

## Chapter 2

# Childhood Development

Maya Strange and Andrea Sorensen

In order to detect and diagnose pathology in children and adolescents, clinicians need to recognize the bounds of normal behaviors. Rapid changes in the developing child make “normal” behavior a moving target. These three cases illustrate some of the challenges to parents and professionals.

At the end of this chapter, the reader will be able to

1. Describe normal emotional development in a preschool age child, a middle-school age child and an adolescent.
2. Discuss protective factors for normal development and how parents can foster normal development in a child.
3. Identify ways in which stages of development, personality traits, family, culture and society influence adaptation and coping.
4. Describe some risk factors for developing psychopathology at various stages of development.
5. Relate how a child’s developmental stage influences the physician–patient interview.

### ***Case Vignette 2.1.1 Presenting Situation: Caleb***

*You are a third-year resident at a pediatric clinic where 34-month-old Caleb is brought in by his parents with the concern that he has emotional outbursts. With further discussion, Caleb’s mother shares that she has a sister diagnosed with Bipolar Disorder and is concerned that he has a mood disorder or Attention-Deficit Hyperactivity Disorder “like his cousins.” The parents describe that Caleb can “rage.” They say that he lies on the floor and flails around while screaming or runs from them and slams doors. He sometimes stands with stiff arms and legs and cries inconsolably.*

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M. Strange

Assistant Professor of Psychiatry, University of Nevada School of Medicine



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### ***Case Vignette 2.1.2 Continuation***

*The parents note that the “rages” can last up to 10 minutes and may occur several times a day. They both agree that triggers for the outbursts may be when he doesn’t get what he wants, when they may not understand him, and when it is around nap or bed time. The father says that he is able to speak sternly with Caleb or sit him in a chair for 1–2 minutes, after which he usually calms down. The mother says that she can become frustrated with him and usually ends up yelling at him to be quiet. When you ask, she gives an example from that morning: she gave Caleb crayons and paper but he only colored for a few minutes and then wanted to play with blocks. She redirected him to the coloring and he sat on the floor and “raged” for 5 minutes. She yelled “Stop it!” then felt guilty, so she gave him the blocks and walked away.*

*Caleb was the product of a full-term first pregnancy without exposures or complications. He was easy to feed and has always slept well at night. He responded appropriately socially, with babbling and peek-a-boo play in infancy, pointing at objects as a toddler, and enjoying being with other children as a toddler. He crawled at 10 months and walked at 15 months. Currently, he can eat with a fork, undress, ride a tricycle, color a circle and a line, and identify colors and much of the alphabet. He speaks in three-word sentences and demonstrates a quickly growing vocabulary. He has no significant medical illnesses or significant injuries. They tell you that Caleb seems happy outside of these episodes.*

*You ask to see Caleb alone, and he agrees to let his parents leave the room. On exam, Caleb seems shy, but then starts to push a toy truck around the room while he makes truck sounds. He colors on a sheet of paper and hands you a pen and asks you to draw a circle. He then draws several circles as well and smiles. He is able to build a nine-block tower, then knocks it over and laughs. He finds a Spider Man toy, and you respond “You found Spider Man.” Caleb then starts to tell you how the superhero jumps and gets the bad guy. He jumps up and down himself. He tells you that he has a Spider Man at home that he sleeps with in his bed. He asks for his mother a few times during the exam, but is willing to keep playing. He makes good eye contact and shares smiles. He denies that anyone has ever hurt him or made him particularly scared (he does admit he’s scared of the dark). When his parents return, he runs to his mother and hugs her.*



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### **Case Vignette 2.1.3 Continuation**

*Caleb attends daycare 3 days a week for the past 6 months. The teacher told Caleb's mother that he did have difficulty sharing with the other kids initially. He would tantrum, sometimes to the point of hitting other children, if he had to share toys. He responded to counts to three and time-outs in the time-out chair at school. The teacher counts to three to give him time to calm down or facilitates a trading of toys when another child has what he wants. He can also choose to play with a different toy. If he does not make a trade, play with a different toy, or calm down by the count of three, then he gets a time-out. Initially he required several time-outs a day, but for the past 2 months has had only one time-out every few days. The teachers have not noted any other concerns.*

### **Learning Issues**

Caleb behaves like a normal boy of his age. His cognitive development is on track: he is using multiple word sentences and pronouns, he names objects, colors, and knows letters. His daily living skills are also well developed for his age. Nearly 3 years old, he is learning to use utensils, undress, and even dress himself and use the toilet. His motor skills are also on target, as he is able to effectively interact with and explore his environment. Socially, he demonstrates that he is able to communicate, appreciate personal boundaries, and share affect (Smidt, 2006). His play and conversations remain self-centered, but this is expected in toddlers and preschoolers. This self-centered perspective of the young child can be frustrating for many adults especially if they do not appreciate this developmental stage. Caleb is only focused on his interests and does not ask the examiner of her opinion or her interests. His attention span is limited to 5 or 10 minutes, and he changes activities frequently. It is clear, however, that the examiner's presence is important to Caleb. The adult provides a reference for the child and can serve to share experiences and encourage appropriate exploration, communication, and expansion on Caleb's own self-awareness during his play.

According to Erikson, a child of this age is in the midst of the developmental phase of autonomy versus shame and doubt (18 months–3.5 years), during which the child seeks to attain autonomy. As the young child becomes more aware of being a separate individual with differing wants/needs from the parents, he or she may start to strongly resist limits. “No!” is a common refrain heard by parents. There is a battle of the wills as the child attempts to exert initial control. Effective communication and established trust between the child and the caretaker are essential for how this stage is resolved. In fact, parents who learn to apply supportive interactions will have ongoing rewards, as the child's efforts toward greater separation may begin during this phase but will continue throughout childhood (Wiener and Dulcan, 2004).

It is also important to consider the neurodevelopment occurring in the preschooler's brain. At birth, the human brain already has a hundred billion neurons, but is still only a fraction of the size it will be in adulthood. As a child experiences

life, these neurons branch dendrites and synapse to one another to form networks of great complexity that integrate their understanding of their environment and their control over their own abilities. The brain also develops by layering neurons with insulating myelin to increase the speed of conducted information. Finally, this process is completed by the neurons pruning themselves of less useful dendritic and synaptic connections (Higgins and George, 2007). Only one-fifth of neurons are programmed by the age of 2. Through exploration and testing of limits, the young child gathers data for programming the other 80 % of the brain. The child's desire for social and environmental interactions are paramount to learning (Lewis, 2002).

Most parents understand that they serve a critical role in providing a safe and interesting environment as well as rules and structure to help children learn without physical injury. Emotional development and learning affective (emotional) regulation also requires such interactive parenting. A child may push the limits of behavior in an attempt to further engage in exploration and continue his self-serving behaviors. A caregiver can acknowledge this desire and voice an understanding that the child desires to learn. ("I know that you want to go across the street and see how the garbage truck picks up garbage.") It is important to remain accessible to the child to help shape his or her expectations. The caregiver can clearly identify the child's desires versus the real and acceptable options for the child. ("We can't go near the truck, but we can watch it from over here or go home and read about trucks.") Offering the child options and time to make a decision helps the child develop self-awareness and problem solving.

When children resist and retaliate, it may be time for a brief and respectful consequence. If the child makes a good choice then it is helpful to immediately praise the child. Consistency in these ongoing interactions models appropriate emotional and behavioral regulation and also nurtures the child's security and attachment with the caregiver. Piaget noted that the 2- to 5-year-old child is in a preoperational developmental phase, which is egocentric from a cognitive, affective, perceptual, and social standpoint. Sociocultural theorists describe, however, that children this age utilize significant social referencing. They offer the concept of scaffolding, in which problem solving for the young child occurs with helpful adults who are the child's primary tool for learning (Lewis, 2002).

### ***Case Vignette 2.1.4 Conclusion***

*You reassure Caleb's parents that he is normal, bright and healthy. You offer your favorite resource for parenting: 1,2,3 Magic! (Phelan, 2003) and Your Child (Pruitt, 2000), as well as the American Academy of Child and Adolescent Psychiatry's website, with resources for parents. You strongly recommend that both parents observe the preschool teacher's techniques so that they can see what works at the school and be consistent at home. A local resource for parenting classes is reviewed. They are encouraged to return to the clinic if these initial recommendations are not effective for the family.*

**Case Vignette 2.2.1 Presenting Situation: Susana**

*Susana is a 10-year-old Hispanic girl brought to your Outpatient Clinic by her mother, who is worried that she has had difficulty concentrating and crying episodes in the past few weeks. The girl sits politely next to her mother with a sad expression and wide opened eyes. She is holding a rubber toy dinosaur close to her chest with her right hand and is touching her mother's arm with her left hand. Susana is an only child and has not had any major health problems in the past.*



**Please proceed with the problem-based approach!**

**Case Vignette 2.2.2 Continued**

*Susana's mother tearfully tells you that her husband, Susana's father, passed away from cancer last month. He had been sick for several months and in hospice care at their home. She says that even before he died, Susana had been having difficulty completing her work at school and her homework. Susana's teacher sent a note home that her worksheets are covered with drawings of clouds and the sky. Her mother tells you that Susana has been crying for about 20 minutes a few times a day for the past several weeks. One time she became frantic when she couldn't find the toy dinosaur that she has been carrying with her for the past 2 months—a gift from her father for her ninth birthday. She also has awakened her mother at night in a panic needing to find a particular T-shirt that her father used to wear. Once she finds the shirt, she goes back to sleep. Her mother notes that even though her sleep has been disturbed, her appetite has remained fine. You glance at the chart and see that Susana is slightly above the 50th percentile for weight.*



**Please proceed with the problem-based approach!**

**Case Vignette 2.2.3 Continued**

*When asked about their support system, Susana's mother tells you that they do not have much family, but they do attend a grief group at their church. They have been able to talk about the impact of the father's death.*

*You ask to speak to Susana alone. When asked about friends, Susana tells you about two close friends. She has been able to play with them and tells them her feelings about missing her father. Susana tells you that her grades continue to be good in school, and she enjoys riding bikes or playing computer games. She feels angry when she sees other kids with their fathers. She still feels that it is unfair that her father had to die.*

*Looking at the sky and the clouds are a comfort because she feels her father is “up there” and with her always.*



**Please proceed with the problem-based approach!**

## Learning Issues

Grief is the emotional pain or anguish that one feels after the loss of a loved one. Anticipatory grief is a similar emotional pain that occurs before the impending death. Three categories, based on age and maturity, of a child's understanding of death have been described. Three to five-year-old children look at death as sleep or a long journey. Five to nine-year-olds accept that someone can die; however, they do not believe it happens to everyone and especially not to themselves. By 10 years of age, children know that death is inevitable and that it may happen to them. Normal bereavement is not considered a disorder, and loss of a close friend or relative occurs to up to half of all youths by the age of 21. Loss of a parent may occur to approximately 4 % of children by age 18 (Lewis, 2002).

Susana's developmental phase has been described by Erikson as industry versus inferiority (5–12 years old). This is a time during which a child develops a sense of competence and focuses on self-worth. The child learns how to become a friend and to identify with a peer group. He or she also gains satisfaction in experiencing hard work that leads to success and also learns to compensate for their weaknesses in some areas by noting accomplishments in other areas. The child not only learns to read but eventually “reads to learn.” Motor development also progresses, and physical activity can be a positive way to engage with peers and master a talent (e.g., playground games such as tag; team sports such as soccer and softball). Piaget describes the cognitive stage of concrete operations. The child is able to conceptualize rather than simply perceive, but is not yet able to utilize abstract thinking. Thus, Susana may understand the irreversibility and inevitability of death, but may have difficulty in applying the concept generally. She may continue to have concerns about potential harm to her own body, not just her father's. Mastery of these thoughts may be seen in dreams or play. If the child becomes overwhelmed, however, he or she may feel vulnerable or even helpless.

Just as a child's body goes through a maturation process at puberty, her brain also undergoes regular maturation processes through the formative years. Susana is at an age where she is just between two peaks in brain development. Between the ages of 4 and 8, her brain continues the process of development. This occurs through gray-matter loss and by maturing the primary sensorimotor regions which consolidate basic sensory and motor function. Between the ages of 11 and 13 her brain will peak in development in the regions of spatial orientation and language (Toga et al., 2006). This process of gray-matter loss maturation will go on through adolescence. From the earliest studies on brain volumes, children between 8 and 10 have been shown to have significantly more cortical gray-matter relative to cerebral size than young adults do (Sowell et al., 2004). Thinning of specific regions in the brain represents focused maturation of the cognitive abilities associated with those regions. For example, thinning of the left dorsal frontal and parietal lobes in children aged 5–11 has been correlated with improved performance on a test of verbal functioning (Toga et al., 2006).

Further research is needed to clarify the psychiatric morbidity among adults who lost a parent in childhood. It helps to recognize complicated bereavement in children in order to minimize morbidity later in life for these individuals. Symptoms of complicated grief are: longing and searching for the loved one, preoccupation with thoughts of the loved one, purposelessness and futility about the future, numbness and detachment from others, difficulty accepting death, lost sense of control and security, and anger and bitterness over the death. The anger can lead to problems in interactions with family and friends, schoolwork, and other activities. Even 2 years after the parent's death, preadolescent girls were noted to have more anxiety, depression, and aggressive behaviors than controls, and adolescent boys were noted to be more withdrawn and have more social problems than their matched controls. Adolescent girls and preadolescent boys showed no differences from their matched controls. Overall, approximately 20 % of children who suffered the death of a parent had serious problems at 1 year that could require treatment such as counseling (Melham et al., 2007).

### ***Case Vignette 2.2.4 Conclusion***

*You are able to reassure Susana's mother that she is experiencing normal grief. This can present in myriad ways—some children cry, some avoid, and others respond by denying that the death occurred. Susana and her mother were commended for their open communication and participation with community and peer groups that are supportive. It will be important to maintain open lines of communication to allow Susana to express sadness, anger, and memories of her father as she works to process grief. You advise Susana's mother to be aware of signs of pathological grief, as described above. Many cities have bereavement groups and resources for children who have lost a parent. This can be a wonderful source of support, because often a child can otherwise feel very alone in this experience.*



### **Case Vignette 2.3.1 Brian**

*Brian is a 15-year-old male with a history of insulin-dependent diabetes who comes to your family medicine clinic with his mother. He is currently in the 10th grade at the local public high school and lives with his mother, 17-year-old-sister, and 11-year-old brother. Brian's parents divorced when he was 9. His father, who lives in town, sees Brian and his siblings every week. His mother brought him to see you for an evaluation due to concerns about some of his recent behavior. Over the past 6 months, he has changed from a "sweet, loving, and attentive son," to a "stranger." She tells you that he spends most of his time in his room, on the phone with friends, or on the computer. He used to be a conscientious student, but recently has been doing his homework at the last minute. The last semester he lost his 4.0-grade average and currently has three Bs on his report card. Brian has also been staying up late and sleeping in more on the weekends. His taste in music and dress has changed. She describes that he used to be very neat, but more recently has been wearing "skater" clothes, and he pierced his ear and eyebrow. He has been talking about getting tattoos. His eating habits have changed, and he has been more casual about managing his blood glucose levels.*



**Please proceed with the problem-based approach!**

### **Case Vignette 2.3.2 Continuation**

*You meet with Brian without his mother. He is soft-spoken and cooperative, with brown shaggy hair, a large hooded sweatshirt and baggy jeans. He tells you he doesn't know why his mother brought him in and that she "overreacts" to everything. Brian reports that he was diagnosed with diabetes when he was 10 years old, "so things were pretty stressful then." He says, "I know I should do better (managing his diabetes), but sometimes I just want to eat without thinking about it, and it's a pain carrying my insulin around all of the time." Brian used to spend more time at home in elementary and middle school because "I didn't have anyone my age to hang out with, so I hung out with my mom." He states that his mother is fairly strict. "It's unfair. My sister would never do anything my mom wouldn't like, so she now doesn't know what to do with me." He doesn't tell his mother too much about his girlfriend or his friends "because it usually turns into a lecture." Brian also has positive things to say about his family: "My mom is an awesome cook, and she would do anything for us. My sister is kind of a dork, but she always looks out for me."*

*Brian tells you that school has been going fairly well, though he could try harder. He skipped school a few times when the weather was warmer to go skateboarding with friends. He also has a girlfriend and says it's a serious relationship. He had*



*few friends when he was younger and, until a couple of years ago, he was one of the shortest children in his class. Since starting high school, he has grown 11 inches and is now 5'9" tall. In high school he has established a large group of friends. When you ask him about substance use, he tells you that he has tried alcohol and marijuana at parties, but "they're not for me." He denies discipline problems in school, with the exception of getting detention in middle school for once having a water balloon fight during recess. He denies any history of stealing, fire setting, harm to animals, or running away. He has never been in trouble with the law.*

*He notes that his mood overall the past several months has been good. He has been sleeping well, but does stay up until 12 a.m. because he is either online or talking on the phone. When his parents divorced, he remembers that he was easily frustrated and somewhat angry at his father, but he continued to enjoy his usual activities and perform well in school. He has a good appetite and denies history of or current suicidal ideation or self-injury. In addition to skateboarding, he likes to write, listen to music, and play guitar. He works at an ice cream shop 10 hours per week, and reportedly his supervisor hopes he can work longer hours during his school breaks. Brian's ultimate goal is to become a professional skateboarder, but if that does not work out, he would like to eventually open his own skate shop or do "accounting, like my dad."*

*You invite Brian's mother to talk with you alone. Brian was diagnosed with diabetes after presenting to the emergency room in diabetic ketoacidosis. Brian's mother strictly managed his diet and blood glucose levels. Recently, Brian has wanted more responsibility, and his last hemoglobin A1C was 7 (previous levels had been in the normal range). She tells you that Brian is a "great kid," but points out that her own brother had some behavioral difficulties when younger, and started using substances during high school. Brian's mother was raised in a very religious household, and her brother was regularly in conflict with the family. Her brother continues to use substances, has irregular contact with the family, has spent time in jail related to his drug use, and has been unable to maintain steady employment. Brian's mother says, "I may be completely off base, but I just don't want to see what happened to my brother happen to Brian."*



**Please proceed with the problem-based approach!**

At this point the differential remains quite broad. Brian's change in behavior including being more isolative, change in school performance and sleep patterns could suggest possible substance use, depression, or even disruptive behavior disorder. It would be important to understand how Brian's change in behavior is affecting his function in other areas, such as with friends, school, or work.

Teenagers at risk for developing serious substance problems include those who: have a family history of substance use, are depressed, have low self-esteem, feel like

they do not fit in or are out of the mainstream. Signs and symptoms of substance use may be physical fatigue, repeated health complaints, red or glazed eyes, and a lasting cough. Emotional complaints may be personality change, sudden mood changes, irritability, irresponsible behavior, low self-esteem, poor judgment, depression, and general lack of interest. The family may notice the teen argues more, breaks rules, and is more withdrawn. School concerns are decreased interest, negative attitude, drop in grades, many absences, truancy, and discipline problems. The teen may have new friends who are less interested in standard home and school activities, have problems with the law, and are interested in less conventional styles of dress and music.

It is important to discuss substance issues as well as screen for mental health disorders, as 10–15 % of the child and adolescent population have symptoms of depression at any one time (Smucker et al., 1986). The prevalence of major depression among children aged 9–17 has been estimated at 5 % (Shaffer et al., 1996) and substance use disorders are quite common.

Another consideration would be a normal variant of adolescent development. According to Erikson's stages of development, adolescence (12–17 years) is the period of identity versus identity diffusion. The adolescent's goal is the answer to the question "Who am I?" As the adolescent tries to figure this out, they may experiment with different identities and rebel against some adult expectations. This stage accompanies significant physical changes and further development of gender identity. The teen's social network increases in importance. The adolescent engages in various activities as he or she determines his or her own values and goals. The developmental goals during this time include not only solidifying one's own identity, but also separating and reconciling one's feelings for the family of origin, developing romantic relationships, and mastering one's bodily functions and impulses (Wiener and Dulcan, 2004). The normal process of separation and individuation can make this a challenging time for parents.

As adolescents approach adulthood their brains continue to develop in areas of greater and greater complexity. For example, the process of myelination to insulate neurons into greater conduction speed is already finished with ventral and deep brain structures that control primitive functions, but continues on in dorsal regions responsible for higher cognitive functions, like the prefrontal cortex, onward to adulthood. In the peak adolescence years after puberty the brain matures specific regions devoted to integrating senses and reasoning ("executive function") (Blakemore and Choudhury, 2006) (Toga et al., 2006). This picture of brain development matches with Erikson's stages of development, as it represents the brain developing in areas associated with response inhibition, emotional regulation, planning, and organization or, in other words, self-control and personal choices (Sowell et al., 2004).

### ***Case Vignette 2.3.3 Conclusion***

*You discuss with Brian's mother that Brian (and she) are likely experiencing normal adolescent development. Though Brian may at times seemingly push his family away, he needs her to remain present and consistent while allowing him to explore*

*as much as is safe (similar to in toddlerhood). It will be important to continue to express the family's values and expectations to him, though in a non-shaming way. Continuing to engage in activities as a family is also helpful to maintain open lines of communication. You refer Brian's mother to the AACAP website, particularly to the Normal Adolescent Development sections. You also meet a few months later with Brian and his mother together to discuss how each feels things are going in the family. You allow time for clarification of certain rules that are non-negotiable. It is helpful for Brian's mother to hear from him his perspective and overall positive feelings about the family.*

## Review Questions

1. What process of neurodevelopment is responsible for the great speed information travels in the brain?
  - (a) Loss of unnecessary gray-matter.
  - (b) Myelin insulation of neurons.
  - (c) Pruning excess dendrite and synapse connections.
  - (d) Forming new dendrite and synapse connections.
2. Which of these statements about a 3 year old would be developmentally unusual?
  - (a) The child eats with a fork or spoon.
  - (b) The child focuses conversations on an adult.
  - (c) The child can ride a tricycle.
  - (d) The child's attention span only lasts 5–10 minutes.
3. What would be a sign that a child's grief at the loss of a parent had become complicated bereavement?
  - (a) Numbness and detachment from others.
  - (b) Seeking out objects belonging to the deceased.
  - (c) Bouts of crying between normal behavior.
  - (d) Preoccupation with activities associated with the deceased.
4. What brain morphology change is correlated to improved verbal function test scores?
  - (a) Thickening of the right dorsal frontal and parietal lobes.
  - (b) Thinning of the right dorsal frontal and parietal lobes.
  - (c) Thickening of the left dorsal frontal and parietal lobes.
  - (d) Thinning of the left dorsal frontal and parietal lobes.
5. Which of these is associated with 15 year olds according to Erikson?
  - (a) Satisfaction in hard work that leads to success.
  - (b) Resisting limits to develop autonomy.
  - (c) Learning to identify with a peer group.
  - (d) Determining personal goals and values.

6. What percentage of the child and adolescent population has symptoms of depression at any one time?
- (a) 1–5 %
  - (b) 5–10 %
  - (c) 10–15 %
  - (d) 15–20 %

## Answers

1. b, 2. b, 3. a, 4. d, 5. d, 6. c

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## Resources

[www.aacap.org](http://www.aacap.org)

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Refer to *Caring for your Child* parenting books.

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Guerrero, A.; Piasecki, M. (Eds.)

2008, XVI, 462 p., Hardcover

ISBN: 978-0-387-77483-1