, but does it mean that adoptive parenting is a *fruitless venture*? Despite the fact that genes may constrain (*the genetic leash may limit*) the influences of the family environment, adoptive parenting is not a futile or ineffective undertaking (it is not a *fruitless venture*). Myers notes that while children are not readily changed or formed (*not easily sculpted*) by parental nurture, parents do influence their children's attitudes, values, manners, faith, and politics.

Thinking About Continuity and Stages

Do adults differ from infants as a *giant redwood* differs from its *seedling*—differences mostly created by constant, gradual growth? Or do we change in some ways as a *caterpillar* differs from a *butterfly*—in distinct stages? The *giant redwood* is a large coniferous tree that grows in a continuous, cumulative way from *seedling* to sapling to mature tree. On the other hand, the *butterfly* emerges as a different creature after passing through a stage as a *caterpillar*. **Developmental psychologists** ask: Are changes throughout the *life span* (from infancy to adulthood) due to a slow, continuous shaping process (like the *giant redwood* tree), or do we go through a series of genetically preprogrammed stages (like the *butterfly*)?

Adulthood

Physical Development

Aging also levies a tax on the brain. Myers is pointing out that *aging* is accompanied by a decrease in some perceptual and cognitive abilities. Just as a person has less money after taxes have been assessed (*levied*) on an income, there are some losses in a brain's ability to function optimally due to the aging process (*aging levies a tax on the brain*).

We are more likely to *rust from disuse than to wear out from overuse*. When adults remain physically active, there are numerous benefits—more cell development, more neural connections, increased mental agility, improved memory, clearer reasoning ability, better maintenance of the *telomeres* that protect the ends of chromosomes, and the promotion of neurogenesis (especially in the hippocampus). If we have a sedentary lifestyle, we will be like unused pieces of metal machinery that suffer from corrosion (*rust*). On the other hand, keeping active will not do us any harm (we won't *wear out from overuse*); instead, we may benefit both mentally and physically (*fit bodies support fit minds*).

In later life, the stairs get steeper, the print gets smaller, and other people seem to *mumble* more. This is not meant to be taken literally. Myers is pointing out that, as we become older, our sensory and perceptual abilities change so that our reaction time and our ability to see and hear decline. Thus, the stairs *appear* steeper, the print *seems* smaller, and people do not *appear* to be speaking clearly (they *mumble*).

Social Development

“*Pair-bonding* is a *trademark* of the human animal,” observed anthropologist Helen Fisher (1993). *Pair-bonding* refers to the monogamous **attachment** formed between one person and another, such as with a marriage partner, and this affiliation is characteristic (*a trademark*) of human beings.

Might test-driving life together in a “trial marriage” reduce divorce risk? Myers is asking whether premarital living together or a “*trial marriage*” (*test-driving life together*) increases the probability of a successful later marriage, decreasing the likelihood of divorce (*reducing divorce risk*). Research suggests it does not. Those who live together before marriage, especially those living together prior to making a commitment to get married (*to become engaged*), are more likely to get divorced than those who do not.

Often, love bears children. To *bear children* means to give birth to offspring or procreate. Falling in love and forming an intimate relationship may result in pregnancy and birth (*love bears children*); for most people, this most long-lasting (*most enduring*) of life changes is a happy event.

For most people, however, an *empty nest* is a happy place (Adelmann et al., 1989; Borchhoff et al., 2008). The “*empty nest syndrome*” refers to the belief that parents suffer great anguish when their children finally leave home. This departure is significant and sometimes not easy. However, for many parents, the absence of their children from the house (*the empty nest*) is not a cause for unhappiness. Instead, it may result in a warmer and more intimate relationship similar to when they were first married (*the “postlaunch honeymoon”*).

Today the clock still ticks, but people feel freer about keeping their own time. The **social clock**, which is applied to both men and women, is the culturally preferred timing of social events such as marriage, parenthood, and retirement. In contemporary society, the timing of these important events in our lives continues to exist (*today the clock still ticks*) but it is less rigid than it once was. Now,

people show less concern about adhering to the traditional sequence or timing dictated by the social clock (*people feel freer about keeping their own time*).

As the years go by, feelings mellow . . . Highs become less high, lows less low. Because bad feelings tied to negative events fade faster than good feelings tied to positive events, most older people have a sense that life has been mostly good. Over time, our emotions get less intense (*feelings mellow*) and tend to have less variability with fewer extremes of either joy (*highs become less high*) or sadness and despair (*lows are less low*).

Thinking About Stability and Change

Many a 20-year-old goof-off has matured into a 40-year-old business or cultural leader. To *goof off* means to avoid work and act in a lazy manner; a person who behaves this way is called a *goof-off*. Some traits, such as *temperament*, are relatively stable over time, but everyone changes in some way with age. Thus, a lazy youth (*a 20-year-old goof-off*) may develop (*mature*) into a more productive adult (*a 40-year-old leader*).

The *hard-driving* young adult may *mellow* by later life, yet still be *a relatively hard-driving senior citizen*. There is a great deal of consistency in temperament and emotionality over the life span, but in some ways we all change with time. Thus, the highly motivated and somewhat obsessive (*hard-driving*) young adult may become less so by later in life (he may *mellow*). Yet, relative to others, he may appear to be fairly single-minded and determined when he gets to retirement age (*a relatively hard-driving senior citizen*).